Koppers Inc.
Carbon Materials and Chemicals
3900 South Laramie Avenue
Cicero, IL 60804-4523
Tel 708 222-3483
Fax 708 656 6079
www.koppers.com

October 21, 2021

*Via E-mail and Certified U.S. Mail*

Yasmine Keppner-Bauman
Illinois Environmental Protection Agency
Bureau of Air/Filed Operations Section
1021 North Grand Ave. East
P.O. Box 19276
Springfield, IL 62794-9276
Yasmine.Keppner-Bauman@Illinois.gov



**Re: Violation Notice A-2021-00217**
**ID: 031300AAJ**

Dear Ms. Keppner-Bauman:

Koppers Inc. ("Koppers") thanks the Illinois Environmental Protection Agency ("IEPA") for virtually meeting on September 30, 2021 to discuss Violation Notice A-2021-00217 and for its consideration of this supplemental, post-meeting response to the Violation Notice.

During our meeting on September 30, 2021, IEPA requested certain, additional information with respect to Koppers' initial response to the Violation Notice. Below, Koppers provides its supplemental response, which should be read in connection with its September 3, 2021 initial response, incorporated herein by reference.

***Introduction***

Koppers submits that the root cause analyses and other information provided with its initial response and during the September 30, 2021 virtual meeting demonstrate that the December 26, 2020 and March 20, 2021 accidental fire events were isolated, accidental and unrelated events and not the result of any systemic operational, maintenance or noncompliance issues at the Stickney facility. Safety, health and environmental ("SHE") stewardship is a crucial principle at Koppers and the company has established a comprehensive set of management systems, processes and procedures that clearly outline its SHE policy, expectations, roles and responsibilities, starting with the basic premise that full compliance with all applicable legal requirements is the minimum level of performance. Koppers' SHE Policy is the commitment to:

- Compliance with all applicable safety, health, environmental, and security laws, regulations, and other requirements to which Koppers subscribes;
- Pollution prevention in order to preserve the environment for the health, productivity and enjoyment of future generations;
- Protection of people through the management of product, process and other safety risks;

- Continuous improvement of our safety, health, environmental, and security systems and performance;
- Communication regarding our business operations and potential risks, both internally and externally to promote openness with our stakeholders.

Reflecting its SHE policy and commitment, Koppers, following the December 26, 2020 and March 20, 2021 fire events, took a number of corrective actions, including repairs, additional preventative maintenance and process improvements, review of existing policies and procedures, implementation of new policies and procedures, employee discipline, and training. Koppers believes that these measures will help ensure that accidental fire events like those that occurred on December 26, 2020 and March 20, 2021 do not occur in the future.

***Estimated Emissions and SDSs***

During the September 30, 2021 virtual meeting, IEPA requested a further explanation of how the emission estimates for the accidental fire events set forth in Koppers' September 3, 2021 initial response were generated, along with the safety data sheets (SDSs) for the materials that were burned.

The information necessary to calculate emission estimates from the fire events includes the amount and composition of the material combusted, the degree of combustion between partial and complete, the amount of combustion air entering through the dampers at the bottom of the heater, and the temperature of the flame. The amount of material combusted is the only reasonably estimable parameter. It is important to note that the only combustible materials involved in the fire were the raw materials feeding the processes.

With the foregoing caveats and limitations, Koppers, in its September 3, 2021 initial response, attempted to estimate the emissions from the December 26, 2020 and March 20, 2021 fire events by using published combustion emission factors. The emissions estimates for both events are based on AP-42 Chapter 1.3 emission factors for fuel oil and process inputs (sulfur content and raw material combusted). To account for incomplete combustion, a combustion efficiency penalty was used to account for products of incomplete combustion: CO and HAP emissions. All thermal decomposition products of sulfur in the material were assumed to be oxidized to sulfur dioxide ($SO_2$).

For example, the December 26, 2020 fire calculation of $SO_2$ emissions in Koppers' September 3, 2021 initial response is based on the amount of material combusted, the maximum permitted sulfur content of that material, and the AP-42 factor as follows:

Amount of material combusted = 600 gallons
Maximum Sulfur Content = 0.8%

$$\text{Amount of } SO_2 \text{ emitted} = 157 \text{ X} \left(\frac{0.8}{100}\right) \frac{\text{lb}}{1000\text{gallons}} \text{ X } 0.6\ 1000 gallons = 0.75 \text{ lb}$$

An example of using the efficiency penalty to account for less than ideal combustion to estimate the carbon monoxide (CO) emissions during the December 26, 2020 fire is as follows:

Amount of material combusted = 600 gallons
50% combustion penalty

$$\text{Amount of CO emitted} = 5\frac{\text{lb}}{1000\text{gallons}} \text{ X } 0.6\ 1000 gallons \text{ X } (1 + 50\%/100) = 4.5 \text{ lb}$$

In addition, as Koppers explained in its September 3, 2021 initial response, during the March 20, 2021 fire event necessary safety precautions were taken at the onset of the fire to ensure that the Tar Distillation Column was not pressurized. This was accomplished by continuing to run the vacuum system, shutting down the tube heater, and switching to ventilating the vacuum system through the No. 2 Fume Scrubber. For safety reasons, this was continued from 10:20 PM on March 20, 2021 until 8:30 AM on March 21, 2021. The total VOM emissions during this period of 10 hours is estimated at 65.4 lb based on process calculations at monitored temperatures starting at 330 °C down to 21 °C as the process cooled. Light Distillate Oil has the highest vapor pressure materials involved in the March 20, 2021 fire event and, therefore, the decrease in vapor pressure is assumed to be proportional to other materials. The uncontrolled VOM emission rate from a tube heater stack test was used as the basis for the first hour emissions from the vacuum system (2012 #2 Tube Heater Stack Test), and reduced by the ratio of the falling vapor pressure (*e.g.*, ratio at 330 °C = 1, and at 100 °C = 0.0018). There was no combustion of this material during the venting and, therefore, there are no emissions of other criteria pollutants due to combustion.

The SDSs for the materials burned during the December 26, 2020 and March 20, 2021 fire events are included with this supplemental response.

***The December 26, 2020 Fire Event***

Koppers' September 3, 2021 initial response provided IEPA with an explanation of the causes of, and emissions estimates from, the December 26, 2020 fire event, as well as the corrective actions taken by Koppers as a result of that event. Koppers reviewed that information with IEPA during the September 3, 2021 virtual meeting and answered IEPA's questions, but did not understand IEPA to have any specific requests for additional information regarding the December 26, 2020 fire event beyond the emission and SDS information provided above. Should IEPA have specific, additional informational needs regarding the December 26, 2020 accidental fire event, Koppers will endeavor to provide such information to the agency as expeditiously as possible.

***The March 20, 2021 Fire Event***

Koppers' September 3, 2021 initial response also provided IEPA with an explanation of the causes of, and emissions estimates from, the March 20, 2021 accidental fire event, as well as the corrective actions taken by Koppers as a result of that event. Much of that explanation was included in materials that Koppers submitted to the Chemical Safety and Hazard Investigation Board ("CSB"), which were provided to IEPA simultaneously with the September 3, 2021 response letter via an e-mail download link. IEPA requested that Koppers provide a further narrative summary of those causes and corrective actions.

As explained by the CSB materials, at the time of the fire on March 20, 2021, Tar Distillation Unit 1 was idle and Unit 2 was producing petroleum pitch by distillation of a blend of petroleum tar and decant oil. Any fire requires fuel, oxygen and an ignition source and the root cause analysis provided to the CSB addressed each of these elements. Inasmuch as the fire was outside, there was abundant oxygen available in ambient air to support combustion. Fuel came from a gasket leak near the top of Unit 2. Liquid and vapors were released and the released vapors ignited. The burning vapors also ignited material on scaffolding that had accumulated from the leak. The scaffolding was in place to facilitate insulation repairs on the unit. Such repairs during operation are routine, as they do not present a safety hazard or operations impediment. Typical of industry practice, moreover, small sections of insulation are removed and replaced and there is no release of process materials. Due to the extent of damage from the fire it was impossible to determine with certainty the source of ignition, so corrective actions are focused on the two most likely sources: electrical spark from equipment operating in the area and material under insulation from past leaks that may have begun to smolder due to extended time at elevated temperature in a confined atmosphere. Lab work has been completed confirming prior work that process temperatures are below auto-ignition temperatures of the products in question. Corrective actions identified during the investigation of this incident include:

- Minimize the risk of leaks
  - Conduct pipe stress and support study and correct identified problems (underway, study to be completed in 2022)
  - Inspect and pressure test vessels and piping to ensure there are no leaks prior to return to service (completed)
  - Replace all valves and gaskets in the distillation building (75% complete, completion in 2022)

- Eliminate possible ignition sources
  - Complete electrical classification study and implement corrective action for non-conforming equipment (study completed, awaiting report)
  - Implement insulation standard to require removal of all soiled insulation at the time of maintenance and to seal insulation at likely leak points to prevent the saturation of insulation away from the immediate location of the leak (underway)

- Improve housekeeping
  - Expedite work to minimize the time scaffolding is erected around the distillation columns (ongoing)
  - Provide splash protection at sample stations to prevent material accumulation in those areas (underway, to be completed by end of 2021)
  - Ensure material in piping is properly contained and cleaned up during maintenance activity (ongoing)

***Printouts of Material Provided Electronically***

Koppers, with its September 3, 2021, initial response, provided IEPA with two e-mail links where additional supporting documentation could be downloaded due to the size of the files. One e-mail contained a link to the CSB investigation file, while the other contained a link to facility repair

records for the fire events. During the September 30, 2021 virtual meeting, IEPA requested hard copy of those materials to the extent possible. Koppers, with this letter, is providing IEPA with requested hard copy of the materials previously supplied electronically, with the exception of the photographs and video that were included with the CSB investigation file.

Koppers is hopeful that the foregoing, supplemental information requested by IEPA is helpful to the agency as it considers resolution of the alleged violations. As previously relayed, it remains Koppers's desire to cooperatively participate in the Section 31 enforcement process and, if determined to be necessary, to work with IEPA toward a mutually-acceptable Compliance Commitment Agreement.

Thank you for considering this supplemental response to the Violation Notice. Please contact me at (708) 556-9984, or by e-mail HerringLS@koppers.com, if you would like to discuss Koppers response or require any additional information. We look forward to receiving IEPA's written response and working towards a satisfactory resolution of these matters.

Sincerely,

Seth Herring
Plant Manager

Enclosures

List of Enclosures:

Document 1 – May 12, 2021 Cover letter, D. Enochs
Document 2 – May 12, 2021 Certification, J. Dowd
Document 3 – Letter to IEPA with Stickney Fire Department Report
Document 4 – Koppers Cause Map Summary
Document 5 – Koppers Cause Map Investigation File
Document 6 – Tar Distillation PFD and P&IDs
Document 7 – SO100 Tar Plant Overview
Document 8 – Safety Data Sheet for Blended Pyrolysis (March 20, 2021 Fire Event)
Document 9 – Safety Data Sheet for Decant Oil (March 20, 2021 Fire Event)
Document 10 – Safety Data Sheet for Petroleum Tar (March 20, 2021 Fire Event)
Document 11 – Safety Data Sheet for Crude Coke Oven Tar (December 26, 2021 and March 20, 2021 Fire Event
Document 12 – Electrical QAQC checklist (March 20, 2021 Fire Event)
Document 13 – P&IDs showing Unit 2 mechanical repair scope (March 20, 2021 Fire Event)
Document 14 – P&IDS showing Unit 1 Mechanical repair scope (March 20, 2021 Fire Event)
Document 15 – Unit 1 Mechanical QAQC Checklist (March 20, 2021 Fire Event)
Document 16 – Unit 2 Mechanical QAQC Checklist (March 20, 2021 Fire Event)

Seth Herring
Plant Manager

Koppers Inc.
Carbon Materials and Chemicals
3900 S. Laramie Ave.
Cicero, IL 60804

***Via E-Mail Only***

Mike Buechele, Legal Investigator II
Illinois Environmental Protection Agency
Division of Records Management/Screening & Research Unit
1021 North Grand Ave. East, P.O. Box 19276
Springfield, IL 62702
Michael.Buechele@Illinois.gov



**RE: Koppers Inc.**
**Public Records Claimed Exempt**

Dear Mr. Buechele:

On behalf of Koppers Inc, please accept this response to your recent correspondence of March 7, 2024.

In accordance with 35 Ill. Adm. Code § 1828.401, Koppers is making the claim that the documents as identified by your March 7, 2024, correspondence remain exempt from public disclosure. Specifically, Koppers claims that the entirety of Documents 4, 7, 13 and 14, and those portions of Document 6 previously identified, remain exempt from public disclosure (collectively, the "Confidential Documents").

As you know, Koppers' facility manages, processes and manufactures chemicals. Stringent security measures are in place to prevent disclosure of information that could pose a security risk to the facility. The Confidential Documents contain such information. Additionally, the Confidential Documents are considered confidential and proprietary business information in accordance with 35 Ill. Adm. Code § 1828.202(a)(1)(F). This information is of a type that is customarily held in confidence by Koppers and was shared with the agency with the understanding that the documentation would remain confidential and exempt from public disclosure.

In accordance with 35 Ill. Adm. Code § 1828.401(c)(1), Koppers is claiming that the entirety of Documents 4, 7, 13 and 14, and those portions of Document 6 previously identified, remain exempt from public disclosure. Koppers is, accordingly, providing a set of the Confidential Documents marked "Public Record Claimed Exempt" in red ink on the face/front of the public records.

# Document 1

Dan Tillema PE
Chemical Incident Investigator
U.S Chemical Safety & Hazard Investigation Board

Koppers Inc.
436 Seventh Avenue, Suite 1800
Pittsburgh, PA 15219
Tel 412 227 2887
enochsdm@koppers.com
www.koppers.com

May 12, 2021

RE: First Records and Information Request

Dear Mr. Tillema,

Koppers Inc. (Koppers) has conducted an investigation into the incident on March 20, 2021. The following information has been collected as a result of the investigation and shared per your request.

Document 1 – Letter to IEPA with Stickney Fire Department Report
Document 2 – Koppers Cause Map Investigation file
Document 3 – Koppers Cause Map Summary
Document 4 – Tar Distillation PFD and P&IDs
Document 5 – SO100 Tar Plant Overview
Document 6 – Safety Data Sheet for Blended Pyrolysis
Document 7 – Safety Data Sheet for Decant Oil
File 1 – Pictures and Videos

If you have any questions, please feel free to contact me.

Sincerely,

Drew Enochs

Drew Enochs
Manager of Global Process Safety
Koppers Inc. | 436 Seventh Avenue | Pittsburgh, PA 15219 | United States
T: +1 412 227 2887 | M: +1 412 680 2171
enochsdm@koppers.com

# Document 2

**Joseph P. Dowd**
Vice President, Zero Harm

**Koppers Inc.**
**436 Seventh Avenue, Suite 1800**
Pittsburgh, Pa. 15219-1800
Tel 412-227-2045
Fax 412-227-2423
DowdJP@Koppers.com
www.koppers.com

May 12, 2021

Dear Mr. Tillema,

I hereby certify that Koppers has provided the following information in response to this information request:

- Koppers internal investigation file that includes:
  - Alarm and event logs
  - Causal analysis
  - Witness statements
  - Interview notes
- Photos and Videos
- PFD and P&IDs
- Operating Manual
- Safety data sheets

Sincerely,

Joseph P. Dowd

Joseph P Dowd

# Document 3

KOPPERS
Koppers Carbon Materials & Chemicals
3900 South Laramie
Cicero, Illinois, 60804
Tel 708 656 5900
www.koppers.com

Ms. Yasmine Keppner-Bauman
Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (MC 40)
PO Box 19276
Springfield, IL 62794-9276

RE: Follow-up Communications on Tar Distillation Fire
Koppers Inc., Stickney Plant
ID Number: 031300AAJ

Dear Ms. Keppner-Bauman:

Koppers Inc. (Koppers) operates a chemical manufacturing plant in Stickney, Illinois under Clean Air Act Permit Program (CAAPP) Permit # 96030134. On March 20, 2021, there was a fire at the Tar Distillation Column and adjacent scaffolding at approximately 10:20 pm. In an effort to keep the Illinois Environmental Protection Agency informed on matters that may lead to inquiries from concerned citizens in the area of the plant, Koppers reported the incident to the IEPA via telephone. This letter is sent as a follow-up report regarding that incident.

Upon discovery of the fire, the distillation plant was immediately shut down. Within a few minutes of shutting the process down, the main fire was extinguished. It is Koppers' understanding that the cause of the fire was material which had leaked from the top of Unit 2 distillation column and ignited. Preliminary identification of the leaked material is fuel oil, pyrolysis (CAS No. 69013-21-4), and clarified oils (petroleum), catalytic cracked (CAS No. 64741-624). The root cause is still under further investigation as the equipment is dismantled. Attached to this letter is the fire department response to the incident.

The facility continues to investigate the root cause of the fire and will implement strategies, as appropriate, to prevent similar incidents from happening in the future.

Condition 5.7 of the CAAPP permit requires Koppers to provide prompt notice to the Illinois Environmental Protection Agency of deviations from CAAPP permit requirements. Here, because the incident was a fire on the outside of the distillation column, no stack vented emissions occurred and there was no deviation from permit limits. Due to the relatively short duration of the fire and the time of day in which it occurred, Koppers does not believe that there were significant effects to the surrounding community.

If there are any questions concerning this report, please contact Ms. Charvi Payghode of Koppers at (708) 222-4688.

Sincerely,

L. Seth Herring
Plant Manager CMC NA

Attachment

# Stickney Fire Department Report

## A

| FDID ★ | State ★ | Incident Date ★ (MM / DD / YYYY) | Station | Incident Number ★ | Exposure ★ | | NFIRS -1 Basic |
|---|---|---|---|---|---|---|---|
| CS852 | IL | 03 / 20 / 2021 | 1ST | 21-0000243 | 000 | ☐ Delete ☐ Change ☐ No Activity | |

## B Location ★

☐ Check this box to indicate that the address for this incident is provided on the Wildland Fire Module in Section E "Alternative Location Specification". Use only for Wildland fires.

Census Tract: 8207 -

☒ Street address
☐ Intersection
☐ In front of
☐ Rear of
☐ Adjacent to
☐ Directions

| Number/Milepost | Prefix | Street or Highway | Street Type | Suffix |
|---|---|---|---|---|
| 3900 | S | Laramie | AVE | |

| Apt./Suite/Room | City | State | Zip Code |
|---|---|---|---|
| | Stickney | IL | 60402 - |

Cross street or directions, as applicable

## C Incident Type ★

111 Building fire

Incident Type

## D Aid Given or Received ★

1 ☐ Mutual aid received
2 ☒ Automatic aid recv.
3 ☐ Mutual aid given
4 ☐ Automatic aid given
5 ☐ Other aid given
N ☐ None

Their FDID: CS201 Their State:
Their Incident Number:

## E1 Date & Times

Midnight is 0000

Check boxes if dates are the same as Alarm Date.

| | Month | Day | Year | Hr Min Sec |
|---|---|---|---|---|
| Alarm ★ (ALARM always required) | 03 | 20 | 2021 | 22:31:00 |
| ☒ Arrival ★ (ARRIVAL required, unless canceled or did not arrive) | 03 | 20 | 2021 | 22:34:00 |
| ☐ Controlled (CONTROLLED Optional, Except for wildland fires) | | | | |
| ☐ Last Unit Cleared (LAST UNIT CLEARED, required except for wildland fires) | 03 | 21 | 2021 | 01:44:00 |

## E2 Shift & Alarms

Local Option

| Shift or Platoon | Alarms | District |
|---|---|---|
| 3 | | IND |

## E3 Special Studies

Local Option

Special Study ID# | Special Study Value

## F Actions Taken ★

11 Extinguishment by fire

Primary Action Taken (1)

Additional Action Taken (2)

Additional Action Taken (3)

## G1 Resources ★

☒ Check this box and skip this section if an Apparatus or Personnel form is used.

| | Apparatus | Personnel |
|---|---|---|
| Suppression | 0003 | 0006 |
| EMS | | |
| Other | | |

☐ Check box if resource counts include aid received resources.

## G2 Estimated Dollar Losses & Values

LOSSES: Required for all fires if known. Optional for non fires.

| | | None |
|---|---|---|
| Property $ | 000,000 | ☒ |
| Contents $ | 000,000 | ☒ |

PRE-INCIDENT VALUE: Optional

| | | |
|---|---|---|
| Property $ | 000,000 | ☐ |
| Contents $ | 000,000 | ☐ |

## Completed Modules

☒ Fire-2
☒ Structure-3
☐ Civil Fire Cas.-4
☐ Fire Serv. Cas.-5
☐ EMS-6
☐ HazMat-7
☐ Wildland Fire-8
☒ Apparatus-9
☒ Personnel-10
☐ Arson-11

## H1 ★ Casualties ☐ None

| | Deaths | Injuries |
|---|---|---|
| Fire Service | | |
| Civilian | | |

## H2 Detector

Required for Confined Fires.

1 ☐ Detector alerted occupants
2 ☒ Detector did not alert them
U ☐ Unknown

## H3 Hazardous Materials Release

N ☒ None
1 ☐ Natural Gas: slow leak, no evacuation or HazMat actions
2 ☐ Propane gas: <21 lb. tank (as in home BBQ grill)
3 ☐ Gasoline: vehicle fuel tank or portable container
4 ☐ Kerosene: fuel burning equipment or portable storage
5 ☐ Diesel fuel/fuel oil: vehicle fuel tank or portable
6 ☐ Household solvents: home/office spill, cleanup only
7 ☐ Motor oil: down engine or portable container
8 ☐ Paint: from paint cans totaling < 55 gallons
0 ☐ Other: Special HazMat actions required or spill > 55gal., Please complete the HazMat form

## I Mixed Use Property

NN ☐ Not Mixed
10 ☐ Assembly use
20 ☐ Education use
33 ☐ Medical use
40 ☐ Residential use
51 ☐ Row of stores
53 ☐ Enclosed mall
58 ☐ Bus. & Residential
59 ☐ Office use
60 ☒ Industrial use
63 ☐ Military use
65 ☐ Farm use
00 ☐ Other mixed use

## J Property Use ★

### Structures

131 ☐ Church, place of worship
161 ☐ Restaurant or cafeteria
162 ☐ Bar/Tavern or nightclub
213 ☐ Elementary school or kindergarten
215 ☐ High school or junior high
241 ☐ College, adult education
311 ☐ Care facility for the aged
331 ☐ Hospital
341 ☐ Clinic, clinic type infirmary
342 ☐ Doctor/dentist office
361 ☐ Prison or jail, not juvenile
419 ☐ 1-or 2-family dwelling
429 ☐ Multi-family dwelling
439 ☐ Rooming/boarding house
449 ☐ Commercial hotel or motel
459 ☐ Residential, board and care
464 ☐ Dormitory/barracks
519 ☐ Food and beverage sales
539 ☐ Household goods, sales, repairs
579 ☐ Motor vehicle/boat sales/repair
571 ☐ Gas or service station
599 ☐ Business office
615 ☐ Electric generating plant
629 ☐ Laboratory/science lab
700 ☒ Manufacturing plant
819 ☐ Livestock/poultry storage (barn)
882 ☐ Non-residential parking garage
891 ☐ Warehouse

### Outside

124 ☐ Playground or park
655 ☐ Crops or orchard
669 ☐ Forest (timberland)
807 ☐ Outdoor storage area
919 ☐ Dump or sanitary landfill
31 ☐ Open land or field
936 ☐ Vacant lot
938 ☐ Graded/care for plot of land
946 ☐ Lake, river, stream
951 ☐ Railroad right of way
960 ☐ Other street
961 ☐ Highway/divided highway
962 ☐ Residential street/driveway
981 ☐ Construction site
984 ☐ Industrial plant yard

Lookup and enter a Property Use code only if you have NOT checked a Property Use box:

Property Use: 700

Manufacturing, processing

NFIRS-1 Revision 03/11/99

**K1 Person/Entity Involved** (Local Option)

Business name (if applicable): KOPPERS INDUSTRIES
Area Code: 630 Phone Number: 605-4380

☐ Check This Box if same address as incident location. Then skip the three duplicate address lines.

Mr.,Ms., Mrs.: | First Name: Tom | MI: | Last Name: Tortoriello | Suffix:

Number: 3900 | Prefix: S | Street or Highway: Laramie | Street Type: AVE | Suffix:

Post Office Box: | Apt./Suite/Room: | City: Stickney

State: IL | Zip Code: 60402-

☐ More people involved? Check this box and attach Supplemental Forms (NFIRS-1S) as necessary

**K2 Owner** (Local Option)

☐ Same as person involved? Then check this box and skip the rest of this section.

Business name (if Applicable): | Area Code: | Phone Number:

☐ Check this box if same address as incident location. Then skip the three duplicate address lines.

Mr.,Ms., Mrs.: | First Name: | MI: | Last Name: | Suffix:

Number: | Prefix: | Street or Highway: | Street Type: | Suffix:

Post Office Box: | Apt./Suite/Room: | City:

State: | Zip Code:

**L Remarks** (Local Option)

03/21/2021 11:59:09 Jacob Anderson

Crew called for the report of a fire. Upon arrival crew found a large tar plant facility with a fire contained to the tar distillery building (approximately 100 x 50). Crew noted the fire to be on the third floor A/B corner with extension to the stacks above the building. Koppers staff were on scene attempting to extinguish with hydrant mounted monitors and advised the material was tar and water could be used on it. Engine 1201 took position in the A/B corner to hit the fire with deck gun and made a positive water supply. Central Stickney Truck 906 took position in the B/C corner and raised aerial to hit what was burning on the stacks. McCook engine positioned in C/D corner of building to hit hot spots with deck gun. Crews made good progress and extinguished what was burning. Staff were on scene throughout duration of event. They believed the material was extinguished but still wanted crews to remain on scene for awhile longer. Crews noted some steam pipes were damaged during the fire and koppers would work to isolate these. Scene was turned over to Koppers staff with no further issues.

---

03/22/2021 16:29:33 Jeffrey Boyajian

Dispatched to location for reported structure fire. Upon going enroute I was given an update by PD on the scene that the fire was confirmed. Upon gathering this information as well as the amount of fire seen upon arrival, I upgraded the response to the full still level. Upon reaching the Tar Distillation building , we had heavy fire noted on the North/East face of the building, as well as extension to the South face and North face of the building which extended up the piping and to the top portions of the structure. Upon doing a 360 degree survey of the building I had Engine 1201 take the front of the structure

**L Authorization**

| Officer in charge ID | Signature | Position or rank | Assignment | Month | Day | Year |
|---|---|---|---|---|---|---|
| 15314 | Boyajian, Jeff G | FC | | 03 | 21 | 2021 |

| Check Box if same as Officer in charge. | Member making report ID | Signature | Position or rank | Assignment | Month | Day | Year |
|---|---|---|---|---|---|---|---|
| ☐ | 15309 | Anderson, Jacob P | CP | | 03 | 21 | 2021 |

| FDID * | State * | MM | DD | YYYY | Station | Incident Number * | Exposure * | |
|---|---|---|---|---|---|---|---|---|
| CS852 | IL | 3 | 20 | 2021 | 1ST | 21-0000243 | 000 | Complete Narrative |

Incident Date *

**Narrative:**

03/21/2021 11:59:09 Jacob Anderson

Crew called for the report of a fire. Upon arrival crew found a large tar plant facility with a fire contained to the tar distillery building (approximately 100 x 50). Crew noted the fire to be on the third floor A/B corner with extension to the stacks above the building. Koppers staff were on scene attempting to extinguish with hydrant mounted monitors and advised the material was tar and water could be used on it. Engine 1201 took position in the A/B corner to hit the fire with deck gun and made a positive water supply. Central Stickney Truck 906 took position in the B/C corner and raised aerial to hit what was burning on the stacks. McCook engine positioned in C/D corner of building to hit hot spots with deck gun. Crews made good progress and extinguished what was burning. Staff were on scene throughout duration of event. They believed the material was extinguished but still wanted crews to remain on scene for awhile longer. Crews noted some steam pipes were damaged during the fire and koppers would work to isolate these. Scene was turned over to Koppers staff with no further issues.

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03/22/2021 16:29:33 Jeffrey Boyajian

Dispatched to location for reported structure fire. Upon going enroute I was given an update by PD on the scene that the fire was confirmed. Upon gathering this information as well as the amount of fire seen upon arrival, I upgraded the response to the full still level. Upon reaching the Tar Distillation building , we had heavy fire noted on the North/East face of the building, as well as extension to the South face and North face of the building which extended up the piping and to the top portions of the structure. Upon doing a 360 degree survey of the building I had Engine 1201 take the front of the structure where they began to establish a water supply and began extinguishment with the deck gun (master stream). I relocated to the front of the plant and established a Command Post and was speaking with Jaime Duarte who was the plant supervisor that night, I established that no one was injured and everyone accounted for, he confirmed. Engine 1201 reported water pressure issues. I then exited my vehicle and noticed that I did not hear the diesel fire pump running and asked why it was not, no-one knew why it was not. I directed Central Stickney's ladder truck to set up on the East side of the structure and McCooks Engine to set up on the West side of the structure, and went to the pump house to see what the issue was with the pump, while preparing companies in staging to prepare for a water supply if the pump was not functional. After arriving in the pump house the "Operational Panel" was signalling the pump was "ON" but obviously was not running. At that time I turned the switch to the manual position and started the pump manually. Once pump was running our water supply issues were no longer an issue. Once the water supply was established , Central Stickney ladder began flowing water for extinguishment to the upper portions of the structure while being fed by Ciceros engine, 1201 continued with extinguishment of the North face of the structure and McCook's engine was set up on the West side and was assisting with extinguishment with their deck gun (master stream). While the water supply issue was being addressed, Jaime and his crew shut down the product being fed into that building remotely. I released all companies that remained in staging. After conferring with Seth Herring and Gregg Bambule from Koppers they agreed with shutting down extinguishment procedures and waiting to see if the fire was extinguished. After a half hour it was determined that the fire was out and what we were seeing was steam. I had all working companies begin to pick up and released them as soon as they were in service. All companies were released and returning to quarters by 1:30 A.M..

Scene was then turned over to Plant Manager Seth Herring and Koppers personnel.

| FDID * | State * | MM Incident Date * | DD | YYYY | Station | Incident Number * | Exposure * | |
|---|---|---|---|---|---|---|---|---|
| CS852 | IL | 3 | 20 | 2021 | 1ST | 21-0000243 | 000 | Complete Narrative |

**Narrative:**

Command was terminated.

---

03/23/2021 15:43:32 Jeffrey Boyajian

I received information today regarding times that the incident was reported from our dispatch center (Consolidated Emergency Center of Cook County) .

1st Call was received at 10:24 .29 and caller hung up

Dispatch tried calling back at 10:24.51 and got a recording

2nd Call was received at 10:27.19 and Brandon reported the fire in unit #1

Police Department reported Fire at 10:28.15 via radio to dispatch

**A** | CS852 (FDID *) | IL (State *) | MM 03 | DD 20 | YYYY 2021 (Incident Date *) | 1ST (Station) | 21-0000243 (Incident Number *) | 000 (Exposure *) | ☐ Delete ☐ Change ☐ No Activity | NFIRS -2 Fire

## B Property Details

**B1** ____ ☒ Not Residential
*Estimated Number of residential living units in building of origin whether or not all units became involved*

**B2** ____ ☒ Buildings not involved
Number of buildings involved

**B3** ____ ☐ None
Acres burned (outside fires) ☐ Less than one acre

## C On-Site Materials or Products ☐ None

*Complete if there were any significant amounts of commercial, industrial, energy or agricultural products or materials on the Property, whether or not they became involved*

Enter up to three codes. Check one or more boxes for each code entered.

| | | |
|---|---|---|
| 000 | On-site materials | 1 ☐ Bulk storage or warehousing 2 ☒ Processing or manufacturing 3 ☐ Packaged goods for sale 4 ☐ Repair or service |
| | On-site material (1) | |
| | | 1 ☐ Bulk storage or warehousing 2 ☐ Processing or manufacturing 3 ☐ Packaged goods for sale 4 ☐ Repair or service |
| | On-site material (2) | |
| | | 1 ☐ Bulk storage or warehousing 2 ☐ Processing or manufacturing 3 ☐ Packaged goods for sale 4 ☐ Repair or service |
| | On-site material (3) | |

## D Ignition

**D1** UU | Undetermined
Area of fire origin *

**D2** UU | Undetermined
Heat source *

**D3** UU | Undetermined
Item first ignited * 1 ☐ Check Box if fire spread was confined to object of origin

**D4** ____ | ____
Type of material first ignited — Required only if item first ignited code is 00 or <70

## E1 Cause of Ignition

☐ Check box if this is an exposure report. Skip to section G

1 ☐ Intentional
2 ☐ Unintentional
3 ☐ Failure of equipment or heat source
4 ☐ Act of nature
5 ☒ Cause under investigation
U ☐ Cause undetermined after investigation

## E2 Factors Contributing To Ignition

☒ None

UU | Undetermined
Factor Contributing To Ignition (1)

____ | ____
Factor Contributing To Ignition (2)

## E3 Human Factors Contributing To Ignition

Check all applicable boxes

1 ☐ Asleep ☒ None
2 ☐ Possibly impaired by alcohol or drugs
3 ☐ Unattended person
4 ☐ Possibly mental disabled
5 ☐ Physically Disabled
6 ☐ Multiple persons involved
7 ☐ Age was a factor

Estimated age of person envolved ____

1 ☐ Male 2 ☐ Female

## F1 Equipment Involved In Ignition

☐ None If Equipment was not involved, Skip to Section G

____ | ____
Equipment Involved

Brand ____

Model ____

Serial # ____

Year ____

## F2 Equipment Power

____ | ____
Equipment Power Source

## F3 Equipment Portability

1 ☐ Portable
2 ☐ Stationary

Portable equipment normally can be moved by one person, is designed to be use in multiple locations, and requires no tools to install.

## G Fire Suppression Factors

Enter up to three codes. ☒ None

NNN | None
Fire suppression factor (1)

____ | ____
Fire suppression factor (2)

____ | ____
Fire suppression factor (3)

## H1 Mobile Property Involved

☐ None

1 ☐ Not involved in ignition, but burned
2 ☐ Involved in ignition, but did not burn
3 ☐ Involved in ignition and burned

## H2 Mobile Property Type & Make

____ | ____
Mobile property type

____ | ____
Mobile property make

____ Year
Mobile property model

License Plate Number ____ State ____ VIN Number ____

## Local Use

☐ Pre-Fire Plan Available
Some of the information presented in this report may be based upon reports from other Agencies

☐ Arson report attached
☐ Police report attached
☐ Coroner report attached
☐ Other reports attached

NFIRS-2 Revision 01/19/99

## I1 Structure Type *

If Fire was In enclosed building or a portable/mobile structure complete the rest of this form

1 [X] Enclosed Building
2 [ ] Portable/mobile structure
3 [ ] Open structure
4 [ ] Air supported structure
5 [ ] Tent
6 [ ] Open platform (e.g. piers)
7 [ ] Underground structure (work areas)
8 [ ] Connective structure (e.g. fences)
0 [ ] Other type of structure

## I2 Building Status *

1 [ ] Under construction
2 [X] Occupied & operating
3 [ ] Idle, not routinely used
4 [ ] Under major renovation
5 [ ] Vacant and secured
6 [ ] Vacant and unsecured
7 [ ] Being demolished
0 [ ] Other
U [ ] Undetermined

## I3 Building * Height

Count the ROOF as part of the highest story

001 Total number of stories at or above grade

Total number of stories below grade

## I4 Main Floor Size*

NFIRS-3 Structure Fire

[ ] , 001 , 000 Total square feet

OR

[ ] , [ ] BY [ ] , [ ]
Lenght in feet — Width in feet

## J1 Fire Origin *

001 Story of fire origin

[ ] Below Grade

## J2 Fire Spread *

1 [ ] Confined to object of origin
2 [ ] Confined to room of origin
3 [ ] Confined to floor of origin
4 [X] Confined to building of origin
5 [ ] Beyond building of origin

## J3 Number of Stories Damaged By Flame

Count the ROOF as part of the highest story

[ ] Number of stories w/ minor damage (1 to 24% flame damage)

[ ] Number of stories w/ significant damage (25 to 49% flame damage)

[ ] Number of stories w/ heavy damage (50 to 74% flame damage)

[ ] Number of stories w/ extreme damage (75 to 100% flame damage)

## K Material Contributing Most To Flame Spread

[ ] Check if no flame spread OR same as material first ignited OR unable to determine — Skip To Section L

K1 [ ] [ ] Item contributing most to flame spread

K2 [ ] [ ] Type of material contributing most of flame spread — Required only if item contributing code is 00 or<70

## L1 Presence of Detectors *

(In area of the fire)

N [ ] None Present — Skip to section M

1 [X] Present

U [ ] Undetermined

## L2 Detector Type

1 [ ] Smoke
2 [ ] Heat
3 [ ] Combination smoke - heat
4 [ ] Sprinkler, water flow detection
5 [X] More than 1 type present
0 [ ] Other _____
U [ ] Undetermined

## L3 Detector Power Supply

1 [ ] Battery only
2 [ ] Hardwire only
3 [ ] Plug in
4 [ ] Hardwire with battery
5 [ ] Plug in with battery
6 [ ] Mechanical
7 [ ] Multple detectors & power supplies
0 [ ] Other _____
U [X] Undetermined

## L4 Detector Operation

1 [ ] Fire too small to activate
2 [ ] Operated (Complete Section L5)
3 [ ] Failed to Operate (Complete Section L6)
U [X] Undetermined

## L5 Detector Effectiveness

Required if detector operated

1 [ ] Alerted Occupants, occupants responded
2 [ ] Occupants failed to respond
3 [ ] There were no occupants
4 [ ] Failed to alert occupants
U [ ] Undetermined

## L6 Detector Failure Reason

Required if detector failed to operate

1 [ ] Power failure, shutoff or disconnect
2 [ ] Improper installation or placement
3 [ ] Defective
4 [ ] Lack of maintenance, includes cleaning
5 [ ] Battery missing or disconnected
6 [ ] Battery discharged or dead
0 [ ] Other _____
U [ ] Undetermined

## M1 Presence of Automatic Extinguishment System *

N [ ] None Present

1 [X] Present — Complete rest of Section M

## M2 Type of Automatic Extinguishment System *

Required if fire was within designed range of AES

1 [X] Wet pipe sprinkler
2 [ ] Dry pipe sprinkler
3 [ ] Other sprinkler system
4 [ ] Dry chemical system
5 [ ] Foam system
6 [ ] Halogen type system
7 [ ] Carbon dioxide ($CO_2$) system
0 [ ] Other special hazard system
U [ ] Undetermined

## M3 Automatic Extinguishment System Operation

Required if fire was within designed range

1 [ ] Operated & effective (Go to M4)
2 [ ] Operated & not effective (M4)
3 [ ] Fire too small to activate
4 [ ] Failed to operate (Go to M5)
0 [ ] Other
U [ ] Undetermined

## M4 Number of Sprinkler Heads Operating

Required if system operated

[ ] Number of sprinkler heads operating

## M5 Automatic Extinguishment System Failure Reason

Required if system failed

1 [ ] System shut off
2 [ ] Not enough agent discharged
3 [ ] Agent discharged but did not reach fire
4 [ ] Wrong type of system
5 [ ] Fire not in area protected
6 [ ] System components damaged
7 [ ] Lack of maintenance
8 [ ] Manual Intervention
0 [ ] Other _____
U [ ] Undetermined

NFIRS-3 Revision 01/19/99

**A**

| FDID * | State * | Incident Date * (MM / DD / YYYY) | Station | Incident Number * | Exposure * | | NFIRS - 9 Apparatus or Resources |
|---|---|---|---|---|---|---|---|
| CS852 | IL | 3 / 20 / 2021 | 1ST | 21-0000243 | 000 | ☐ Delete ☐ Change | |

**B**

| Apparatus or * Resource | Date and Times (Check if same as alarm date) | Month | Day | Year | Hour | Min | Sent [X] | Number of * People | Use (Check ONE box for each apparatus to indicate its main use at the incident.) | Actions Taken |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 ID 1201 Type 11 | Dispatch [X] | 3 | 20 | 2021 | 22:31 | | [X] | 4 | [X] Suppression ☐ EMS ☐ Other | |
| | Arrival [X] | 3 | 20 | 2021 | 22:34 | | | | | |
| | Clear ☐ | 3 | 21 | 2021 | 01:44 | | | | | |
| 2 ID 1208 Type 60 | Dispatch [X] | 3 | 20 | 2021 | 22:31 | | [X] | 1 | [X] Suppression ☐ EMS ☐ Other | |
| | Arrival [X] | 3 | 20 | 2021 | 22:40 | | | | | |
| | Clear ☐ | 3 | 21 | 2021 | 01:44 | | | | | |
| 3 ID 1210 Type 92 | Dispatch [X] | 3 | 20 | 2021 | 22:31 | | [X] | 1 | [X] Suppression ☐ EMS ☐ Other | |
| | Arrival [X] | 3 | 20 | 2021 | 22:34 | | | | | |
| | Clear ☐ | 3 | 21 | 2021 | 01:44 | | | | | |
| 4 ID Type | Dispatch ☐ | | | | | | ☐ | | ☐ Suppression ☐ EMS ☐ Other | |
| | Arrival ☐ | | | | | | | | | |
| | Clear ☐ | | | | | | | | | |
| 5 ID Type | Dispatch ☐ | | | | | | ☐ | | ☐ Suppression ☐ EMS ☐ Other | |
| | Arrival ☐ | | | | | | | | | |
| | Clear ☐ | | | | | | | | | |
| 6 ID Type | Dispatch ☐ | | | | | | ☐ | | ☐ Suppression ☐ EMS ☐ Other | |
| | Arrival ☐ | | | | | | | | | |
| | Clear ☐ | | | | | | | | | |
| 7 ID Type | Dispatch ☐ | | | | | | ☐ | | ☐ Suppression ☐ EMS ☐ Other | |
| | Arrival ☐ | | | | | | | | | |
| | Clear ☐ | | | | | | | | | |
| 8 ID Type | Dispatch ☐ | | | | | | ☐ | | ☐ Suppression ☐ EMS ☐ Other | |
| | Arrival ☐ | | | | | | | | | |
| | Clear ☐ | | | | | | | | | |
| 9 ID Type | Dispatch ☐ | | | | | | ☐ | | ☐ Suppression ☐ EMS ☐ Other | |
| | Arrival ☐ | | | | | | | | | |
| | Clear ☐ | | | | | | | | | |

**Type of Apparatus or Resources**

**Ground Fire Suppression**
- 11 Engine
- 12 Truck or aerial
- 13 Quint
- 14 Tanker & pumper combination
- 16 Brush truck
- 17 ARF (Aircraft Rescue and Firefighting)
- 10 Ground fire suppression, other

**Heavy Ground Equipment**
- 21 Dozer or plow
- 22 Tractor
- 24 Tanker or tender
- 20 Heavy equipment, other

**Aircraft**
- 41 Aircraft: fixed wing tanker
- 42 Helitanker
- 43 Helicopter
- 40 Aircraft, other

**Marine Equipment**
- 51 Fire boat with pump
- 52 Boat, no pump
- 50 Marine apparatus, other

**Support Equipment**
- 61 Breathing apparatus support
- 62 Light and air unit
- 60 Support apparatus, other

**Medical & Rescue**
- 71 Rescue unit
- 72 Urban Search & rescue unit
- 73 High angle rescue unit
- 75 BLS unit
- 76 ALS unit
- 70 Medical and rescue unit,other

More Apparatus? Use Additional Sheets

**Other**
- 91 Mobile command post
- 92 Chief officer car
- 93 HazMat unit
- 94 Type 1 hand crew
- 95 Type 2 hand crew
- 99 Privately owned vehicle
- 00 Other apparatus/resource

- NN None
- UU Undetermined

NFIRS-9 Revision 11/17/98

**A**

| FDID * | State * | Incident Date * (MM / DD / YYYY) | Station | Incident Number * | Exposure * | | |
|---|---|---|---|---|---|---|---|
| CS852 | IL | 3 / 20 / 2021 | 1ST | 21-0000243 | 000 | ☐ Delete ☐ Change | NFIRS - 10 Personnel |

| B Apparatus or Resource * (Use codes listed below) | Date and Times (Check if same as alarm date) | Month | Day | Year | Hours/mins | Sent [X] | Number of People * | Use (Check ONE box for each apparatus to indicate its main use at the incident.) | Actions Taken (List up to 4 actions for each apparatus and each personnel.) |
|---|---|---|---|---|---|---|---|---|---|
| 1 ID 1201 Type 11 | Dispatch [X] | 3 | 20 | 2021 | 22:31 | | | | |
| | Arrival [X] | 3 | 20 | 2021 | 22:34 | Sent [X] | 4 | [X] Suppression [ ] EMS [ ] Other | |
| | Clear [ ] | 3 | 21 | 2021 | 01:44 | | | | |

| Personnel ID | Name | Rank or Grade | Attend [X] | Action Taken | Action Taken | Action Taken | Action Taken |
|---|---|---|---|---|---|---|---|
| 15309 | Anderson, Jacob | CP | X | | | | |
| 15321 | Czech, Douglas | FF | X | | | | |
| 15325 | Farias, Miguel | FF | X | | | | |
| 15387 | Focht, Garrett | FF | X | | | | |

| B Apparatus or Resource * (Use codes listed below) | Date and Times (Check if same as alarm date) | Month | Day | Year | Hours/mins | Sent [X] | Number of People * | Use (Check ONE box for each apparatus to indicate its main use at the incident.) | Actions Taken (List up to 4 actions for each apparatus and each personnel.) |
|---|---|---|---|---|---|---|---|---|---|
| 2 ID 1208 Type 60 | Dispatch [X] | 3 | 20 | 2021 | 22:31 | | | | |
| | Arrival [X] | 3 | 20 | 2021 | 22:40 | Sent [X] | 1 | [X] Suppression [ ] EMS [ ] Other | |
| | Clear [ ] | 3 | 21 | 2021 | 01:44 | | | | |

| Personnel ID | Name | Rank or Grade | Attend [X] | Action Taken | Action Taken | Action Taken | Action Taken |
|---|---|---|---|---|---|---|---|
| 15302 | Babinec, John | DC | X | | | | |

| B Apparatus or Resource * (Use codes listed below) | Date and Times (Check if same as alarm date) | Month | Day | Year | Hours/mins | Sent [X] | Number of People * | Use (Check ONE box for each apparatus to indicate its main use at the incident.) | Actions Taken (List up to 4 actions for each apparatus and each personnel.) |
|---|---|---|---|---|---|---|---|---|---|
| 3 ID 1210 Type 92 | Dispatch [X] | 3 | 20 | 2021 | 22:31 | | | | |
| | Arrival [X] | 3 | 20 | 2021 | 22:34 | Sent [X] | 1 | [X] Suppression [ ] EMS [ ] Other | |
| | Clear [ ] | 3 | 21 | 2021 | 01:44 | | | | |

| Personnel ID | Name | Rank or Grade | Attend [X] | Action Taken | Action Taken | Action Taken | Action Taken |
|---|---|---|---|---|---|---|---|
| 15314 | Boyajian, Jeff | FC | X | | | | |

| CS852 | IL | 3 | 20 | 2021 | 18T | 21-0000243 | 000 | Responding Units/Personnal |
|---|---|---|---|---|---|---|---|---|
| FDID | State | Incident Date | | | Station | Incident Number | Exposure | |

| Unit | Notify Time | Enroute Time | Arrival Time | Cleared Time |
|---|---|---|---|---|
| 1201 HME 2007 Pumper | 22:31:00 | 22:31:00 | 22:34:00 | 01:44:00 |

| Staff ID\Staff Name | | Activity | Rank | Position | Role |
|---|---|---|---|---|---|
| 15309 | Anderson, Jacob P | Fire call | Captain | Officer's se | Captain |
| 15321 | Czech, Douglas P | Fire call | Firefighter | Driver | Driver of th |
| 15325 | Farias, Miguel | Fire call | Firefighter | Rear seat #1 | |
| 15387 | Focht, Garrett | Fire call | Firefighter | Rear seat #2 | |

| | | | | |
|---|---|---|---|---|
| 1208 Apparatus/Staff, Utility car | 22:31:00 | 22:36:00 | 22:40:00 | 01:44:00 |

| Staff ID\Staff Name | | Activity | Rank | Position | Role |
|---|---|---|---|---|---|
| 15302 | Babinec, John C | Fire call | Deputy Chie | Driver | Deputy Chief |

| | | | | |
|---|---|---|---|---|
| 1210 Fire Chief | 22:31:00 | 22:31:00 | 22:34:00 | 01:44:00 |

| Staff ID\Staff Name | | Activity | Rank | Position | Role |
|---|---|---|---|---|---|
| 15314 | Boyajian, Jeff G | Fire call | Fire Chief | Command | Chief |

| FDID * | State * | MM Incident | DD Date * | YYYY | Station | Incident Number * | Exposure * |
|---|---|---|---|---|---|---|---|
| C8852 | IL | 3 | 20 | 2021 | 1ST | 21-0000243 | 000 |

**Responding Personnel**

| Staff ID\Staff Name | Unit | | Activity | Position | Rank | PaySol | Hrs | HrsPd | Pts |
|---|---|---|---|---|---|---|---|---|---|
| 15309 Anderson, Jacob P | 1201 | | FIRECALL Fire call | OF | CP | | 3.22 | 3.22 | 0.00 |
| 15321 Czech, Douglas P | 1201 | X | FIRECALL Fire call | DR | FF | | 3.22 | 3.22 | 0.00 |
| 15325 Farias, Miguel | 1201 | | FIRECALL Fire call | R1 | FF | | 3.22 | 3.22 | 0.00 |
| 15387 Focht, Garrett | 1201 | | FIRECALL Fire call | R2 | FF | | 3.22 | 3.22 | 0.00 |
| 15302 Babinec, John C | 1208 | X | FIRECALL Fire call | DR | DC | | 3.22 | 3.22 | 0.00 |
| 15314 Boyajian, Jeff G | 1210 | X | FIRECALL Fire call | CM | FC | | 3.22 | 3.22 | 0.00 |

**Total Participants:** 6

**Total Personnel Hours:** 19.32

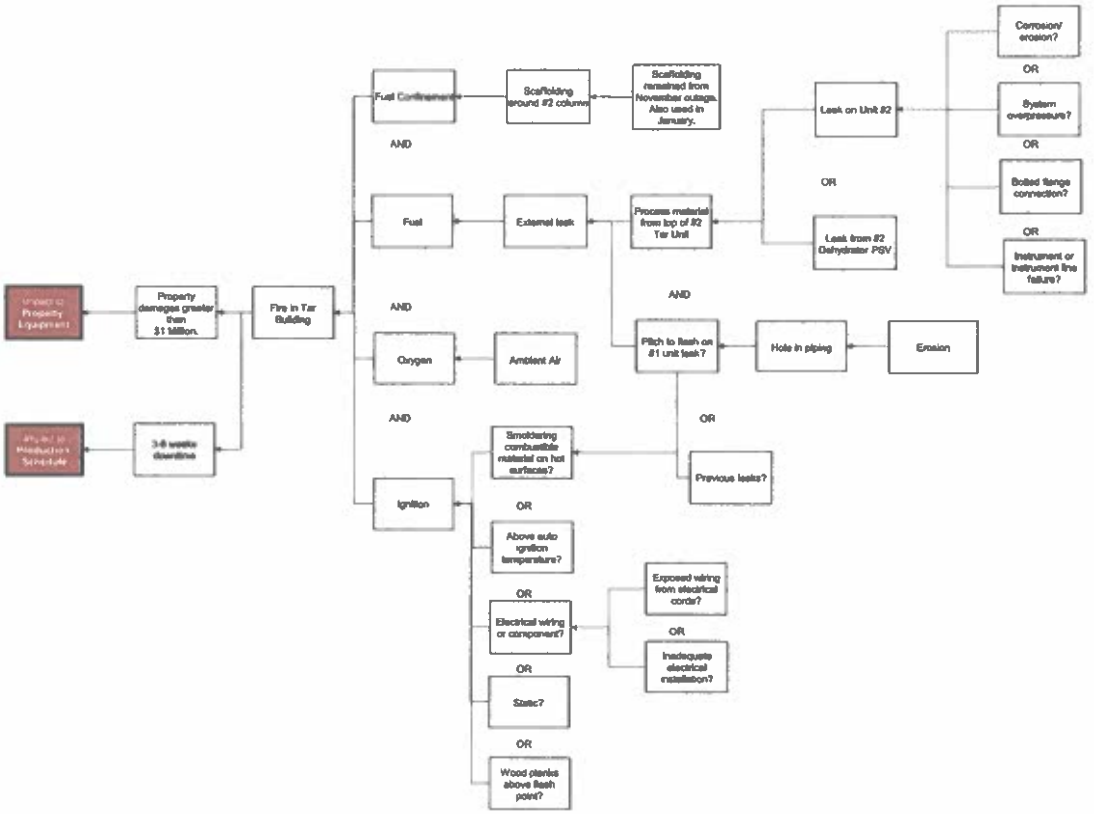
An 'X' next to the unit denotes driver.

# Document 4

Public Record Claimed Exempt

# Document 5

## Tar Fire March 2021


Action:
Pressure test columns and systems to identify if any leaks are present

Action:
Repair and replace process piping and gaskets in fire zone

Action:
Consider best practice with regards to bolting (flush vs. 2 threads past nut)

Action:
Conduct Pipe stress and support study to evaluate stress on piping (potentially increasing leaks). Include reboiler loop.

Action:
Consider establishing a replacement cycle on gaskets

Action:
Consider leaving building open and not reinstalling siding

Action:
Establish policy/procedure for draining material into containment and not onto floor

Action:
Routine walkdowns to inspect and look for anything abnormal.

Action:
Implement Capital project for Tar Building upgrades

Action:
Consider deflection shield on pump that prevents material spray during seal leaks.

Action:
Conduct engineering design evaluation on the fire protection system.

## Timeline

| Date | Time | Description | Source, Reference |
|---|---|---|---|
| March 20, 2021 | | | |
| | All Day | Unit #1 making hard carbon (HCP) | |
| | 10 - 11 AM | Leak on top of #1 unit flash column. Vapors reported on gooseneck. | Supervisor log |
| | 11:25 AM | Transfer of approximately 28,250 gallons to 1 tank occured. This signifies decant transfer from 14 tank to 1 tank. Mixer on 1 tank was on. About 44% decant oil ratio. | PLC Trend |
| | 1:45 PM | Feed started going to Unit #2 signifying unit began feeding Petro Tar. | PLC Trend |
| | 2:00 PM | Tar BOC temperature reduction signifying start of shutdown on #1 column | PLC Trend |
| | 3:15 PM | Vacuum pump on #1 unit shuts down | PLC Trend |
| | 3:35 PM | Pressure increase in #1 flash column signifying operators clearing the lines. | |
| | 3:35 PM | #2 Tube heater tripped on high outlet temperature (425C) | PLC Trend |
| | 3:35 PM | H2S Mezzanine South peaked at 103.6 ppm (top of scale) | PLC Trend |
| | 4:18 PM | #2 Tube heater tripped for second time on high outlet temperature (425) | PLC Trend |
| | 4:18 PM | H2S Mezzanine South peaked at 103.6 ppm (top of scale) | PLC Trend |
| | 5:05 PM | Unit #2 began running in manual | PLC Trend |
| | 5:05 PM | H2S Mezzanine south rose to 9.4 ppm | PLC Trend |
| | 10:13 PM | Operator noticed BOC temp at 388C and reboiler temp at 410C. Set gas flow control to reboiler to zero. | Operator interview and PLC Trend |
| | 10:23 PM | Malfunctioning #2 dehydrator Circ Flow (FI-4203) goes to 700 gpm (top of scale). This previously was reading zero. | PLC Trend |
| | 10:23 PM | #2 Dry Tar feed to col flow drops out to zero but then came back - consider if vapor flow was involved in reading? | PLC Trend |
| | 10:23 PM | PI-4202 (#2 Creo TOC pressure), PI-4204 (#2 Dehydrator TOC pressure) dropped to zero. | PLC Trend |
| | 10:23 PM | #2 Flash pressure (PI-4203) spiked | |
| | 10:23 PM | #2 Tar TOC pressure (PV-4201) spiked to top of scale then came down | PLC Trend |
| | 10:24 PM | #2 flash column high level switch activated (Closing Pitch to Flash valve) | PLC Trend |
| | 10:25 PM | Unit #2 reboiler outlet and BOC temperature goes to top of scale. Coil skin and economizer temperature did not go top of scale suggesting heater temperatures were not abnormal. | PLC Trend |
| | 10:25 PM | Kill switch from control room | PLC Trend |
| | 10:26 AM | Wet tar feed to unit shut down. | PLC Trend |
| | 10:26 PM | Diesel pump attempted kicked on | Fire System alarm panel |
| | 10:26 PM | Electric fire pump kicked on | Electric fire pump log |
| | 10:27 PM | Tar Column Feed Tray #8 Temperature 592 C | PLC Trend |
| | 10:27 PM | Flames visible from ground to top of column. End of video shows flash of light/fire on 3rd floor | Video |
| March 20, 2021 | 10:27 PM | Condenser temperature on mez begin reacting | PLC Trend |
| | 10:31 PM | Flames on columns subside, fire in building and outside on ground floor. | Picture |
| | 10:33 PM | Video showing fire on top of Unit #1 flash column. | Video |
| | 10:36 PM | Electric fire pump kicked off | Electric fire pump log |
| | 10:36 PM | Electric fire pump kicked on | Electric fire pump log |
| | 10:40 PM | Fire department onsite with water on building from north courtyard | Video |
| | 10:46 PM | Electric Fire pump kicked off and log showed it came back on | Electric fire pump log |
| | 10:47 PM | Photo showing more smoke and less fire. Fire truck in north courtyard. | Photo |
| | 10:52 PM | Electric Fire pump started in manual and stayed on | Electric fire pump log and boiler operator statement |

## Notes

Use this tab to keep track of any supporting notes, emails or documents.

Unit #2 has higher (40%) low CV limit on the controller compared to Unit #1 for the fuel gas. (i.e., the controller cannot go any lower than 40% output). This may explain why the unit tripped out several times when starting up on petro tar. Tripped on Reboiler outlet temperature high.

Tank #1 Mixer has been on since January 23.

Interviews:
Midnight crew and Ali at 8:00 am
Matt Davis at 9:00 am
Scott and Larry at 2:00 pm
Kevin in Lab at 2:30 pm

Henry (Tar Processman, Midnight shift) - Looked like the fire was on the bottom and then the whole columns went up. Fire department started ground level and worked up. No fire alarm came on until the monitors came on.

Andy (Tar Operator, Midnight shift) - Unit reboiler was running in manual, bottom of tar column was 388C (target 380C normally). Reboiler outlet temp 410C. Put gas at zero. Went to heat food, came back and alarm went off.

Moises (Tar Processman, Midnight) -
Ali (Lab Technician, Midnight) - called Sidney at 10:26.

Larry - first witness. Came out of lunch room and saw flaming glow on roof between columns. Nothing was on Unit #1 at that time. Went with Jaime into the Foreman's office. After came out of foreman's office entire building was engulfed in flames.

Jaime - Shift Super, called the guard and then Seth (10:27)

Bob Ruehle (PA Operator) - Walked to PA control room to start shift, did not notice anything unusual when looking toward Tar Building.

Matt Davis (Utilities Operator) - Called Tommy about 10:50 and started electric fire pump at 10:52 in manual.

Operators shut down after fire.
3 Tank (CTD), 662 (NSR), and 663 (NSR) shut down, 23 Tank (Pet Distillate)
Andy - Pitch tank auto valves closed, RCO tank auto valves closed

Unit 2 outage in November, came up in early December. Shut down due to vacuum issues, then tube heater fire. Tar and creo columns vacuum tested before start up. After start up, vacuum issues. Wet tar feed valves leaking through, closed block valves. Vacuum breakers reading backwards. Ran for about 10 days or so before incident.

Unit #2 runs with Petro TAR feeds:
Oct 30, 2020 from 8:00 am to 1:00 pm (5 hours)
Sep 9, 2020 from 11:00 am to 5:00 pm (6 hours)
July 2, 2020 to July 3, 2020 from 6:30 pm to 7:30 am (12 hours)
June 5, 2020 to June 6, 2020 from 10:00 am to 1:00 am (15 hours)

| | | |
|---|---|---|
| # | 22:21:56 | Jaime walks north to the foreman's office. Does not seem to be anything out of the ordinary. |
| # | 22:24:24 | Possible smoke at top of screen floats by. |
| # | 22:24:57 | First bit of flaming debris falls to the ground |
| # | 22:25:03 | Screen goes dark, presumably from a lot of smoke. 2 people are looking in the direction of the distillation building from the tar foreman's office. Larry is one. |
| # | 22:27:10 | Larry, Steve, and Jaime get to the monitor on the north side. |
| # | 22:28:17 | There is weak water flow. |
| # | 22:28:40 | Larry, Steve, and Marlo go to the south side monitor. |
| # | 22:32:00 | Andy leaves the control room and goes by foreman's office. |
| # | 22:34:00 | Still weak flow. Monitor is locked toward the column and people back up past 33 tank. |
| # | 22:37:50 | Fire Truck arrives. |
| # | 22:39:00 | Koppers people seem to try and close monitor and reopen. It seems like the drain isn't completely closed. Water comes out of the ground by the monitor. |
| # | 22:39:50 | Fire truck water on. Strong flow. |
| # | 22:41:50 | Fire truck water off. SFD hooks up 4" hoe from hydrant by topped tar cooler to the truck. |
| # | 22:48:00 | SFD shuts off plant fire monitor. |
| # | 22:54:00 | Truck flow strong then weakens. |
| # | 22:56:00 | Strong flow |
| # | 22:58:00 | Shut off water to move truck. |
| # | 23:01:00 | Strong flow. |
| # | 23:39:00 | Truck water off. No sign of fire. |
| # | 23:40:00 | Water on again to keep flooding in case. |
| # | 0:04:00 | Truck water off. |
| # | 0:09:00 | Chief Babinek, Seth, and I went by building. Still no sign of smoke or fire, only steam. Called fire over. SFD to watch for about an hour. |
| # | 1:27:00 | SFD disconnects hoses and prepares to leave. |

# Document 6

Public Record Claimed Exempt

Public Record Claimed Exempt

Public Record Claimed Exempt

Public Record Claimed Exempt

Public Record Claimed Exempt

Public Record Claimed Exempt

Public Record Claimed Exempt

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Public Record Claimed Exempt

# Document 7

**Carbon Materials and Chemicals**
**Cicero, Illinois**
**Tar Operations**

# SO100
# Tar Plant Overview

KOPPERS

**Prepared by:**

**Revised:**
April, 2015

Koppers Inc., Cicero

# Tar Operations

*Tar Plant Overview*

Koppers Inc., Cicero

**Tar Operations**

*Tar Plant Overview*

Koppers Inc., Cicero

# Tar Operations

*Tar Plant Overview*

Koppers Inc., Cicero

# Tar Operations

*Tar Plant Overview*

Public Record Claimed Exempt

# Document 8

# SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Version 14.0 | Revision Date: 05/20/2015 | Print Date: 05/27/2015

## SECTION 1. IDENTIFICATION

Product name : Blended Pyrolysis Pitch

Product code : X2219

**Manufacturer or supplier's details**

Company : **Shell Chemical LP**
PO Box 2463
HOUSTON TX 77252-2463
USA

SDS Request : 1-800-240-6737

Customer Service : 1-855-697-4355

**Emergency telephone number**

Chemtrec Domestic (24 hr) : 1-800-424-9300

Chemtrec International (24 hr) : 1-703-527-3887

**Recommended use of the chemical and restrictions on use**

Recommended use : Base chemical., Raw material for use in the chemical industry.

Restrictions on use : This product must not be used in applications other than the above without first seeking the advice of the supplier.

## SECTION 2. HAZARDS IDENTIFICATION

**GHS Classification**

Flammable liquids : Category 4

Carcinogenicity : Category 1B

Acute toxicity (Inhalation) : Category 4

Reproductive toxicity : Category 2

Specific target organ toxicity - repeated exposure : Category 2 (Blood., Liver., Thymus)

Acute aquatic toxicity : Category 1

Chronic aquatic toxicity : Category 1

**GHS Label element**

Hazard pictograms :

Signal word : Danger

Hazard statements : PHYSICAL HAZARDS:
H227 Combustible liquid.
HEALTH HAZARDS:
H350 May cause cancer.
H332 Harmful if inhaled.
H361 Suspected of damaging fertility or the unborn child.
H373 May cause damage to organs through prolonged or repeated exposure.
ENVIRONMENTAL HAZARDS:
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P201 Obtain special instructions before use.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
**Response:**
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P331 Do NOT induce vomiting.
P370 + P378 In case of fire: Use appropriate media to extinguish.
**Storage:**
P405 Store locked up.
P403 Store in a well-ventilated place.
**Disposal:**
P501 Dispose of contents/ container to an approved waste disposal plant.

**Other hazards which do not result in classification**
Hydrogen sulphide is highly toxic and may be fatal if inhaled.
Hydrogen sulphide (H2S), an extremely flammable and toxic gas, and other hazardous vapours may evolve and collect in the headspace of storage tanks, transport vessels and other enclosed containers.
May dull the sense of smell, so do not rely on odour as an indication of hazard.
May ignite on surfaces at temperatures above auto-ignition temperature.
This material is a static accumulator.
Even with proper grounding and bonding, this material can still accumulate an electrostatic charge.
If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur.
Not classified as flammable but will burn.
Flammable vapours may be present even at temperatures below the flash point.
Therefore it should be treated as a potentially flammable liquid.
Contact with hot material can cause thermal burns which may result in permanent skin damage.
Repeated exposure may cause skin dryness or cracking

The classification of this material is based on OSHA HCS 2012 criteria.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Hazardous components**

| Chemical Name | Synonyms | CAS-No. | Concentration (%) |
|---|---|---|---|
| Fuel oil, pyrolysis | Fuel oil, pyrolysis | 69013-21-4 | <= 100 |

**Further information**

Contains:

| Chemical Name | Identification number | Concentration [%] |
|---|---|---|
| hydrogen sulphide | 7783-06-4, 231-977-3 | - <= 0.04 |

## SECTION 4. FIRST-AID MEASURES

General advice : Vapourisation of H2S that has been trapped in clothing can be dangerous to rescuers. Maintain respiratory protection to avoid contamination from the victim to rescuer. Mechanical ventilation should be used to resuscitate if at all possible.

If inhaled : Remove to fresh air. Do not attempt to rescue the victim unless proper respiratory protection is worn. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting, or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.

In case of skin contact : Cold product -
Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available.
If persistent irritation occurs, obtain medical attention.

Hot product -
If contact with hot product, immediately cool the burn area by flushing or immersing the affected area with water for at least 15 to 20 minutes. Do not attempt to remove anything from the burn area or apply burn creams or ointments. During transport do not cover the wound with dressing or sheet since these may adhere to the product.

In case of eye contact : Cold product -
Flush eye with copious quantities of water.
If persistent irritation occurs, obtain medical attention.

Hot product -
If contact with hot product, cool the burn area by flushing with large amounts of water for at least 15 minutes. Do not attempt to remove anything from the burn area or apply burn creams or ointments.

If swallowed : If vomiting occurs spontaneously, keep head below hips to prevent aspiration.
Give nothing by mouth.

Most important symptoms and effects, both acute and : Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing,

| | | |
|---|---|---|
| delayed | | and/or difficulty breathing.<br>Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision.<br>Defatting dermatitis signs and symptoms may include a burning sensation and/or a dried/cracked appearance. |
| Protection of first-aiders | : | When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings. |
| Immediate medical attention, special treatment | : | Hydrogen sulphide (H2S) - CNS asphyxiant. May cause rhinitis, bronchitis and occasionally pulmonary oedema after severe exposure. CONSIDER: Oxygen therapy. Consult a Poison Control Center for guidance.<br>Call a doctor or poison control center for guidance. |

## SECTION 5. FIRE-FIGHTING MEASURES

| | | |
|---|---|---|
| Suitable extinguishing media | : | Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only. |
| Unsuitable extinguishing media | : | Do not use direct water jets on the burning product as they could cause a steam explosion and spread of the fire.<br>Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam. |
| Specific hazards during fire-fighting | : | Hazardous combustion products may include:<br>A complex mixture of airborne solid and liquid particulates and gases (smoke).<br>Oxides of nitrogen<br>Oxides of sulphur.<br>Unidentified organic and inorganic compounds.<br>Flammable vapours may be present even at temperatures below the flash point.<br>The vapour is heavier than air, spreads along the ground and distant ignition is possible.<br>Will float and can be reignited on surface water.<br>Hydrogen sulphide (H2S) and other toxic sulphur oxides may be given off when this material is heated. Do not depend on sense of smell for warning.<br>Carbon monoxide may be evolved if incomplete combustion occurs. |
| Specific extinguishing methods | : | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. |
| Further information | : | Keep adjacent containers cool by spraying with water.<br>If possible remove containers from the danger zone.<br>If the fire cannot be extinguished the only course of action is to evacuate immediately.<br>Contain residual material at affected sites to prevent material from entering drains (sewers), ditches, and waterways. |
| Special protective equipment for firefighters | : | Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if |

large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).

## SECTION 6. ACCIDENTAL RELEASE MEASURES

| | | |
|---|---|---|
| Personal precautions, protective equipment and emergency procedures | : | Do not breathe fumes, vapour.<br>Do not operate electrical equipment. |
| | : | Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area and evacuate all personnel. Attempt to disperse the gas or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Monitor area with combustible gas meter.<br>May ignite on surfaces at temperatures above auto-ignition temperature. |
| Environmental precautions | : | Take measures to minimise the effects on groundwater.<br>Contain residual material at affected sites to prevent material from entering drains (sewers), ditches, and waterways.<br>Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers. |
| Methods and materials for containment and cleaning up | : | Take precautionary measures against static discharges.<br>For small liquid spills (< 1 drum), transfer by mechanical means to a labeled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely Remove contaminated soil and dispose of safely.<br>For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely<br>Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers. |
| | | Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet.<br>See Chapter 13 for information on disposal.<br>Observe all relevant local and international regulations.<br>Remove contaminated clothing.<br>Evacuate the area of all non-essential personnel.<br>Avoid contact with skin, eyes and clothing.<br>Ventilate contaminated area thoroughly. |
| Additional advice | : | For guidance on selection of personal protective equipment |

see Chapter 8 of this Safety Data Sheet.
Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.
For guidance on disposal of spilled material see Chapter 13 of this Safety Data Sheet.
Local authorities should be advised if significant spillages cannot be contained.
Maritime spillages should be dealt with using a Shipboard Oil Pollution Emergency Plan (SOPEP), as required by MARPOL Annex 1 Regulation 26.

This material is covered by EPA's Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Petroleum Exclusion. Therefore, releases to the environment may not be reportable under CERCLA.
U.S. regulations may require reporting releases of this material to the environment which exceed the reportable quantity (refer to Chapter 15) to the National Response Center at (800) 424-8802.
Under Section 311 of the Clean Water Act (CWA) this material is considered an oil. As such, spills into surface waters must be reported to the National Response Center at (800) 424-8802.

## SECTION 7. HANDLING AND STORAGE

Technical measures : Avoid breathing of or direct contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Chapter 8 of this Safety Data Sheet.
Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.
Prevent spillages.
Contaminated leather articles including shoes cannot be decontaminated and should be destroyed to prevent reuse.

Precautions for safe handling : The inherent toxic and olfactory (sense of smell) fatiguing properties of hydrogen sulphide require that air monitoring alarms be used if concentrations are expected to reach harmful levels such as in enclosed spaces, heated transport vessels and spill or leak situations. If the air concentration exceeds 10 ppm, the area should be evacuated unless respiratory protection is in use.
Avoid prolonged or repeated contact with skin.
When using do not eat or drink.
Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks.
Earth all equipment.
Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols.
Properly dispose of any contaminated rags or cleaning materials in order to prevent fires.

| | | |
|---|---|---|
| Avoidance of contact | : | Strong oxidising agents. |
| Product Transfer | : | Avoid splash filling Wait 2 minutes after tank filling (for tanks such as those on road tanker vehicles) before opening hatches or manholes. Wait 30 minutes after tank filling ( for large storage tanks) before opening hatches or manholes. Keep containers closed when not in use. Even with proper grounding and bonding, this material can still accumulate an electrostatic charge. If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur. Even when the product is not itself flammable, such vapours may be present as a result of operations involving a previously handled product, or faulty vapour recovery systems. Do NOT use compressed air for filling, discharging, or handling operations. |

**Storage**

| | | |
|---|---|---|
| Other data | : | Drum and small container storage:<br>Drums should be stacked to a maximum of 3 high.<br>Use properly labeled and closable containers.<br>Prevent ingress of water.<br>Tank storage:<br>Tanks must be specifically designed for use with this product.<br>Bulk storage tanks should be diked (bunded).<br>Locate tanks away from heat and other sources of ignition.<br>Tanks should be fitted with heating coils.<br>Ensure heating coils are always covered with product (minimum 15 cm).<br>Electrostatic charges will be generated during pumping.<br>Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment to reduce the risk.<br>The vapours in the head space of the storage vessel may lie in the flammable/explosive range and hence may be flammable.<br>Refer to section 15 for any additional specific legislation covering the packaging and storage of this product. |
| Packaging material | : | Suitable material: For containers, or container linings use mild steel, stainless steel., Aluminium may also be used for applications where it does not present an unnecessary fire hazard., Examples of suitable materials are: high density polyethylene (HDPE) and Viton (FKM), which have been specifically tested for compatibility with this product., For container linings, use amine-adduct cured epoxy paint., For seals and gaskets use: graphite, PTFE, Viton A, Viton B.<br>Unsuitable material: Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Examples of materials to avoid are: natural rubber (NR), nitrile rubber (NBR), ethylene propylene rubber (EPDM), polymethyl methacrylate (PMMA), polystyrene, polyvinyl chloride (PVC), polyisobutylene., However, some may be suitable for glove materials. |
| Specific use(s) | : | See additional references that provide safe handling practices |

for liquids that are determined to be static accumulators: American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practices on Static Electricity).
CENELEC CLC/TR 50404 (Electrostatics – Code of practice for the avoidance of hazards due to static electricity).

## SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

**Components with workplace control parameters**

| Components | CAS-No. | Value type (Form of exposure) | Control parameters / Permissible concentration | Basis |
|---|---|---|---|---|
| hydrogen sulphide | 7783-06-4 | CEIL | 20 ppm | OSHA Z-2 |
| | | Peak | 50 ppm | OSHA Z-2 |
| | | TWA | 1 ppm | ACGIH |
| | | STEL | 5 ppm | ACGIH |

**Monitoring Methods**

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.
Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory.
Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.
National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods http://www.cdc.gov/niosh/
Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods http://www.osha.gov/
Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances http://www.hse.gov.uk/
Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA) , Germany http://www.dguv.de/inhalt/index.jsp
L'Institut National de Recherche et de Securité, (INRS), France http://www.inrs.fr/accueil

**Engineering measures** : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:
Use sealed systems as far as possible.
Firewater monitors and deluge systems are recommended.
Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits.
Local exhaust ventilation is recommended.
Eye washes and showers for emergency use.

General Information:

Consider technical advances and process upgrades (including automation) for the elimination of releases.Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation.Drain

down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when there is potential for inhalation; clear up spills immediately and dispose of wastes safely.Ensure safe systems of work or equivalent arrangements are in place to manage risks.Regularly inspect, test and maintain all control measures.Consider the need for risk based health surveillance.
Do not ingest. If swallowed then seek immediate medical assistance.

**Personal protective equipment**

Respiratory protection : If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation.
Check with respiratory protective equipment suppliers.
Where air-filtering respirators are suitable, select an appropriate combination of mask and filter.
Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus.
All respiratory protection equipment and use must be in accordance with local regulations.

Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

Select a filter suitable for the combination of organic gases and vapours [Type A/Type P boiling point >65°C (149°F)].

Hand protection
Remarks : Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same, but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent

on the exact composition of the glove material.

| | | |
|---|---|---|
| Eye protection | : | Wear goggles for use against liquids and gas.<br>If a local risk assessment deems it so then chemical splash goggles may not be required and safety glasses may provide adequate eye protection. |
| Skin and body protection | : | Wear chemical resistant gloves/gauntlets and boots. Where risk of splashing, also wear an apron.<br>Wear antistatic and flame retardant clothing, if a local risk assessment deems it so. |
| Protective measures | : | Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers. |
| Hygiene measures | : | Ensure that all local regulations regarding handling and storage facilities are followed. |

**Environmental exposure controls**

| | | |
|---|---|---|
| General advice | : | Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour.<br>Information on accidental release measures are to be found in section 6.<br>Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation. |

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

| | | |
|---|---|---|
| Appearance | : | Oil. |
| Colour | : | black |
| Odour | : | Strong hydrocarbon or rotten egg |
| Odour Threshold | : | Data not available |
| pH | : | Data not available |
| Melting point/freezing point | : | Data not available |
| Boiling point/boiling range | : | > 235 °C / > 455 °F |
| Flash point | : | 93 °C / 199 °F |
| Evaporation rate | : | Data not available |
| Upper explosion limit | : | not determined |
| Lower explosion limit | : | not determined |
| Vapour pressure | : | Data not available |
| Relative vapour density | : | Data not available |

| | | |
|---|---|---|
| Relative density | : | 0.9593 |
| Density | : | Data not available |
| Solubility(ies) | | |
| Water solubility | : | 0.05 g/l negligible |
| Partition coefficient: n-octanol/water | : | log Pow: ca. 2 - 20 |
| Auto-ignition temperature | : | Data not available |
| Decomposition temperature | : | no data available |
| Viscosity | | |
| Viscosity, dynamic | : | Data not available |
| Viscosity, kinematic | : | Data not available |
| Explosive properties | : | Not applicable |
| Oxidizing properties | : | Not applicable |
| Surface tension | : | Data not available |
| Conductivity | : | Low conductivity: < 100 pS/m, The conductivity of this material makes it a static accumulator., A liquid is typically considered nonconductive if its conductivity is below 100 pS/m and is considered semi-conductive if its conductivity is below 10 000 pS/m., Whether a liquid is nonconductive or semiconductive, the precautions are the same., A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid |
| Molecular weight | : | Data not available |

## SECTION 10. STABILITY AND REACTIVITY

| | | |
|---|---|---|
| Chemical stability | : | Stable under normal conditions of use. |
| Conditions to avoid | : | Avoid heat, sparks, open flames and other ignition sources. |
| Incompatible materials | : | Strong oxidising agents. |
| Hazardous decomposition products | : | Hazardous decomposition products are not expected to form during normal storage.<br>Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases including carbon monoxide, carbon dioxide, sulphur oxides and unidentified organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation. |

## SECTION 11. TOXICOLOGICAL INFORMATION

Basis for assessment : Information given is based on product data, a knowledge of the components and the toxicology of similar products.Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

**Information on likely routes of exposure**
Skin and eye contact are the primary routes of exposure although exposure may occur through inhalation or following accidental ingestion.

**Acute toxicity**

**Product:**

Acute oral toxicity : LD50 Oral (Rat): > 5,000 mg/kg
Remarks: Low toxicity:

Acute inhalation toxicity : LC 50 (Rat): >1 - <=5 mg/l
Exposure time: 4 h
Remarks: Harmful if inhaled.

Acute dermal toxicity : LD 50 (Rabbit): > 2,000 mg/kg
Remarks: Low toxicity:

**Skin corrosion/irritation**

**Product:**

Remarks: Expected to be slightly irritating., Prolonged/repeated contact may cause defatting of the skin which can lead to dermatitis., Contact with hot material can cause thermal burns which may result in permanent skin damage.

**Serious eye damage/eye irritation**

**Product:**

Remarks: Expected to be slightly irritating., Hot product may cause severe eye burns and/or blindness.

**Respiratory or skin sensitisation**

**Product:**

Remarks: Not expected to be a sensitiser.

**Germ cell mutagenicity**

**Product:**

: Remarks: Positive in in-vitro, but negative in in-vivo mutagenicity assays.

Germ cell mutagenicity- Assessment : This product does not meet the criteria for classification in categories 1A/1B.

**Carcinogenicity**

**Product:**
Remarks: Causes cancer in laboratory animals.

| | |
|---|---|
| Carcinogenicity - Assessment | : Category 1B |
| **IARC** | No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. |
| **ACGIH** | No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH. |
| **OSHA** | No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA. |
| **NTP** | No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP. |

**Reproductive toxicity**

**Product:**

| | |
|---|---|
| | : Remarks: Causes foetotoxicity at doses which are maternally toxic. |
| Reproductive toxicity - Assessment | : This product does not meet the criteria for classification in categories 1A/1B. |

**STOT - single exposure**

**Product:**
Remarks: Contains hydrogen sulphide., Inhalation of vapours or mists may cause irritation to the respiratory system.

**STOT - repeated exposure**

**Product:**
Remarks: Causes damage to organs through prolonged or repeated exposure.

Target Organs: Blood, Liver, Thymus

**Aspiration toxicity**

**Product:**
Not considered an aspiration hazard.

**Further information**

**Product:**

Remarks: H2S has a broad range of effects dependent on the airborne concentration and length of exposure: 0.02 ppm odour threshold, smell of rotten eggs; 10 ppm eye and respiratory tract irritation; 100 ppm coughing, headache, dizziness, nausea, eye irritation, loss of sense of smell in minutes; 200 ppm potential for pulmonary oedema after >20-30 minutes; 500 ppm loss of consciousness after short exposures, potential for respiratory arrest; >1000ppm immediate loss of consciousness, may lead rapidly to death, prompt cardiopulmonary resuscitation may be required. Do not depend on sense of smell for warning. H2S causes rapid olfactory fatigue (deadens sense of smell). There is no evidence that H2S will accumulate in the body tissue after repeated exposure., Classifications by other authorities under varying regulatory frameworks may exist.

## SECTION 12. ECOLOGICAL INFORMATION

| | | |
|---|---|---|
| Basis for assessment | : | Fuels are typically made from blending several refinery streams. Ecotoxicological studies have been carried out on a variety of hydrocarbon blends and streams but not those containing additives.<br>Information given is based on a knowledge of the components and the ecotoxicology of similar products.Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s). |

**Ecotoxicity**

**Product:**

| | | |
|---|---|---|
| Toxicity to fish (Acute toxicity) | : | Remarks: Harmful:<br>LL/EL/IL50 >10 <= 100 mg/l |
| Toxicity to daphnia and other aquatic invertebrates (Acute toxicity) | : | Remarks: Toxic:<br>LL/EL/IL50 > 1 <= 10 mg/l |
| Toxicity to algae (Acute toxicity) | : | Remarks: Very toxic:<br>LL/EL/IL50 < 1 mg/l |
| Toxicity to fish (Chronic toxicity) | : | Remarks: NOEC/NOEL expected to be > 0.01 - <= 0.1 mg/l (based on modeled data) |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : | Remarks: NOEC/NOEL expected to be > 0.1 - <= 1.0 mg/l (based on modeled data) |
| Toxicity to bacteria (Acute toxicity) | : | Remarks: Expected to be practically non toxic:<br>LL/EL/IL50 > 100 mg/l |

**Persistence and degradability**

**Product:**

| | | |
|---|---|---|
| Biodegradability | : | Remarks: The volatile constituents will oxidize rapidly by photochemical reactions in air. |

Major constituents are inherently biodegradable.

**Bioaccumulative potential**

**Product:**

Bioaccumulation : Remarks: Contains constituents with the potential to bioaccumulate.

**Mobility in soil**

**Product:**

Mobility : Remarks: Partly evaporates from water or soil surfaces, but a significant proportion will remain after one day.
Large volumes may penetrate soil and could contaminate groundwater.
Contains volatile components.
Floats on water.

**Other adverse effects**

no data available

**Product:**

Additional ecological information : Films formed on water may affect oxygen transfer and damage organisms.

## SECTION 13. DISPOSAL CONSIDERATIONS

**Disposal methods**

Waste from residues : Recover or recycle if possible.
It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.
Do not dispose into the environment, in drains or in water courses
Do not dispose of tank water bottoms by allowing them to drain into the ground.
Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.

Contaminated packaging : Send to drum recoverer or metal reclaimer.
Drain container thoroughly.
After draining, vent in a safe place away from sparks and fire.
Residues may cause an explosion hazard if heated above the flash point. Do not puncture, cut or weld uncleaned drums.
Do not pollute the soil, water or environment with the waste container.
Comply with any local recovery or waste disposal regulations.

## SECTION 14. TRANSPORT INFORMATION

**National Regulations**

**US Department of Transportation Classification (49 CFR Parts 171-180)**

Not regulated as a dangerous good

**International Regulation**

**IATA-DGR**
Not regulated as a dangerous good

**IMDG-Code**
Not regulated as a dangerous good

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

**Special precautions for user**

Not applicable

**Additional Information** : This material is an 'OIL' under 49 CFR Part 130 when transported in a container of 3500 gallon capacity or greater.

## SECTION 15. REGULATORY INFORMATION

**OSHA Hazards** : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

**EPCRA - Emergency Planning and Community Right-to-Know Act**

**CERCLA Reportable Quantity**

| Components | CAS-No. | Component RQ (lbs) | Calculated product RQ (lbs) |
|---|---|---|---|
| Hydrogen Sulfide | 7783-06-4 | 100 | * |

*: Calculated RQ exceeds reasonably attainable upper limit.

**CERCLA Reportable Quantity**

Calculated RQ exceeds reasonably attainable upper limit.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

This material does not contain any components with a section 304 EHS RQ.

**SARA 311/312 Hazards** : Immediate (Acute) Health Hazard
Delayed (Chronic) Health Hazard
Fire Hazard

**SARA 302** : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**Clean Water Act**

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

| | | |
|---|---|---|
| hydrogen sulphide | 7783-06-4 | 0.04 % |

**Pennsylvania Right To Know**

| | |
|---|---|
| hydrogen sulphide | 7783-06-4 |

**California Prop 65** This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

Other regulations : The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

## SECTION 16. OTHER INFORMATION

**Further information**

NFPA Rating (Health, Fire, Reactivity) 2, 2, 0

A vertical bar (|) in the left margin indicates an amendment from the previous version.
Due to the conversion of this product to GHS classification and labelling, there has been a significant change to the nature of the information presented in chapter 2.

Abbreviations and Acronyms : The standard abbreviations and acronyms used in this document can be looked up in reference literature (e.g. scientific dictionaries) and/or websites.

ACGIH = American Conference of Governmental Industrial Hygienists
ADR = European Agreement concerning the International Carriage of Dangerous Goods by Road
AICS = Australian Inventory of Chemical Substances
ASTM = American Society for Testing and Materials
BEL = Biological exposure limits
BTEX = Benzene, Toluene, Ethylbenzene, Xylenes
CAS = Chemical Abstracts Service
CEFIC = European Chemical Industry Council
CLP = Classification Packaging and Labelling
COC = Cleveland Open-Cup
DIN = Deutsches Institut fur Normung
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
DSL = Canada Domestic Substance List
EC = European Commission
EC50 = Effective Concentration fifty
ECETOC = European Center on Ecotoxicology and Toxicology Of Chemicals

ECHA = European Chemicals Agency
EINECS = The European Inventory of Existing Commercial Chemical Substances
EL50 = Effective Loading fifty
ENCS = Japanese Existing and New Chemical Substances Inventory
EWC = European Waste Code
GHS = Globally Harmonised System of Classification and Labelling of Chemicals
IARC = International Agency for Research on Cancer
IATA = International Air Transport Association
IC50 = Inhibitory Concentration fifty
IL50 = Inhibitory Level fifty
IMDG = International Maritime Dangerous Goods
INV = Chinese Chemicals Inventory
IP346 = Institute of Petroleum test method N° 346 for the determination of polycyclic aromatics DMSO-extractables
KECI = Korea Existing Chemicals Inventory
LC50 = Lethal Concentration fifty
LD50 = Lethal Dose fifty per cent.
LL/EL/IL = Lethal Loading/Effective Loading/Inhibitory loading
LL50 = Lethal Loading fifty
MARPOL = International Convention for the Prevention of Pollution From Ships
NOEC/NOEL = No Observed Effect Concentration / No Observed Effect Level
OE_HPV = Occupational Exposure - High Production Volume
PBT = Persistent, Bioaccumulative and Toxic
PICCS = Philippine Inventory of Chemicals and Chemical Substances
PNEC = Predicted No Effect Concentration
REACH = Registration Evaluation And Authorisation Of Chemicals
RID = Regulations Relating to International Carriage of Dangerous Goods by Rail
SKIN_DES = Skin Designation
STEL = Short term exposure limit
TRA = Targeted Risk Assessment
TSCA = US Toxic Substances Control Act
TWA = Time-Weighted Average
vPvB = very Persistent and very Bioaccumulative

Sources of key data used to compile the Safety Data Sheet : The quoted data are from, but not limited to, one or more sources of information (e.g. toxicological data from Shell Health Services, material suppliers' data, CONCAWE, EU IUCLID date base, EC 1272 regulation, etc).

Revision Date : 05/20/2015

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

# Document 9

# SAFETY DATA SHEET

Decant Oil

## Section 1. Identification

**GHS product identifier** : Decant Oil

**Chemical name** : Clarified oils (petroleum), catalytic cracked

**Synonyms** : Catalytically Cracked Clarified Oil (Petroleum); Clarified Oil; Claroil; Clarified Slurry Oil; Cat Slurry Oil; Decant Oil; Bottoms Stream from a Fluid Catalytic Cracker Unit; FCCU Bottoms; Fluid Catalytic Cracker Unit (FCCU) Residuum; FCCU Decant Oil; FCCU Claroil; Coker Feed Component; No. 6 Fuel Oil Blending Component; Heavy Fuel Oil Blending Component; Unfinished Bunker Fuel; Carbon Black Unit Feedstock; C20-C50 Petroleum Hydrocarbons; Needle Coker Feedstock; Alternative Product No. 0153

**Code** : 07501

**Supplier's details** : CITGO Petroleum Corporation
P.O. Box 4689
Houston, TX 77210
sdsvend@citgo.com

**Emergency telephone number (with hours of operation)** : Technical Contact: (800) 248-4684
Medical Emergency: (832) 486-4700
CHEMTREC Emergency: (800) 424-9300
(United States Only)

## Section 2. Hazards identification

**OSHA/HCS status** : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

**Classification of the substance or mixture** : ACUTE TOXICITY (inhalation) - Category 4
GERM CELL MUTAGENICITY - Category 1
CARCINOGENICITY - Category 1B
TOXIC TO REPRODUCTION (Unborn child) - Category 1B
TOXIC TO REPRODUCTION (Fertility) - Category 2
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
AQUATIC HAZARD (ACUTE) - Category 1
AQUATIC HAZARD (LONG-TERM) - Category 1

**GHS label elements**

**Hazard pictograms** :

**Signal word** : Danger

**Hazard statements** : Harmful if inhaled.
May cause genetic defects.
May cause cancer.
May damage the unborn child.
Suspected of damaging fertility.
May be fatal if swallowed and enters airways.
May cause damage to organs through prolonged or repeated exposure.
Very toxic to aquatic life with long lasting effects.

**Precautionary statements**

**Prevention** : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves. Wear eye or face protection. Wear protective clothing. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Do not breathe vapor.

## Section 2. Hazards identification

**Response** : Collect spillage. Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting.

**Storage** : Store locked up.

**Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations.

**Supplemental label elements** : Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and receiving equipment. These alone may be insufficient to remove static electricity. Do not taste or swallow. Wash thoroughly after handling.

**Hazards not otherwise classified** : Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor may cause flash fire or explosion. Causes digestive tract burns. Prolonged or repeated contact may dry skin and cause irritation. Elevated temperature liquid. May contain or release poisonous hydrogen sulfide gas.

## Section 3. Composition/information on ingredients

**Substance/mixture** : Substance

**Chemical name** : Clarified oils (petroleum), catalytic cracked

**Other means of identification** : Catalytically Cracked Clarified Oil (Petroleum); Clarified Oil; Claroil; Clarified Slurry Oil; Cat Slurry Oil; Decant Oil; Bottoms Stream from a Fluid Catalytic Cracker Unit; FCCU Bottoms; Fluid Catalytic Cracker Unit (FCCU) Residuum; FCCU Decant Oil; FCCU Claroil; Coker Feed Component; No. 6 Fuel Oil Blending Component; Heavy Fuel Oil Blending Component; Unfinished Bunker Fuel; Carbon Black Unit Feedstock; C20-C50 Petroleum Hydrocarbons; Needle Coker Feedstock; Alternative Product No. 0153

**CAS number/other identifiers**

**CAS number** : 64741-62-4

| Ingredient name | % | CAS number |
|---|---|---|
| Clarified oils (petroleum), catalytic cracked | >99 | 64741-62-4 |
| Polycyclic aromatic hydrocarbons | 7 - 13 | 130498-29-2 |
| Naphthalene | 0.5 - 1.5 | 91-20-3 |
| Hydrogen sulfide | <0.1 | 7783-06-4 |

* = Various ** = Mixture *** = Proprietary

Any concentration shown as a range is to protect confidentiality or is due to process variation.

**There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.**

**Occupational exposure limits, if available, are listed in Section 8.**

## Section 4. First aid measures

**Description of necessary first aid measures**

**Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

**Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

## Section 4. First aid measures

**Skin contact** : Wash skin thoroughly with soap and water or use recognized skin cleanser. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

**Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

### Most important symptoms/effects, acute and delayed

#### Potential acute health effects

**Eye contact** : Contact can cause severe thermal burns and damage to the eyes.

**Inhalation** : Harmful if inhaled. Inhalation of mist or vapors at elevated temperatures can cause respiratory irritation or lung damage. Hydrogen sulfide may be released from this product. Highest concentrations are likely in the vapor spaces of storage tanks, barge compartments and process equipment. Hydrogen sulfide may be harmful or fatal if inhaled. NIOSH has determined that atmospheres containing 100 ppm or more of hydrogen sulfide ($H_2S$) are immediately dangerous to life and health. At concentrations above 500 ppm, $H_2S$ causes unconsciousness and respiratory paralysis leading to coma and/or death. Inhalation of gas may cause respiratory paralysis, severe nose, throat, respiratory tract, and lung irritation, depending on the concentration and duration of exposure. Symptoms are characterized by coughing, choking, or shortness of breath. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

**Skin contact** : Defatting to the skin. May cause skin dryness and irritation. Contact with material at elevated temperatures can cause severe thermal burns and tissue damage.

**Ingestion** : Corrosive to the digestive tract. Causes burns. May be fatal if swallowed and enters airways.

#### Over-exposure signs/symptoms

**Eye contact** : No specific data.

**Inhalation** : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

**Skin contact** : Adverse symptoms may include the following:
irritation
dryness
cracking

**Ingestion** : Adverse symptoms may include the following:
stomach pains
nausea or vomiting

### Indication of immediate medical attention and special treatment needed, if necessary

**Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. If ingested, this material presents a significant aspiration and chemical pneumonitis hazard. Induction of emesis is not recommended. Consider activated charcoal and/or gastric lavage. If patient is obtunded, protect the airway by cuffed endotracheal intubation or by placement of the body in a Trendelenburg and left lateral decubitus position. Treat intoxications as hydrogen sulfide exposures.

**Specific treatments** : Treat symptomatically and supportively.

## Section 4. First aid measures

**Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that gas or vapor is still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

**See toxicological information (Section 11)**

## Section 5. Fire-fighting measures

Extinguishing media

**Suitable extinguishing media** : Use caution when applying carbon dioxide in confined spaces. SMALL FIRE: Steam, $CO_2$, dry chemical or inert gas (e.g., nitrogen). LARGE FIRE: Use foam, water fog or water spray. Water fog and spray are effective in cooling containers and adjacent structures. However, water can cause frothing and/or may not extinguish the fire. Water can be used to cool the external walls of vessels to prevent excessive pressure, ignition or explosion.

**Unsuitable extinguishing media** : Do not use water jet.

**Specific hazards arising from the chemical** : This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. To reduce potential for static discharge, use proper bonding and grounding procedures. This liquid may accumulate static electricity when filling properly grounded containers. Static accumulation may be significantly increased by the presence of small quantities of water or other contaminants. In a fire or if heated, a pressure increase will occur and the container may burst. This material is very toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

**Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
sulfur oxides

**Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

**Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

**For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

**For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

**Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

## Section 6. Accidental release measures

**Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

**Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

## Section 7. Handling and storage

**Precautions for safe handling**

**Protective measures** : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not swallow. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container. Handling operations that can promote accumulation of static charges include but are not limited to: mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations. Restrict flow velocity according to API 2003 (2008), NFPA 77 (2007), and Laurence Britton, "Avoiding Static Ignition Hazards in Chemical Operations". To reduce potential for static discharge, ensure that all equipment is properly grounded and bonded and meets appropriate electrical classification requirements. This material can release hydrogen sulfide gas. Refer to Section 8 for description of appropriate respiratory personnel protective equipment. This material may evolve hydrogen sulfide (H2S), a highly flammable and poisonous gas. Always check for hazardous vapors and take appropriate precautions.

**Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

**Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. $H_2S$ is a potentially deadly gas. Do not rely on the ability to smell $H_2S$. Use appropriate respiratory protection. Hydrogen Sulfide ($H_2S$) can accumulate during storage of this material. Monitor for $H_2S$ during tank gauging and similar operations. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Bulk Storage Conditions: Maintain all storage tanks in accordance with applicable regulations. Use necessary controls to monitor tank inventories. Inspect all storage tanks on a periodic basis. Test tanks and associated piping for tightness. Maintain the automatic leak detection devices to assure proper working condition.

## Section 8. Exposure controls/personal protection

### Control parameters

#### Occupational exposure limits

| | |
|---|---|
| Polycyclic aromatic hydrocarbons | **ACGIH TLV (United States). Notes: Coal Tar Pitch Volatiles, as benzene soluble aerosol**<br>TWA: 0.2 mg/m³ 8 hours.<br>**OSHA PEL (United States). Notes: Coal Tar Pitch Volatiles, as benzene soluble aerosol**<br>TWA: 0.2 mg/m³ 8 hours.<br>**NIOSH REL (United States, 10/2016).**<br>TWA: 0.1 mg/m³ 10 hours.<br>**OSHA PEL (United States, 6/2016).**<br>TWA: 0.2 mg/m³ 8 hours. Form: Benzene soluble |
| Naphthalene | **ACGIH TLV (United States). Absorbed through skin.**<br>STEL: 15 ppm 15 minutes.<br>**ACGIH TLV (United States, 3/2017). Absorbed through skin.**<br>TWA: 10 ppm 8 hours.<br>TWA: 52 mg/m³ 8 hours.<br>**NIOSH REL (United States, 10/2016).**<br>TWA: 10 ppm 10 hours.<br>TWA: 50 mg/m³ 10 hours.<br>STEL: 15 ppm 15 minutes.<br>STEL: 75 mg/m³ 15 minutes.<br>**OSHA PEL (United States, 6/2016).**<br>TWA: 10 ppm 8 hours.<br>TWA: 50 mg/m³ 8 hours. |
| Hydrogen sulfide | **ACGIH TLV (United States, 3/2017).**<br>TWA: 1 ppm 8 hours.<br>STEL: 5 ppm 15 minutes.<br>**OSHA PEL Z2 (United States, 2/2013).**<br>CEIL: 20 ppm<br>AMP: 50 ppm 10 minutes.<br>**NIOSH REL (United States, 10/2016).**<br>CEIL: 10 ppm 10 minutes.<br>CEIL: 15 mg/m³ 10 minutes. |

**Appropriate engineering controls** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

**Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, vapor controls, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

#### Individual protection measures

**Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

## Section 8. Exposure controls/personal protection

**Eye/face protection** : Safety glasses equipped with side shields are recommended as minimum protection in industrial settings. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles. Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If inhalation hazards exist, a full-face respirator may be required instead. Use a full-face shield and chemical safety goggles if handling heated material.

**Skin protection**

**Hand protection** : Avoid skin contact with liquid. Chemical-resistant gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. When product is heated, wear gloves to protect against thermal burns. Leather gloves are not protective for liquid contact.

**Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When working with or exposed to material at elevated temperatures, wear thermal protective body-covering work clothes.

**Other skin protection** : Avoid skin contact with liquid. Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Leather boots are not protective for liquid contact.

**Respiratory protection** : Avoid inhalation of gases, vapors, mists or dusts. Use a properly fitted, air-purifying or supplied-air respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommend: A full-face supplied air pressure-demand respirator with escape bottle or a pressure-demand self-contained, breathing apparatus (SCBA) is required. Respirators should be used in accordance with OSHA requirements (29 CFR 1910.134).

## Section 9. Physical and chemical properties

**Appearance**

**Physical state** : Liquid.

**Color** : Dark brown to black

**Odor** : Strong, pungent burnt or cracked hydrocarbon odor.

**pH** : Not available.

**Boiling point** : 271°C (520°F)

**Flash point** : Closed cup: 149°C (300°F) [Setaflash.]

**Evaporation rate** : 0.005 (n-butyl acetate = 1)

**Lower and upper explosive (flammable) limits** : Lower: 0.9%
Upper: 7%

**Vapor pressure** : <0.013 kPa (<0.1 mm Hg) [room temperature]

**Vapor density** : >1 [Air = 1]

**Relative density** : 1 to 1.09 [Estimated]

**Density lbs/gal** : Estimated 8.71 lbs/gal

**Density gm/cm$^3$** : Not available.

**Solubility** : Insoluble in the following materials: cold water.

**Solubility in water** : 0.0004 g/l

**Flow time (ISO 2431)** : Not available.

**Viscosity** : Kinematic (40°C (104°F)): >1.9 cm$^2$/s (>190 cSt)

**Viscosity SUS** : Estimated 968 SUS @104 F

**Conductivity** : <50 picosiemens/meter (unadditized)

## Section 10. Stability and reactivity

**Reactivity** : Not expected to be Explosive, Self-Reactive, Self-Heating, or an Organic Peroxide under US GHS Definition(s).

**Chemical stability** : The product is stable.

**Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.

**Conditions to avoid** : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not store with strong oxidizing agents.

**Incompatible materials** : Reactive or incompatible with the following materials: oxidizing materials

**Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## Section 11. Toxicological information

**Information on toxicological effects**

**Acute toxicity**

| Product/ingredient name | Result | Species | Dose | Exposure |
|---|---|---|---|---|
| Clarified oils (petroleum), catalytic cracked | LD Dermal | Rabbit | >2 g/kg | - |
| | LD50 Oral | Rat | 4300 mg/kg | - |
| Polycyclic aromatic hydrocarbons | LD50 Dermal | Rabbit | >2000 mg/kg | - |
| | LD50 Oral | Rat | >5000 mg/kg | - |
| Naphthalene | LD50 Oral | Rat | 490 mg/kg | - |
| Hydrogen sulfide | LC50 Inhalation Gas. | Mouse | 634 ppm | 1 hours |
| | LC50 Inhalation Gas. | Rat | 820 mg/m³ | 3 hours |
| | LC50 Inhalation Gas. | Rat | 700 mg/m³ | 4 hours |
| | LC50 Inhalation Gas. | Rat | 444 ppm | 4 hours |
| | LC50 Inhalation Gas. | Rat | 470 mg/m³ | 6 hours |

**Conclusion/Summary** : No additional information.

**Irritation/Corrosion**

| Product/ingredient name | Result | Species | Score | Exposure | Observation |
|---|---|---|---|---|---|
| Naphthalene | Skin - Mild irritant | Rabbit | - | 495 milligrams | - |

**Skin** : No additional information.

**Eyes** : No additional information.

**Respiratory** : No additional information.

**Sensitization**

Not available.

**Skin** : No additional information.

**Respiratory** : No additional information.

**Mutagenicity**

Not available.

**Conclusion/Summary** : **Clarified oils (petroleum), catalytic cracked**: Findings from in vitro and in vivo studies of this material have been both negative and positive, but the overall weight of evidence suggests this material is genotoxic.

**Carcinogenicity**

# Section 11. Toxicological information

Not available.

**Conclusion/Summary** : **Clarified oils (petroleum), catalytic cracked**: The International Agency for Research on Cancer (IARC) has identified high-boiling fractions of catalytically cracked petroleum streams as "untreated or mildly-treated oils' and has classified these oils as Group 1, Carcinogenic to Humans.
**Polycyclic aromatic hydrocarbons**: Chronic or repeated exposure increases the likelihood of tumor initiation as well as the potential for metabolism of a PNA procarcinogen into a carcinogen. Increased incidence of tumors of the skin, bladder, lung and gastrointestinal tract have been described in individuals exposed to elevated concentrations of certain PNAs.

Dermal exposures are associated with precancerous lesions, erythema, dermal burns, photosensitivity, acneiform lesions and irritation. Oral exposure to certain PNAs have been associated with precancerous growths of the mouth (leukoplakia). Also, mild nephrotoxicity, indicated by increased kidney size, congestion and renal cortical hemorrhages, plus elevated liver function tests and histopathologic abnormalities have occurred in rats following chronic ingestion.

**Classification**

| Product/ingredient name | OSHA | IARC | NTP |
|---|---|---|---|
| Clarified oils (petroleum), catalytic cracked | + | 1 | - |
| Polycyclic aromatic hydrocarbons | + | 1 | - |
| Naphthalene | - | 2B | Reasonably anticipated to be a human carcinogen. |

**Reproductive toxicity**

Not available.

**Conclusion/Summary** : No additional information.

**Teratogenicity**

Not available.

**Conclusion/Summary** : **Clarified oils (petroleum), catalytic cracked**: Fetal death and fetal malformations were observed in pregnant rodents following dermal exposure.

**Specific target organ toxicity (single exposure)**

| Name | Category | Route of exposure | Target organs |
|---|---|---|---|
| Hydrogen sulfide | Category 3 | Not applicable. | Respiratory tract irritation |

**Specific target organ toxicity (repeated exposure)**

| Name | Category | Route of exposure | Target organs |
|---|---|---|---|
| Clarified oils (petroleum), catalytic cracked | Category 2 | Not determined | Not determined |

**Aspiration hazard**

Not available.

**Information on the likely routes of exposure** : Routes of entry anticipated: Oral, Dermal, Inhalation.

**Potential acute health effects**

**Eye contact** : Contact can cause severe thermal burns and damage to the eyes.

## Section 11. Toxicological information

**Inhalation** : Harmful if inhaled. Inhalation of mist or vapors at elevated temperatures can cause respiratory irritation or lung damage. Hydrogen sulfide may be released from this product. Highest concentrations are likely in the vapor spaces of storage tanks, barge compartments and process equipment. Hydrogen sulfide may be harmful or fatal if inhaled. NIOSH has determined that atmospheres containing 100 ppm or more of hydrogen sulfide ($H_2S$) are immediately dangerous to life and health. At concentrations above 500 ppm, $H_2S$ causes unconsciousness and respiratory paralysis leading to coma and/or death. Inhalation of gas may cause respiratory paralysis, severe nose, throat, respiratory tract, and lung irritation, depending on the concentration and duration of exposure. Symptoms are characterized by coughing, choking, or shortness of breath. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

**Skin contact** : Defatting to the skin. May cause skin dryness and irritation. Contact with material at elevated temperatures can cause severe thermal burns and tissue damage.

**Ingestion** : Corrosive to the digestive tract. Causes burns. May be fatal if swallowed and enters airways.

### Symptoms related to the physical, chemical and toxicological characteristics

**Eye contact** : No specific data.

**Inhalation** : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

**Skin contact** : Adverse symptoms may include the following:
irritation
dryness
cracking

**Ingestion** : Adverse symptoms may include the following:
stomach pains
nausea or vomiting

### Delayed and immediate effects and also chronic effects from short and long term exposure

#### Short term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

#### Long term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

#### Potential chronic health effects

Not available.

**General** : May cause damage to organs through prolonged or repeated exposure.

**Carcinogenicity** : May cause cancer. Risk of cancer depends on duration and level of exposure.

**Mutagenicity** : May cause genetic defects.

**Teratogenicity** : May damage the unborn child.

**Developmental effects** : No known significant effects or critical hazards.

**Fertility effects** : Suspected of damaging fertility.

## Section 12. Ecological information

**Toxicity**

| Product/ingredient name | Result | Species | Exposure |
|---|---|---|---|
| Naphthalene | Acute EC50 1.6 ppm Fresh water | Daphnia - Daphnia magna | 48 hours |
| | Acute LC50 2350 µg/l Marine water | Crustaceans - Palaemonetes pugio | 48 hours |
| | Acute LC50 213 µg/l Fresh water | Fish - Melanotaenia fluviatilis - Larvae | 96 hours |
| | Chronic NOEC 0.5 mg/l Marine water | Crustaceans - Uca pugnax - Adult | 3 weeks |
| | Chronic NOEC 1.5 mg/l Fresh water | Fish - Oreochromis mossambicus | 60 days |
| Hydrogen sulfide | Acute EC50 62 µg/l Fresh water | Crustaceans - Gammarus pseudolimnaeus | 2 days |
| | Acute LC50 2 µg/l Fresh water | Fish - Coregonus clupeaformis - Yolk-sac fry | 96 hours |

**Conclusion/Summary** : Not available.

**Persistence and degradability**

Not available.

**Conclusion/Summary** : Not available.

**Bioaccumulative potential**

| Product/ingredient name | $LogP_{ow}$ | BCF | Potential |
|---|---|---|---|
| Naphthalene | 3.4 | 36.5 to 168 | low |

**Mobility in soil**

**Soil/water partition coefficient ($K_{OC}$)** : Not available.

**Other adverse effects** : No known significant effects or critical hazards.

## Section 13. Disposal considerations

**Disposal methods** : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

## Section 14. Transport information

| | DOT Classification | IMDG | IATA |
|---|---|---|---|
| **UN number** | UN3082 | UN3082 | UN3082 |
| **UN proper shipping name** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Clarified oils (petroleum), catalytic cracked) | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Clarified oils (petroleum), catalytic cracked) | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Clarified oils (petroleum), catalytic cracked) |
| | | | |

## Section 14. Transport information

| | | | |
|---|---|---|---|
| **Transport hazard class(es)** | 9  | 9  | 9  |
| **Packing group** | III | III | III |
| **Environmental hazards** | Yes. | Yes. | Yes. |

Additional information

**DOT Classification** : Non-bulk packages of this product are not regulated as hazardous materials in package sizes less than the product reportable quantity, unless transported by inland waterway. The marine pollutant mark is not required when transported on inland waterways in sizes of ≤5 L or ≤5 kg.
Reportable quantity 11111.1 lbs / 5044.4 kg [1275.2 gal / 4827.2 L]. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.
Limited quantity Yes.
Packaging instruction Exceptions: 155. Non-bulk: 203. Bulk: 241.
Special provisions 8, 146, 173, 335, IB3, T4, TP1, TP29
Remarks If this liquid is offered for transportation at or above 100° C (212° F), the shipping description must be revised to an Elevated Temperature Material. The word "HOT" must immediately proceed the proper shipping name unless "elevated temperature" or "molten" is already included in the proper shipping name. **Oil:** The product(s) represented by this SDS is (are) regulated as "oil" under 49 CFR Part 130. Shipments by rail or highway in packaging having a capacity of 3500 gallons or more or in a quantity greater 42,000 gallons are subject to these requirements. In addition, mixtures containing 10% or more of this product may be subject to these requirements.

**TDG Classification** : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.43-2.45 (Class 9), 2.7 (Marine pollutant mark).
Non-bulk packages of this product are not regulated as dangerous goods when transported by road or rail.

**Mexico Classification** : The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.

**ADR/RID** : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.

**IMDG** : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.
Emergency schedules F-A, S-F
Special provisions 274, 335, 969
Remarks If this liquid is offered for transportation at or above 100° C (212° F), the shipping description must be revised to an Elevated Temperature Material. The word "HOT" must immediately proceed the proper shipping name unless "elevated temperature" or "molten" is already included in the proper shipping name.

**IATA** : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 5.0.2.4.1, 5.0.2.6.1.1 and 5.0.2.8.
Quantity limitation Passenger and Cargo Aircraft: 450 L. Packaging instructions: 964. Cargo Aircraft Only: 450 L. Packaging instructions: 964. Limited Quantities - Passenger Aircraft: 30 kg. Packaging instructions: Y964.
Special provisions A97, A158, A197
Remarks If this liquid is offered for transportation at or above 100° C (212° F), the shipping description must be revised to an Elevated Temperature Material. The word "HOT" must immediately proceed the proper shipping name unless "elevated temperature" or "molten" is already included in the proper shipping name.

## Section 14. Transport information

**Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**Transport in bulk according to Annex II of MARPOL and the IBC Code** : Not available.

## Section 15. Regulatory information

**U.S. Federal regulations** : **United States inventory (TSCA 8b)**: All components are listed or exempted.

**Clean Water Act (CWA) 307**: Polycyclic aromatic hydrocarbons; naphthalene

**Clean Water Act (CWA) 311**: naphthalene; hydrogen sulphide

This material is classified as an oil under Section 311 of the Clean Water Act (CWA) and the Oil Pollution Act of 1990 (OPA). Discharges or spills which produce a visible sheen on waters of the United States, their adjoining shorelines, or into conduits leading to surface waters must be reported to the EPA's National Response Center at (800) 424-8802.

**SARA 302/304**

**Composition/information on ingredients**

| Name | % | EHS | SARA 302 TPQ | | SARA 304 RQ | |
|---|---|---|---|---|---|---|
| | | | (lbs) | (gallons) | (lbs) | (gallons) |
| Hydrogen sulfide | <0.1 | Yes. | 500 | - | 100 | - |

**SARA 304 RQ** : 112233.4 lbs / 50954 kg [12881 gal / 48759.8 L]

**SARA 311/312**

**Classification** : ACUTE TOXICITY (inhalation) - Category 4
GERM CELL MUTAGENICITY - Category 1
CARCINOGENICITY - Category 1B
TOXIC TO REPRODUCTION (Unborn child) - Category 1B
TOXIC TO REPRODUCTION (Fertility) - Category 2
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
HNOC - Static-accumulating flammable liquid
HNOC - Corrosive to digestive tract

**Composition/information on ingredients**

| Name | % | Classification |
|---|---|---|
| Clarified oils (petroleum), catalytic cracked | >99 | ACUTE TOXICITY (inhalation) - Category 4<br>GERM CELL MUTAGENICITY - Category 1<br>CARCINOGENICITY - Category 1B<br>TOXIC TO REPRODUCTION (Unborn child) - Category 1B<br>TOXIC TO REPRODUCTION (Fertility) - Category 2<br>SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2<br>HNOC - Static-accumulating flammable liquid<br>HNOC - Corrosive to digestive tract |
| Clarified oils (petroleum), catalytic cracked | >99 | FLAMMABLE LIQUIDS - Category 4<br>ACUTE TOXICITY (inhalation) - Category 4<br>CARCINOGENICITY - Category 1B<br>TOXIC TO REPRODUCTION (Fertility) - Category 2<br>TOXIC TO REPRODUCTION (Unborn child) - Category 2<br>SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2 |
| Polycyclic aromatic hydrocarbons | 7 - 13 | GERM CELL MUTAGENICITY - Category 1B<br>CARCINOGENICITY - Category 1B<br>TOXIC TO REPRODUCTION (Unborn child) (dermal) - Category 1B |
| Naphthalene | 0.5 - 1.5 | FLAMMABLE SOLIDS - Category 2 |

## Section 15. Regulatory information

| | | |
|---|---|---|
| Hydrogen sulfide | <0.1 | ACUTE TOXICITY (oral) - Category 4<br>CARCINOGENICITY - Category 2<br>FLAMMABLE GASES - Category 1<br>GASES UNDER PRESSURE - Compressed gas<br>ACUTE TOXICITY (inhalation) - Category 2<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 |

**SARA 313**

| | Product name | CAS number | % |
|---|---|---|---|
| **Form R - Reporting requirements** | Polycyclic aromatic hydrocarbons<br>naphthalene | 130498-29-2<br>91-20-3 | <20<br><2 |
| **Supplier notification** | Polycyclic aromatic hydrocarbons<br>naphthalene | 130498-29-2<br>91-20-3 | <20<br><2 |

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

**State regulations**

**Massachusetts** : None of the components are listed.

**New York** : The following components are listed: Naphthalene

**New Jersey** : The following components are listed: POLYCYCLIC AROMATIC HYDROCARBONS; NAPHTHALENE; MOTH FLAKES

**Pennsylvania** : The following components are listed: Polycyclic aromatic hydrocarbons; NAPHTHALENE

**California Prop. 65 Clear and Reasonable Warnings (2018)**

⚠ **WARNING**: This product can expose you to chemicals including Naphthalene, Polycyclic aromatic hydrocarbons, which are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

**International regulations**

**Inventory list**

**United States** : All components are listed or exempted.

**Australia** : All components are listed or exempted.

**Canada** : All components are listed or exempted.

**China** : All components are listed or exempted.

**Europe** : All components are listed or exempted.

**Japan** : **Japan inventory (ENCS)**: Not determined.
**Japan inventory (ISHL)**: Not determined.

**Malaysia** : Not determined.

**New Zealand** : All components are listed or exempted.

**Philippines** : Not determined.

**Republic of Korea** : All components are listed or exempted.

**Taiwan** : All components are listed or exempted.

**Thailand** : Not determined.

**Turkey** : Not determined.

**Viet Nam** : Not determined.

## Section 16. Other information

**National Fire Protection Association (U.S.A.)**

## Section 16. Other information

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**Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.**

**Procedure used to derive the classification**

| Classification | Justification |
|---|---|
| ACUTE TOXICITY (inhalation) - Category 4 | Calculation method |
| GERM CELL MUTAGENICITY - Category 1 | Calculation method |
| CARCINOGENICITY - Category 1B | Calculation method |
| TOXIC TO REPRODUCTION (Unborn child) - Category 1B | Calculation method |
| TOXIC TO REPRODUCTION (Fertility) - Category 2 | Calculation method |
| SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2 | Calculation method |
| AQUATIC HAZARD (ACUTE) - Category 1 | Calculation method |
| AQUATIC HAZARD (LONG-TERM) - Category 1 | Calculation method |

**History**

**Date of printing** : 8/7/2018

**Date of issue/Date of revision** : 8/7/2018

**Date of previous issue** : No previous validation

**Version** : 1

**Key to abbreviations** : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

**References** : Not available.

**Indicates information that has changed from previously issued version.**

**Notice to reader**

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# Document 10

## Section 1 - PRODUCT AND COMPANY IDENTIFICATION

**Material Name**
PETROLEUM TAR

**Synonyms**
Slurry Oil; Heavy Pyrolysis Oil and Pyrolysis Fuel Oil

**Product Use**
Production feedstock material.

**Restrictions on Use**
None known.

**Details of the supplier of the safety data sheet**
KOPPERS INC.
436 Seventh Avenue
Pittsburgh, PA 15219-1800
Mfg Contact: 412-227-2001 (SDS Requests: 866-852-5239)

CHEMTREC: 800-424-9300 (Outside USA: +1 703-527-3887)
Emergencies: (Medical in USA): 877-737-9047
Emergencies: (Medical Outside of USA): 651-632-9269
E-mail: naorgmsds@koppers.com

## Section 2 - HAZARDS IDENTIFICATION

**Classification in accordance with paragraph (d) of 29 CFR 1910.1200.**
Skin Sensitization - Category 1
Carcinogenicity - Category 1B
Hazardous to the Aquatic Environment - Acute - Category 3

**GHS Label Elements**

**Symbol(s)**

**Signal Word**
Danger

**Hazard Statement(s)**
May cause an allergic skin reaction.
May cause cancer.
Harmful to aquatic life.

**Precautionary Statement(s)**

**Prevention**
Avoid breathing vapor or mist.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/protective clothing/eye protection/face protection.
Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.
Avoid release to the environment.

**Response**
IF exposed or concerned: Get medical advice/attention.
IF ON SKIN: Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice/attention.
Wash contaminated clothing before reuse.

**Storage**
Store locked up.

**Disposal**
Dispose of contents/container in accordance with local/regional/national/international regulations.

**Other Hazards**
Heated material may cause thermal burns.

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

| CAS | Component Name | Percent |
|---|---|---|
| 69013-21-4 | Fuel oil, pyrolysis | 0-100 |
| 64741-62-4 | Clarified oils, petroleum, catalytic cracked | 0-100 |
| Not Available | The above listed complex substance contains the following constituents | - |
| 85-01-8 | Phenanthrene | 0.53-0.92 |
| 91-20-3 | Naphthalene | 0.09-0.63 |
| 243-17-4 | Benzo[b]fluorene | 0.2-0.6 |
| 91-57-6 | 2-Methylnaphthalene | 0.3-0.6 |
| 129-00-0 | Pyrene | 0.28-0.55 |
| 83-32-9 | Acenaphthene | 0.23-0.41 |
| 90-12-0 | 1-Methylnaphthalene | 0.3-0.4 |
| 120-12-7 | Anthracene | 0.21-0.35 |
| 206-44-0 | Fluoranthene | 0.16-0.32 |
| 132-64-9 | Dibenzofuran | 0.07-0.25 |
| 7704-34-9 | Sulfur | 0.174-0.243 |
| 189-64-0 | Dibenzo(a,h)pyrene | 0-0.2 |
| 86-73-7 | Fluorene | 0.1-0.2 |
| 238-84-6 | Benzo(a)fluorene | 0-0.2 |

| | | |
|---|---|---|
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 0.07-0.13 |
| 208-96-8 | Acenaphthylene | 0.08-0.12 |
| 56-55-3 | 1,2-Benzanthracene | 0.07-0.12 |
| 218-01-9 | 1,2-Benzphenanthrene | 0.07-0.12 |
| 53-70-3 | Dibenz(a,h)anthracene | 0-0.1 |
| 226-36-8 | Dibenz(a,h)acridine | 0-0.1 |
| 92-52-4 | Biphenyl | 0-0.1 |
| 217-59-4 | Triphenylene | 0-0.1 |
| 192-97-2 | Benzo(e)pyrene | 0-0.1 |
| 50-32-8 | Benzo(a)pyrene | 0.04-0.07 |
| 191-24-2 | Benzo(g,h,i)perylene | 0.0-0.04 |
| 7783-06-4 | Hydrogen sulfide | <0.04 |
| 91-22-5 | Quinoline | 0-0.02 |

### Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Aromatic hydrocarbons, polycyclic (130489-29-2).

## Section 4 - FIRST AID MEASURES

### Inhalation

If adverse effects occur, remove to uncontaminated area. Do not attempt rescue in confined spaces without adequate protective gear and proper training. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

### Skin

Take off immediately all contaminated clothing. Wash all affected skin areas with warm soapy water. Skin contact causes photosensitization which can last for 36-72 hours after exposure. Keep out of direct sunlight for the next two to three days to avoid sunburn to the photosensitized skin areas. Use a broad spectrum blockout cream to protect against UV alpha ray exposure. Get medical attention, if needed.

### Eyes

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Then get immediate medical attention.

### Ingestion

Not a likely route of exposure. Rinse mouth. Do NOT induce vomiting. If a large amount is swallowed, get medical attention. Do not give anything by mouth to an unconscious or convulsive person. If vomiting occurs, keep head lower than hips to help prevent aspiration.

### Most Important Symptoms/Effects

### Acute

allergic reactions, thermal burns from heated material

**Delayed**
allergic reactions, nasal cancer, skin cancer

**Indication of any immediate medical attention and special treatment needed**
Treat symptomatically and supportively.

## Section 5 - FIRE FIGHTING MEASURES

**Extinguishing Media**

**Suitable Extinguishing Media**
regular dry chemical, carbon dioxide, regular foam, water spray

**Unsuitable Extinguishing Media**
Do not use high-pressure water streams.

**Hazardous Combustion Products**
oxides of carbon, oxides of nitrogen, oxides of sulfur, hydrocarbons, hydrogen sulfide

**Advice for firefighters**
Slight fire hazard. During fire conditions, vapors and decomposition products may be released, forming flammable/explosive mixtures in air. Containers may rupture or explode if exposed to heat.

**Fire Fighting Measures**
Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Use extinguishing agents appropriate for surrounding fire. Flood with fine water spray. Directly spraying water or foam onto hot burning product may cause frothing. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire.

**Special Protective Equipment and Precautions for Firefighters**
Wear full protective firefighting gear including self-contained breathing apparatus (SCBA) for protection against possible exposure.

## Section 6 - ACCIDENTAL RELEASE MEASURES

**Personal Precautions, Protective Equipment and Emergency Procedures**
Wear personal protective clothing and equipment, see Section 8. Avoid release to the environment.

**Methods and Materials for Containment and Cleaning Up**
Stop leak if possible without personal risk. To prevent liquid from flowing into drains, completely contain spilled material with dikes, sandbags, etc. Collect spilled material in appropriate container for disposal. In Canada, report releases to provincial authorities, municipal authorities, or both, as required. Due to the concentration of Dibenz(a,h)anthracene and the CERCLA (40 CFR 302.4) reportable quantity of 1 pound, the release of 1000 pounds (160 gallons) of this product requires National Response Center notification. See Section 13 for waste disposal information.

## Section 7 - HANDLING AND STORAGE

**Precautions for Safe Handling**
Avoid breathing vapor or mist. Avoid breathing vapors of heated materials. Avoid contact with eyes, skin and clothing. When using do not eat, drink or smoke. Wear protective gloves/clothing and eye/face protection. Wash exposed areas thoroughly with soap and water, or a waterless hand cleaner, after skin contact and before eating, drinking, using tobacco products, or restrooms. Use protective skin cream on exposed skin before and during work shift. To reduce sun sensitivity a sun-blocking lotion can also be applied prior to application of a protective cream. Contaminated clothing should be removed and laundered before reuse. Contaminated work clothing should not be allowed out of the workplace unless laundered or decontaminated. After working with the product use warm soapy water and a wash cloth to thoroughly wash all areas of skin that have been contacted with product. After washing,

apply a broad spectrum UV blockout cream on exposed skin areas before going into sunlight. Keep out of strong sunlight for two to three days after being affected by the product. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

### Conditions for Safe Storage, Including any Incompatibilities

Store locked up.
Storage and handle in accordance with all current regulations and standards. Store in a tightly closed container. Store in a cool, dry place. Store in a well-ventilated area. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ. SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning. Keep separated from incompatible substances.

### Incompatible Materials

oxidizing materials

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### Component Exposure Limits

| | |
|---|---|
| **Fuel oil, pyrolysis** | **69013-21-4** |
| ACGIH: | 0.2 mg/m3 TWA as benzene-soluble aerosol (related to Pitch, coal tar, high-temperature) |
| OSHA (US): | 0.2 mg/m3 TWA (benzene soluble fraction ) (related to Pitch, coal tar, high-temperature) |
| **Clarified oils, petroleum, catalytic cracked** | **64741-62-4** |
| ACGIH: | 0.2 mg/m3 TWA as benzene-soluble aerosol (related to Pitch, coal tar, high-temperature) |
| OSHA (US): | 0.2 mg/m3 TWA (benzene soluble fraction ) (related to Pitch, coal tar, high-temperature) |
| **Naphthalene** | **91-20-3** |
| ACGIH: | 10 ppm TWA |
| | Skin - potential significant contribution to overall exposure by the cutaneous route |
| OSHA (US): | 10 ppm TWA ; 50 mg/m3 TWA |
| **2-Methylnaphthalene** | **91-57-6** |
| ACGIH: | 0.5 ppm TWA |
| | Skin - potential significant contribution to overall exposure by the cutaneous route |
| **1-Methylnaphthalene** | **90-12-0** |
| ACGIH: | 0.5 ppm TWA |

| | |
|---|---|
| | Skin - potential significant contribution to overall exposure by the cutaneous route |
| **Biphenyl** | **92-52-4** |
| ACGIH: | 0.2 ppm TWA |
| OSHA (US): | 0.2 ppm TWA ; 1 mg/m3 TWA |
| **Hydrogen sulfide** | **7783-06-4** |
| ACGIH: | 1 ppm TWA |
| | 5 ppm STEL |
| OSHA (US): | 20 ppm Ceiling |

### ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)

**Fuel oil, pyrolysis (69013-21-4)**

2.5 µg/l Medium: urine Time: end of shift at end of workweek Parameter: 1-Hydroxypyrene with hydrolysis (background ); Medium: urine Time: end of shift at end of workweek Parameter: 3-Hydroxybenzo(a)pyrene with hydrolysis (nonquantitative ) (related to Polycyclic aromatic hydrocarbons)

**Clarified oils, petroleum, catalytic cracked (64741-62-4)**

2.5 µg/l Medium: urine Time: end of shift at end of workweek Parameter: 1-Hydroxypyrene with hydrolysis (background ); Medium: urine Time: end of shift at end of workweek Parameter: 3-Hydroxybenzo(a)pyrene with hydrolysis (nonquantitative ) (related to Polycyclic aromatic hydrocarbons)

**Naphthalene (91-20-3)**

Time: end of shift Parameter: 1-Naphthol with hydrolysis plus 2-Naphthol with hydrolysis (nonquantitative, nonspecific )

### Engineering Controls

Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

### Individual Protection Measures, such as Personal Protective Equipment

### Eye/face protection

ANSI Z87.1-1989 approved safety glasses with side shields. Provide an emergency eye wash fountain and quick drench shower in the immediate work area. At elevated temperatures: A face shield is recommended.

### Skin Protection

Wear protective clothing to prevent contact. Wear long sleeved shirt or overalls fastened at wrists and neck, with long legged trousers with trouser legs worn outside over boot tops, boots, socks, and safety hat plus gloves. Use protective skin cream on exposed skin before and during work shift. Protective clothing must be changed when it shows signs of contamination. Remove and launder contaminated clothing separately from other laundry before reuse. When material is at an elevated temperature, wear appropriate heat resistant clothing.

### Respiratory Protection

If the applicable TLVs and/or PELs are exceeded, use NIOSH-approved multipurpose air-purifying cartridge respirators, for organic vapors and P-100 particulate. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are not known, or any other circumstance where air-purifying respirators may not provide adequate protection.

### Glove Recommendations

Wear appropriate gloves. When material is at an elevated temperature, wear appropriate heat resistant gloves.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---|---|---|---|
| **Appearance** | black Liquid | **Physical State** | liquid |
| **Odor** | none at room temperature ,aromatic when liquid | **Color** | black |
| **Odor Threshold** | Not available | **pH** | Not available |
| **Melting Point** | Not available | **Boiling Point** | 350 - 989 °F |
| **Boiling Point Range** | Not available | **Freezing point** | Not available |
| **Evaporation Rate** | Not available | **Flammability (solid, gas)** | Not applicable |
| **Autoignition Temperature** | Not available | **Flash Point** | 290 °F |
| **Lower Explosive Limit** | Not available | **Decomposition temperature** | Not available |
| **Upper Explosive Limit** | Not available | **Vapor Pressure** | Not available |
| **Vapor Density (air=1)** | Not available | **Specific Gravity (water=1)** | 1.13 |
| **Water Solubility** | Not available | **Partition coefficient: n-octanol/water** | Not available |
| **Viscosity** | Not available | **Kinematic viscosity** | Not available |
| **Solubility (Other)** | Not available | **Density** | Not available |
| **Physical Form** | Liquid | **Molecular Weight** | Not available |
| **OSHA Flammability Category** | 4 | | |

**Other Information**
None known.

## Section 10 - STABILITY AND REACTIVITY

**Reactivity**
No reactivity hazard is expected.

**Chemical Stability**
Stable at normal ambient temperatures and pressure.

### Possibility of Hazardous Reactions
Will not polymerize.

### Conditions to Avoid
Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat. Keep out of water supplies and sewers. Dangerous gases may accumulate in confined spaces.

### Incompatible Materials
oxidizing materials

### Hazardous decomposition products
oxides of carbon, oxides of nitrogen, oxides of sulfur, hydrocarbons, hydrogen sulfide

## Section 11 - TOXICOLOGICAL INFORMATION

### Information on Likely Routes of Exposure

### Inhalation
nasal cancer

### Skin Contact
thermal burns from heated material, allergic reactions, sensitivity to sunlight, skin cancer

### Eye Contact
sensitivity to sunlight, thermal burns from heated material

### Ingestion
thermal burns from heated material

### Acute and Chronic Toxicity

### Component Analysis - LD50/LC50
The components of this material have been reviewed in various sources and the following selected endpoints are published:
**Fuel oil, pyrolysis (69013-21-4)**
Oral LD50 Rat 3300 mg/kg (related to Pitch, coal tar, high-temperature)
Dermal LD50 Rat >5000 mg/kg (no deaths occurred ) (related to Pitch, coal tar, high-temperature)
**Clarified oils, petroleum, catalytic cracked (64741-62-4)**
Oral LD50 Rat 4320 - 5270 mg/kg
Dermal LD50 Rabbit >2000 mg/kg (no deaths occurred )
Inhalation LC50 Rat >3700 mg/m3 4 h (no deaths occurred )

### Product Toxicity Data

### Acute Toxicity Estimate

| | |
|---|---|
| Dermal | >2000 mg/kg |
| Inhalation - Dust and Mist | >5 mg/l |
| Oral | >2000 mg/kg |

### Immediate Effects
allergic reactions. thermal burns from heated material.

### Delayed Effects
allergic reactions, nasal cancer, skin cancer

### Irritation/Corrosivity Data
No data available.

### Respiratory Sensitization
No data available.

### Dermal Sensitization
Component data indicate the substance is sensitizing.

### Component Carcinogenicity

| | |
|---|---|
| **Fuel oil, pyrolysis** | **69013-21-4** |
| ACGIH: | A1 - Confirmed Human Carcinogen (related to Pitch, coal tar, high-temperature) |
| IARC: | Monograph 100F [2012] ; Supplement 7 [1987] ; Monograph 35 [1985] (related to Pitch, coal tar, high-temperature) (Group 1 (carcinogenic to humans)) |
| NTP: | Known Human Carcinogen (related to Pitch, coal tar, high-temperature) |
| NIOSH: | potential occupational carcinogen (related to Pitch, coal tar, high-temperature) |
| **Clarified oils, petroleum, catalytic cracked** | **64741-62-4** |
| ACGIH: | A1 - Confirmed Human Carcinogen (related to Pitch, coal tar, high-temperature) |
| IARC: | Monograph 100F [2012] ; Supplement 7 [1987] ; Monograph 35 [1985] (related to Pitch, coal tar, high-temperature) (Group 1 (carcinogenic to humans)) |
| NTP: | Known Human Carcinogen (related to Pitch, coal tar, high-temperature) |
| NIOSH: | potential occupational carcinogen (related to Pitch, coal tar, high-temperature) |

### Germ Cell Mutagenicity
No data available.

### Tumorigenic Data
No data available

### Reproductive Toxicity
No data available.

### Specific Target Organ Toxicity - Single Exposure
No data available.

### Specific Target Organ Toxicity - Repeated Exposure
No data available.

### Aspiration hazard
No data available.

### Medical Conditions Aggravated by Exposure
Medical conditions may include respiratory disorders, skin disorders and allergies, central nervous system disorders (i.e. headache, drowsiness, dizziness, loss of coordination), liver disorders, kidney disorders, spleen disorders, and heart disorders.

### Additional Data
Product: In addition to containing information about the product as a whole, this data sheet also contains information about individual components of the product. Information of this nature may not have been derived from studies or

data relating to this product and/or may have been derived from studies or data that did not involve human exposure and involved animal exposure only. Component: Some polycyclic aromatic hydrocarbons (PAHs) have been reported to cause lung and skin cancer in humans under conditions of prolonged/repeated exposure. The National Toxicology Program (NTP) and IARC have independently classified various PAH compounds as reasonably anticipated to be human carcinogens (NTP), probably carcinogenic to humans (IARC Group 2A), possibly carcinogenic to humans (IARC Group 2B), and not classifiable as to carcinogenicity to humans (IARC Group 3). The cancers reported in the studies upon which IARC based its conclusions involved lung, skin, liver, stomach, kidney and blood cancers in animals. Based on the results of animal experiments PAHs may cause injury to the liver, kidneys, lungs, blood and lymph systems. Some PAH's have also been associated with impaired fertility, heritable genetic damage and birth defects in mice. Skin application to mice of cracked bunker fuel (alone) and blended, induced benign and malignant skin tumors. Steam cracked residues produced an increase in the incidence of skin tumors after repeated skin applications to mice. Naphthalene. Inhalation studies in male and female rats produced olfactory epithelium neuroblastomas of the nose and nasal respiratory epithelium adenomas. Incidence of olfactory epithelium neuroblastoma increased with increased exposure and was significantly higher in female rats. Inhalation studies of female mice showed an increased incidence of lung tumors and an increased incidence of bronchiolo-alveolar adenomas.

## Section 12 - ECOLOGICAL INFORMATION

### Ecotoxicity
Harmful to aquatic life.

### Component Analysis - Aquatic Toxicity

| **Clarified oils, petroleum, catalytic cracked** | **64741-62-4** |
|---|---|
| Fish: | LC50 96 h Brachydanio rerio 48 mg/L [semi-static ] |

### Persistence and Degradability
No data available.

### Bioaccumulative Potential
No data available.

### Mobility
No data available.

### Other Toxicity
No data available.

## Section 13 - DISPOSAL CONSIDERATIONS

### Disposal Methods
Dispose in accordance with all applicable regulations.

### Component Waste Numbers
The U.S. EPA has not published waste numbers for this product's components.

## Section 14 - TRANSPORT INFORMATION

**US DOT Information:**
**Further information:** Petroleum Tar - Not regulated as a dangerous good, Not heated for transportation. This material is an 'OIL' under 49 CFR Part 130 when transported in a container of 3500 gallon capacity or greater.

### International Bulk Chemical Code
This material does not contain any chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

## Section 15 - REGULATORY INFORMATION

### U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

| | |
|---|---|
| **Phenanthrene** | **85-01-8** |
| SARA 313: | 1 % de minimis concentration |
| CERCLA: | 5000 lb final RQ ; 2270 kg final RQ |
| **Naphthalene** | **91-20-3** |
| SARA 313: | 0.1 % de minimis concentration |
| CERCLA: | 100 lb final RQ ; 45.4 kg final RQ |
| **Pyrene** | **129-00-0** |
| SARA 302: | 1000 lb lower TPQ ; 10000 lb upper TPQ |
| CERCLA: | 5000 lb final RQ ; 2270 kg final RQ |
| SARA 304: | 5000 lb EPCRA RQ |
| **Acenaphthene** | **83-32-9** |
| CERCLA: | 100 lb final RQ ; 45.4 kg final RQ |
| **Anthracene** | **120-12-7** |
| SARA 313: | 1 % de minimis concentration |
| CERCLA: | 5000 lb final RQ ; 2270 kg final RQ |
| **Fluoranthene** | **206-44-0** |
| SARA 313: | 1 % Supplier notification limit |
| CERCLA: | 100 lb final RQ ; 45.4 kg final RQ |
| **Dibenzofuran** | **132-64-9** |
| SARA 313: | 1 % de minimis concentration |
| CERCLA: | 100 lb final RQ ; 45.4 kg final RQ |
| **Dibenzo(a,h)pyrene** | **189-64-0** |
| SARA 313: | 0.1 % Supplier notification limit |
| **Fluorene** | **86-73-7** |

| | |
|---|---|
| CERCLA: | 5000 lb final RQ ; 2270 kg final RQ |
| **Indeno(1,2,3-cd)pyrene** | **193-39-5** |
| SARA 313: | 0.1 % Supplier notification limit |
| CERCLA: | 100 lb final RQ ; 45.4 kg final RQ |
| **Acenaphthylene** | **208-96-8** |
| CERCLA: | 5000 lb final RQ ; 2270 kg final RQ |
| **1,2-Benzanthracene** | **56-55-3** |
| SARA 313: | 0.1 % Supplier notification limit |
| CERCLA: | 10 lb final RQ ; 4.54 kg final RQ |
| **1,2-Benzphenanthrene** | **218-01-9** |
| SARA 313: | 1 % Supplier notification limit |
| CERCLA: | 100 lb final RQ ; 45.4 kg final RQ |
| **Dibenz(a,h)anthracene** | **53-70-3** |
| SARA 313: | 0.1 % Supplier notification limit |
| CERCLA: | 1 lb final RQ ; 0.454 kg final RQ |
| **Dibenz(a,h)acridine** | **226-36-8** |
| SARA 313: | 0.1 % Supplier notification limit |
| **Biphenyl** | **92-52-4** |
| SARA 313: | 1 % de minimis concentration |
| CERCLA: | 100 lb final RQ ; 45.4 kg final RQ |
| **Benzo(a)pyrene** | **50-32-8** |
| SARA 313: | 0.1 % Supplier notification limit |
| CERCLA: | 1 lb final RQ ; 0.454 kg final RQ |
| **Benzo(g,h,i)perylene** | **191-24-2** |
| SARA 313: | 1 % Supplier notification limit |
| CERCLA: | 5000 lb final RQ ; 2270 kg final RQ |
| **Hydrogen sulfide** | **7783-06-4** |

| | |
|---|---|
| SARA 302: | 500 lb TPQ |
| SARA 313: | 1 % de minimis concentration |
| CERCLA: | 100 lb final RQ ; 45.4 kg final RQ |
| OSHA (safety): | 1500 lb TQ |
| SARA 304: | 100 lb EPCRA RQ |
| **Quinoline** | **91-22-5** |
| SARA 313: | 1 % de minimis concentration |
| CERCLA: | 5000 lb final RQ ; 2270 kg final RQ |

**SARA Section 311/312 (40 CFR 370 Subparts B and C) reporting categories**
Carcinogenicity; Respiratory/Skin Sensitization

**U.S. State Regulations**
The following components appear on one or more of the following state hazardous substances lists:

| Component | CAS | CA | MA | MN | NJ | PA |
|---|---|---|---|---|---|---|
| **Fuel oil, pyrolysis** | **69013-21-4** | Yes | Yes | Yes | Yes | Yes |
| **Clarified oils, petroleum, catalytic cracked** | **64741-62-4** | Yes | Yes | Yes | Yes | Yes |

**California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)**

**WARNING**

This product can expose you to chemicals including Naphthalene, Dibenzo(a,h)pyrene, Indeno(1,2,3-cd)pyrene, 1,2-Benzanthracene, 1,2-Benzphenanthrene, Dibenz(a,h)anthracene, Dibenz(a,h)acridine, Benzo(a)pyrene, Quinoline , which are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

**Canada Regulations**

**Canadian WHMIS Ingredient Disclosure List (IDL)**
Components of this material have been checked against the Canadian WHMIS Ingredients Disclosure List. The List is composed of chemicals which must be identified on MSDSs if they are included in products which meet WHMIS criteria specified in the Controlled Products Regulations and are present above the threshold limits listed on the IDL

| | |
|---|---|
| **Fuel oil, pyrolysis** | **69013-21-4** |
| | 0.1 % (related to Pitch, coal tar, high-temperature) |
| **Clarified oils, petroleum, catalytic cracked** | **64741-62-4** |
| | 0.1 % (related to Pitch, coal tar, high-temperature) |

| | |
|---|---|
| **Dibenzo(a,h)pyrene** | **189-64-0** |
| | 0.1 % |
| **Indeno(1,2,3-cd)pyrene** | **193-39-5** |
| | 0.1 % |
| **1,2-Benzanthracene** | **56-55-3** |
| | 0.1 % |
| **1,2-Benzphenanthrene** | **218-01-9** |
| | 0.1 % |
| **Dibenz(a,h)anthracene** | **53-70-3** |
| | 0.1 % |
| **Dibenz(a,h)acridine** | **226-36-8** |
| | 0.1 % |

**WHMIS Classification**
D2A , D2B

**Component Analysis - Inventory**
**Fuel oil, pyrolysis (69013-21-4)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | No | No | No | No | No | No | No | No | No | Yes | No |

**Clarified oils, petroleum, catalytic cracked (64741-62-4)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | No | No | No | Yes | No | No | Yes | Yes | No | Yes | Yes |

**The above listed complex substance contains the following constituents (Not Available)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - | KR KECI - | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Annex 1 | Annex 2 | | | | | | |
| No | No | No | No | No | No | No | No | No | No | No | No | No | No | No |

**Phenanthrene (85-01-8)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | Yes | No | No | Yes | Yes | Yes | Yes | Yes |

**Naphthalene (91-20-3)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | Yes | No | No | Yes | Yes | Yes | Yes | Yes |

**2-Methylnaphthalene (91-57-6)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | No | No | No | Yes | Yes | Yes | Yes | Yes |

**Pyrene (129-00-0)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | Yes | No | No | Yes | Yes | Yes | Yes | Yes |

**Acenaphthene (83-32-9)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | Yes | No | No | Yes | Yes | No | Yes | Yes |

**1-Methylnaphthalene (90-12-0)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | No | No | No | Yes | Yes | No | Yes | Yes |

**Anthracene (120-12-7)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | Yes | No | No | Yes | Yes | Yes | Yes | Yes |

**Fluoranthene (206-44-0)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | NSL | EIN | Yes | No | Yes | Yes | No | No | No | Yes | Yes | No | Yes | Yes |

**Dibenzofuran (132-64-9)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | No | Yes | No | Yes | Yes | No | Yes | Yes |

**Dibenzo(a,h)pyrene (189-64-0)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No | No | EIN | No | No | No | No | No | No | No | No | No | Yes | Yes | Yes |

**Fluorene (86-73-7)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | No | Yes | No | Yes | Yes | No | Yes | Yes |

**Indeno(1,2,3-cd)pyrene (193-39-5)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | NSL | EIN | No | No | No | No | No | No | No | No | Yes | Yes | Yes | Yes |

**Acenaphthylene (208-96-8)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | NSL | EIN | No | Yes | Yes | Yes | No | No | No | No | Yes | Yes | Yes | Yes |

**1,2-Benzanthracene (56-55-3)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | NSL | EIN | No | No | No | No | No | No | No | Yes | Yes | No | Yes | Yes |

**1,2-Benzphenanthrene (218-01-9)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | No | No | No | Yes | No | No | No | Yes | No | Yes | Yes |

**Dibenz(a,h)anthracene (53-70-3)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | NSL | EIN | No | No | No | No | No | No | No | Yes | Yes | Yes | Yes | Yes |

**Dibenz(a,h)acridine (226-36-8)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No | No | No | No | No | No | No | No | No | No | No | No | Yes | No | Yes |

**Biphenyl (92-52-4)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | Yes | No | No | Yes | Yes | Yes | Yes | Yes |

**Benzo(a)pyrene (50-32-8)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | No | Yes | No | No | Yes | No | No | Yes | Yes | Yes | Yes | Yes |

**Benzo(g,h,i)perylene (191-24-2)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No | No | EIN | No | No | No | No | No | No | No | No | Yes | Yes | Yes | Yes |

**Hydrogen sulfide (7783-06-4)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | Yes | No | No | Yes | Yes | Yes | Yes | Yes |

**Quinoline (91-22-5)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes | Yes | Yes |

**U.S. Inventory (TSCA)**
Listed on inventory.

## Section 16 - OTHER INFORMATION

**NFPA Ratings**
Health: 2 Fire: 1 Reactivity: 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

**Summary of Changes**
Updated: 8/2/2018; MSDS SUMMARY OF CHANGES: SECTION 14 - TRANSPORTATION INFORMATION

**Key / Legend**
ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania*; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CFR - Code of Federal Regulations (US); CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EC – European Commission; EEC - European Economic Community; EIN - European Inventory of (Existing Commercial Chemical Substances); EINECS - European Inventory of Existing Commercial Chemical Substances; ENCS - Japan Existing and New Chemical Substance Inventory; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; F - Background (for Venezuela Biological Exposure Indices); IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH -

Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; ISHL - Japan Industrial Safety and Health Law; IUCLID - International Uniform Chemical Information Database; JP - Japan; Kow - Octanol/water partition coefficient; KR KECI Annex 1 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR KECI Annex 2 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL) , KR - Korea; LD50/LC50 - Lethal Dose/ Lethal Concentration; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of LIsts™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX – Mexico; Ne- Non-specific; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; Nq - Non-quantitative; NSL – Non-Domestic Substance List (Canada); NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PEL- Permissible Exposure Limit; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; Sc - Semi-quantitative; STEL - Short-term Exposure Limit; TCCA – Korea Toxic Chemicals Control Act; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TW – Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); VN (Draft) - Vietnam (Draft); WHMIS - Workplace Hazardous Materials Information System (Canada).

### Other Information

**Disclaimer:**

The information set forth in this Safety Data Sheet does not purport to be all-inclusive and should be used only as a guide. While the information and recommendations set forth herein are believed to be accurate, the company makes no warranty regarding such information and recommendations and disclaims all liability from reliance thereon.

# Document 11

## Section 1 - PRODUCT AND COMPANY IDENTIFICATION

**Material Name**
CRUDE COKE OVEN TAR, CRUDE COAL TAR

**Synonyms**
CENTRIFUGE TAR

**Product Use**
process chemical.

**Restrictions on Use**
None known.

**Details of the supplier of the safety data sheet**
KOPPERS INC.
436 Seventh Avenue
Pittsburgh, PA 15219-1800
Mfg Contact: 412-227-2001 (SDS Requests: 866-852-5239)

CHEMTREC: 800-424-9300 (Outside USA: +1 703-527-3887)
Emergencies: (Medical in USA): 877-737-9047
Emergencies: (Medical Outside of USA): 651-632-9269
E-mail: naorgmsds@koppers.com

## Section 2 - HAZARDS IDENTIFICATION

**Classification in accordance with paragraph (d) of 29 CFR 1910.1200.**
Acute Toxicity - Dermal - Category 4
Acute Toxicity - Inhalation - Dust/Mist - Category 3
Skin Corrosion/Irritation - Category 2
Serious Eye Damage/Eye Irritation - Category 2A
Skin Sensitization - Category 1
Germ Cell Mutagenicity - Category 1B
Carcinogenicity - Category 1A
Reproductive Toxicity - Category 1B
Specific target organ toxicity - Single exposure - Category 1 ( blood , respiratory system , kidneys , nervous system , heart )
Specific target organ toxicity - Single exposure - Category 2 ( eyes )
Specific Target Organ Toxicity - Repeated Exposure - Category 1 ( blood , eyes , respiratory system , central nervous system )
Hazardous to the Aquatic Environment - Acute - Category 2
Hazardous to the Aquatic Environment - Chronic - Category 2

**GHS Label Elements**

**Symbol(s)**

**Signal Word**
Danger

### Hazard Statement(s)

Toxic if inhaled.
Harmful in contact with skin.
Causes skin irritation.
Causes serious eye irritation.
May cause an allergic skin reaction.
May cause genetic defects.
May cause cancer.
May damage fertility or the unborn child.
Causes damage to organs. (blood , respiratory system , kidneys , nervous system , heart )
May cause damage to organs. (eyes )
Causes damage to organs through prolonged or repeated exposure. (blood , eyes , respiratory system , central nervous system )
Toxic to aquatic life with long lasting effects.

### Precautionary Statement(s)

### Prevention

Do not breathe vapor or mist.
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Do not eat, drink or smoke when using this product.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/protective clothing/eye protection/face protection.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid release to the environment.

### Response

IF exposed or concerned: Get medical advice/attention.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a POISON CENTER or doctor/physician.
IF ON SKIN: Wash with plenty of soap and water.
Call a POISON CENTER or doctor/physician if you feel unwell.
If skin irritation or rash occurs: Get medical advice/attention.
Take off contaminated clothing and wash before reuse.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
Collect spillage.

### Storage

Store in a well-ventilated place.
Keep container tightly closed.
Store locked up.

### Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

### Statement(s) of Unknown Acute Toxicity

Dermal 72% of the mixture consists of ingredient(s) of unknown acute toxicity.
Inhalation 97% of the mixture consists of ingredient(s) of unknown acute toxicity.

### Other Hazards

Heated material may cause thermal burns.

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

| CAS | Component Name | Percent |
|---|---|---|
| 65996-89-6 | Tar, coal, high-temperature | 100 |
| - | The above listed complex substance contains the following constituents | - |
| Not Available | POLYCYCLIC AROMATIC HYDROCARBONS | 7.0-31.0 |
| 91-20-3 | Naphthalene | 3.0-12.0 |
| 85-01-8 | Phenanthrene | 2.5-7.5 |
| 206-44-0 | Fluoranthene | 1.5-5.0 |
| 120-12-7 | Anthracene | 0.7-4.0 |
| 83-32-9 | Acenaphthene | 0.10-3.0 |
| 205-99-2 | Benzo(b)fluoranthene | 0.4-2.5 |
| 132-64-9 | Dibenzofuran | 1.0-2.5 |
| 50-32-8 | Benzo[a]pyrene | 0.1-2.0 |
| 56-55-3 | Benz[a]anthracene | 0.5-1.6 |
| 207-08-9 | Benzo(k)fluoranthene | 0.1-1.5 |
| 218-01-9 | Chrysene | 0.1-1.5 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 0.1-1.0 |
| 108-88-3 | TOLUENE | 0.1-1.0 |
| 71-43-2 | Benzene | 0.1-1.0 |
| 108-95-2 | Phenol | 0.1-1.0 |

**Component Related Regulatory Information**
This product may be regulated, have exposure limits or other information identified as the following: Aromatic hydrocarbons, polycyclic (130489-29-2).

## Section 4 - FIRST AID MEASURES

**Inhalation**
If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

**Skin**
Take off immediately all contaminated clothing. Wash all affected skin areas with warm soapy water. Skin contact causes photosensitization which can last for 36-72 hours after exposure. Keep out of direct sunlight for the next two

to three days to avoid sunburn to the photosensitized skin areas. Use a broad spectrum blockout cream to protect against UV alpha ray exposure. Get medical attention, if needed.

### Eyes
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Then get immediate medical attention.

### Ingestion
Not a likely route of exposure. Rinse mouth. Do NOT induce vomiting. If a large amount is swallowed, get medical attention. Do not give anything by mouth to unconscious or convulsive person. If vomiting occurs, keep head lower than hips to help prevent aspiration.

### Most Important Symptoms/Effects

### Acute
Harmful in contact with skin, toxic if inhaled, skin irritation, eye irritation, thermal burns from heated material, allergic reactions, blood damage, respiratory system damage, kidney damage, nervous system damage, heart damage, eye damage

### Delayed
allergic reactions, mutagenic effects, Reproductive Effects, blood damage, eye damage, respiratory system damage, central nervous system damage, lung cancer, bladder cancer, skin cancer, scrotal cancer

### Indication of any immediate medical attention and special treatment needed
Treat symptomatically and supportively.

## Section 5 - FIRE FIGHTING MEASURES

### Extinguishing Media

### Suitable Extinguishing Media
regular dry chemical, carbon dioxide, regular foam, water spray, fog or mist

### Unsuitable Extinguishing Media
Do not use high-pressure water streams.

### Hazardous Combustion Products
oxides of carbon

### Advice for firefighters
Contact with heat may generate toxic and/or flammable gases. Containers may rupture or explode if exposed to heat.

### Fire Fighting Measures
Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Use extinguishing agents appropriate for surrounding fire. Flood with fine water spray. Directly spraying water or foam onto hot burning product may cause frothing. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire.

### Special Protective Equipment and Precautions for Firefighters
Wear full protective firefighting gear including self-contained breathing apparatus (SCBA) for protection against possible exposure.

## Section 6 - ACCIDENTAL RELEASE MEASURES

### Personal Precautions, Protective Equipment and Emergency Procedures
Wear personal protective clothing and equipment, see Section 8. Avoid release to the environment.

### Methods and Materials for Containment and Cleaning Up

Stop leak if possible without personal risk. To prevent liquid from flowing into drains, completely contain spilled material with dikes, sandbags, etc. Collect spilled material in appropriate container for disposal. In Canada, report releases to provincial authorities, municipal authorities, or both, as required. Due to the concentration of Benzo(b)fluoranthene and the CERCLA (40 CFR 302.4) reportable quantity of 1 pound, the release of 40 pounds (4 gallons) of this product requires National Response Center notification. See Section 13 for waste disposal information.

## Section 7 - HANDLING AND STORAGE

### Precautions for Safe Handling

Do not breathe vapor or mist. Avoid breathing vapors of heated materials. Avoid contact with eyes, skin and clothing. Use only outdoors or in a well-ventilated area. When using, do not eat, drink or smoke. Wear protective gloves/clothing and eye/face protection. Wash exposed areas thoroughly with soap and water, or a waterless hand cleaner, after skin contact and before eating, drinking, using tobacco products, or restrooms. Use protective skin cream on exposed skin before and during work shift. To reduce sun sensitivity a sun-blocking lotion can also be applied prior to application of a protective cream. Contaminated clothing should be removed and laundered before reuse. Contaminated work clothing should not be allowed out of the workplace unless laundered or decontaminated. After working with the product use warm soapy water and a wash cloth to thoroughly wash all areas of skin that have been contacted with product. After washing, apply a broad spectrum UV blockout cream on exposed skin areas before going into sunlight. Keep out of strong sunlight for two to three days after being affected by the product. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

### Conditions for Safe Storage, Including any Incompatibilities

Store in a well-ventilated place.
Keep container tightly closed.
Store locked up.
Store and handle in accordance with all current regulations and standards. Label all containers. Keep in a closed, properly labeled container in a cool (shaded), dry, well-ventilated area. Protect from physical damage. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355 Part B).

### Incompatible Materials

oxidizing materials

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### Component Exposure Limits

| | |
|---|---|
| **Tar, coal, high-temperature** | **65996-89-6** |
| ACGIH: | 0.2 mg/m3 TWA as benzene-soluble aerosol (related to Pitch, coal tar, high-temperature) |
| OSHA (US): | 0.2 mg/m3 TWA (benzene soluble fraction ) (related to Pitch, coal tar, high-temperature) |
| **Naphthalene** | **91-20-3** |
| ACGIH: | 10 ppm TWA |
| | Skin - potential significant contribution to overall exposure by the cutaneous route |
| OSHA (US): | 10 ppm TWA ; 50 mg/m3 TWA |

| | |
|---|---|
| **Benzene** | **71-43-2** |
| ACGIH: | 0.5 ppm TWA |
| | 2.5 ppm STEL |
| | Skin - potential significant contribution to overall exposure by the cutaneous route |
| OSHA (US): | 10 ppm TWA applies to industry segments exempt from the benzene standard at 29 CFR 1910.1028 ; 1 ppm TWA |
| | 5 ppm STEL (See 29 CFR 1910.1028 ) 15 min ; 0.5 ppm Action Level ; 1 ppm TWA |
| | 5 ppm STEL (see 29 CFR 1910.1028 ) |
| | 25 ppm Ceiling |
| **Phenol** | **108-95-2** |
| ACGIH: | 5 ppm TWA |
| | Skin - potential significant contribution to overall exposure by the cutaneous route |
| OSHA (US): | 5 ppm TWA ; 19 mg/m3 TWA |
| | prevent or reduce skin absorption |

### ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)

**Tar, coal, high-temperature (65996-89-6)**
Medium: urine Time: end of shift at end of workweek Parameter: 1-Hydroxypyrene with hydrolysis (nonquantitative ) (related to Pitch, coal tar, high-temperature)
**Naphthalene (91-20-3)**
Time: end of shift Parameter: 1-Naphthol with hydrolysis plus 2-Naphthol with hydrolysis (nonquantitative, nonspecific )
**Benzene (71-43-2)**
25 µg/g creatinine Medium: urine Time: end of shift Parameter: S-Phenylmercapturic acid (background ); 500 µg/g creatinine Medium: urine Time: end of shift Parameter: t,t-Muconic acid (background )
**Phenol (108-95-2)**
250 mg/g creatinine Medium: urine Time: end of shift Parameter: Phenol with hydrolysis (background, nonspecific )

### Engineering Controls

Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

### Individual Protection Measures, such as Personal Protective Equipment

### Eye/face protection

ANSI Z87.1-1989 approved safety glasses with side shields. Provide an emergency eye wash fountain and quick drench shower in the immediate work area. At elevated temperatures: A face shield is recommended.

### Skin Protection

Wear protective clothing to prevent contact. Wear long sleeved shirt or overalls fastened at wrists and neck, with long legged trousers with trouser legs worn outside over boot tops, boots, socks, and safety hat plus gloves. Use protective skin cream on exposed skin before and during work shift. Protective clothing must be changed when it shows signs of contamination. Remove and launder contaminated clothing separately from other laundry before reuse. When material is at an elevated temperature, wear appropriate heat resistant clothing.

### Respiratory Protection
If the applicable TLVs and/or PELs are exceeded, use NIOSH-approved multipurpose air-purifying cartridge respirators, for organic vapors and P-100 particulate.

### Glove Recommendations
Wear appropriate chemical resistant gloves. When material is at an elevated temperature, wear appropriate heat resistant gloves.

### Protective Materials
protective skin cream, chemical resistant material, heat resistant material

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---|---|---|---|
| **Appearance** | black viscous Liquid | **Physical State** | liquid |
| **Odor** | aromatic odor | **Color** | black |
| **Odor Threshold** | Not available | **pH** | Not applicable |
| **Melting Point** | 16.6 °F | **Boiling Point** | 410 °F |
| **Boiling Point Range** | Not available | **Freezing point** | Not available |
| **Evaporation Rate** | Not available | **Flammability (solid, gas)** | Not applicable |
| **Autoignition Temperature** | Not available | **Flash Point** | >205 °F |
| **Lower Explosive Limit** | Not available | **Decomposition temperature** | Not available |
| **Upper Explosive Limit** | Not available | **Vapor Pressure** | 0.2 - 1 mmHg @ 68 °C |
| **Vapor Density (air=1)** | Not available | **Specific Gravity (water=1)** | 1.16 |
| **Water Solubility** | Not available | **Partition coefficient: n-octanol/water** | Not available |
| **Viscosity** | >20.5 mm2/s | **Kinematic viscosity** | Not available |
| **Solubility (Other)** | Not available | **Density** | Not available |
| **Physical Form** | viscous liquid | **Texture** | viscous |
| **Molecular Weight** | Not available | **OSHA Flammability Category** | 4 |

### Other Information
None known

## Section 10 - STABILITY AND REACTIVITY

### Reactivity
No reactivity hazard is expected.

### Chemical Stability
Stable at normal temperatures and pressure.

### Possibility of Hazardous Reactions
Will not polymerize.

### Conditions to Avoid
Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials. Containers may rupture or explode if exposed to heat. Keep out of water supplies and sewers.

### Incompatible Materials
oxidizing materials

### Hazardous decomposition products
oxides of carbon

## Section 11 - TOXICOLOGICAL INFORMATION

### Information on Likely Routes of Exposure

**Inhalation**
respiratory system damage, central nervous system damage, eye damage, blood damage, kidney damage, lung cancer, bladder cancer

**Skin Contact**
irritation, sensitivity to sunlight, allergic reactions, thermal burns from heated material, eye damage, Reproductive Effects, central nervous system damage, blood damage, kidney damage, nervous system damage, skin cancer, scrotal cancer

**Eye Contact**
irritation, sensitivity to sunlight, thermal burns from heated material, eye damage

**Ingestion**
thermal burns from heated material, eye damage, central nervous system damage, blood damage, nervous system damage, kidney damage

### Acute and Chronic Toxicity

### Component Analysis - LD50/LC50
The components of this material have been reviewed in various sources and the following selected endpoints are published:
**Tar, coal, high-temperature (65996-89-6)**
Oral LD50 Rat 3300 mg/kg (related to Pitch, coal tar, high-temperature)
Dermal LD50 Rat >5000 mg/kg (no deaths occurred ) (related to Pitch, coal tar, high-temperature)
**Naphthalene (91-20-3)**
Oral LD50 Rat 1110 mg/kg
Dermal LD50 Rabbit 1120 mg/kg
Inhalation LC50 Rat >340 mg/m3 1 h
**Phenol (108-95-2)**
Oral LD50 Rat 340 mg/kg
Dermal LD50 Rabbit 630 mg/kg

### Product Toxicity Data

**Acute Toxicity Estimate**

| | |
|---|---|
| Dermal | 1174.01 mg/kg |
| Inhalation - Dust and Mist | 2.72 mg/L |
| Oral | >2000 mg/kg |

**Immediate Effects**

Harmful in contact with skin, toxic if inhaled, skin irritation, eye irritation, thermal burns from heated material, allergic reactions, blood damage, respiratory system damage, kidney damage, nervous system damage, heart damage, eye damage.

### Delayed Effects
allergic reactions, mutagenic effects, Reproductive Effects, blood damage, eye damage, respiratory system damage, central nervous system damage, lung cancer, bladder cancer, skin cancer, scrotal cancer

### Irritation/Corrosivity Data
Erythema/eschar score: very slight

### Respiratory Sensitization
No evidence that the material can lead to respiratory hypersensitivity.

### Dermal Sensitization
Component data indicate the substance is sensitizing.

### Component Carcinogenicity

| **Tar, coal, high-temperature** | **65996-89-6** |
|---|---|
| ACGIH: | A1 - Confirmed Human Carcinogen (related to Pitch, coal tar, high-temperature) |
| IARC: | Supplement 7 [1987] (Group 1 (carcinogenic to humans)) |
| NTP: | Known Human Carcinogen (related to Pitch, coal tar, high-temperature) |
| NIOSH: | potential occupational carcinogen (related to Pitch, coal tar, high-temperature) |

May cause cancer. NOAEL: 36 mg/kg bw/day - oral.

### Germ Cell Mutagenicity
Bacterial Reverse Mutation Test – positive. May cause genetic defects.

### Tumorigenic Data
No data available

### Reproductive Toxicity
Available data characterizes this substance as a reproductive hazard. May damage fertility or the unborn child.

### Specific Target Organ Toxicity - Single Exposure
blood, respiratory system, kidneys, nervous system, heart, eyes

### Specific Target Organ Toxicity - Repeated Exposure
blood, eyes, respiratory system, central nervous system

### Aspiration hazard
Not expected to be an aspiration hazard.

### Medical Conditions Aggravated by Exposure
respiratory disorders, skin disorders and allergies, eye disorders, central nervous system disorders (i.e. headache, drowsiness, dizziness, loss of coordination) blood system disorders, metabolic disorders, immune system disorders or allergies

### Additional Data
Coal tars are listed in the IARC monographs as carcinogenic to humans (Group 1). IARC's evaluation is based on evidence from the first half of the 20th century that occupational exposures to coal-tar derived products are associated with skin cancer in humans. There are also case reports and a few other studies on occupational exposures to coal-tars that are consistent with this evaluation. Epidemiological studies provide evidence that certain exposures

in the coke production industry are carcinogenic to humans, giving rise to lung cancer possibly from coal-tar fume. Also, there is evidence for the carcinogenicity in experimental animals of coal-tars. Today, with the use of engineering controls and personal protective equipment, occupational exposure to coal tar derived components is expected to be below permissible limits (measured as CTPVs). In addition to containing information about the product as a whole, this data sheet also contains information about individual components of the product. Information of this nature may not have been derived from studies or data relating to this product and/or may have been derived from studies or data that did not involve human exposure and involved animal exposure only. Some polycyclic aromatic hydrocarbons (PAHs), found in coal tar complex substances, have been reported to cause lung and skin cancer in humans under conditions of poor personal hygiene, prolonged/repeated contact, and exposure to sunlight. The National Toxicology Program (NTP) and IARC have independently classified various PAH compounds present in coal tar substances as reasonably anticipated to be human carcinogens (NTP), probably carcinogenic to humans (IARC Group 2A), possibly carcinogenic to humans (IARC Group 2B), and not classifiable as to carcinogenicity to humans (IARC Group 3). The cancers reported in the studies upon which IARC based its conclusions involved lung, skin, liver, stomach, kidney and blood cancers in animals. Based on the results of animal experiments PAHs may cause injury to the liver, kidneys, lungs, blood and lymph systems. Some PAH's have also been associated with impaired fertility, heritable genetic damage and birth defects in mice.

## Section 12 - ECOLOGICAL INFORMATION

### Ecotoxicity
Toxic to aquatic life with long lasting effects.

### Component Analysis - Aquatic Toxicity

| **Tar, coal, high-temperature** | **65996-89-6** |
|---|---|
| Fish: | LC50 96 h Oryzias latipes 7.33 - 235 mg/L [semi-static ] |
| Algae: | EC50 72 h Pseudokirchneriella subcapitata 0.015 mg/L IUCLID |
| Invertebrate: | LC50 48 h Daphnia magna 4.44 - 11.2 mg/L IUCLID |

### Fish Toxicity
>250 mg/l 96 hour(s) LL50 Brachydanio rerio (Zebra fish)

### Invertebrate Toxicity
2.8 mg/l 48 hour(s) EL50 Daphnia magna.

### Algal Toxicity
29 mg/l 72 hour(s) EL50 Desmodesmus subspicatus. 5 mg/l 72 hour(s) NOELR.

### Persistence and Degradability
Highly insoluble in water.

### Bioaccumulative Potential
This material is believed not to bioaccumulate due to low water solubility. Highly insoluble in water.

### Mobility
Highly insoluble in water.

### Other Toxicity
No data available.

## Section 13 - DISPOSAL CONSIDERATIONS

### Disposal Methods

Dispose in accordance with all applicable regulations. Based on the results of the Toxicity Characteristic Leaching Procedure (TCLP): Benzene - D018 (toxicity >/= 0.5 ppm).

### Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

## Section 14 - TRANSPORT INFORMATION

**US DOT Information:**
**Shipping Name:** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. , ( Contains: BENZO(A)PYRENE , BENZO(B)FLUORANTHENE , NAPHTHALENE ) RQ
**Hazard Class:** 9
**UN/NA #:** UN3082
**Packing Group:** III
**Required Label(s):** 9
Marine pollutant
**Further information:** For International Shipments: RQ Environmentally hazardous substances, liquid, n.o.s. ID Number UN3082 This material contains reportable quantity (RQ) Hazardous Substances.

**IATA Information:**
**Shipping Name:** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. , ( Contains: BENZO(A)PYRENE , BENZO(B)FLUORANTHENE , NAPHTHALENE ) RQ
**Hazard Class:** 9
**UN#:** UN3082
**Packing Group:** III
**Required Label(s):** 9
Marine pollutant
**Further information:** Passenger & Cargo Aircraft - Ltd. Qty. - (Packing Instruction / Max. Net Qty. per Pkg.): Y964 / 30 kg GPassenger & Cargo Aircraft (Packing Instruction / Max. Net Qty. per Pkg.): 964 / 450 L ERG Code: 9L

**TDG Information:**
**Shipping Name:** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. , ( Contains: BENZO(A)PYRENE , BENZO(B)FLUORANTHENE , NAPHTHALENE ) RQ
**Hazard Class:** 9
**UN#:** UN3082
**Packing Group:** III
**Required Label(s):** 9
Marine pollutant

### International Bulk Chemical Code

This material contains one or more of the following chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

| | |
|---|---|
| **Tar, coal, high-temperature** | **65996-89-6** |
| IBC Code: | Category X (molten ) (related to Pitch, coal tar, high-temperature) |

### Further information

STCC Code: 2814137; HAZ STCC Code: 4966312, ERG: 171 US DOT Reportable Quantites BENZO(B)FLUORANTHENE (205-99-2) 1 lbs RQ; 0.454 kg RQ

## Section 15 - REGULATORY INFORMATION

### U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

| | |
|---|---|
| **Tar, coal, high-temperature** | **65996-89-6** |
| TSCA 12b: | Section 4 , 1 % de minimus concentration |
| **Naphthalene** | **91-20-3** |
| SARA 313: | 0.1 % de minimis concentration |
| CERCLA: | 100 lb final RQ ; 45.4 kg final RQ |
| **Phenanthrene** | **85-01-8** |
| SARA 313: | 1 % de minimis concentration |
| CERCLA: | 5000 lb final RQ ; 2270 kg final RQ |
| **Fluoranthene** | **206-44-0** |
| SARA 313: | 1 % Supplier notification limit |
| CERCLA: | 100 lb final RQ ; 45.4 kg final RQ |
| **Anthracene** | **120-12-7** |
| SARA 313: | 1 % de minimis concentration |
| CERCLA: | 5000 lb final RQ ; 2270 kg final RQ |
| **Acenaphthene** | **83-32-9** |
| CERCLA: | 100 lb final RQ ; 45.4 kg final RQ |
| **Benzo(b)fluoranthene** | **205-99-2** |
| SARA 313: | 0.1 % Supplier notification limit |
| CERCLA: | 1 lb final RQ ; 0.454 kg final RQ |
| **Dibenzofuran** | **132-64-9** |
| SARA 313: | 1 % de minimis concentration |
| CERCLA: | 100 lb final RQ ; 45.4 kg final RQ |
| **Benzo[a]pyrene** | **50-32-8** |
| SARA 313: | 0.1 % Supplier notification limit |
| CERCLA: | 1 lb final RQ ; 0.454 kg final RQ |

| | |
|---|---|
| **Benz[a]anthracene** | **56-55-3** |
| SARA 313: | 0.1 % Supplier notification limit |
| CERCLA: | 10 lb final RQ ; 4.54 kg final RQ |
| **Benzo(k)fluoranthene** | **207-08-9** |
| SARA 313: | 0.1 % Supplier notification limit |
| CERCLA: | 5000 lb final RQ ; 2270 kg final RQ |
| **Chrysene** | **218-01-9** |
| SARA 313: | 1 % Supplier notification limit |
| CERCLA: | 100 lb final RQ ; 45.4 kg final RQ |
| **Indeno(1,2,3-cd)pyrene** | **193-39-5** |
| SARA 313: | 0.1 % Supplier notification limit |
| CERCLA: | 100 lb final RQ ; 45.4 kg final RQ |
| **TOLUENE** | **108-88-3** |
| SARA 313: | 1 % de minimis concentration |
| CERCLA: | 1000 lb final RQ ; 454 kg final RQ |
| **Benzene** | **71-43-2** |
| SARA 313: | 0.1 % de minimis concentration |
| CERCLA: | 10 lb final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule ); 4.54 kg final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule ) |
| **Phenol** | **108-95-2** |
| SARA 302: | 500 lb lower TPQ ; 10000 lb upper TPQ |
| SARA 313: | 1 % de minimis concentration |
| CERCLA: | 1000 lb final RQ ; 454 kg final RQ |
| SARA 304: | 1000 lb EPCRA RQ |

**SARA Section 311/312 (40 CFR 370 Subparts B and C) reporting categories**
Carcinogenicity; Acute toxicity; Reproductive Toxicity; Skin Corrosion/Irritation; Respiratory/Skin Sensitization; Serious Eye Damage/Eye Irritation; Specific Target Organ Toxicity; Germ Cell Mutagenicity

**U.S. State Regulations**
The following components appear on one or more of the following state hazardous substances lists:

| Component | CAS | CA | MA | MN | NJ | PA |
|---|---|---|---|---|---|---|
| **Tar, coal, high-temperature** | **65996-89-6** | Yes | Yes | Yes | Yes | Yes |

### California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)

**WARNING**

This product can expose you to chemicals including Benzene , which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

### Canada Regulations

### Canadian WHMIS Ingredient Disclosure List (IDL)

Components of this material have been checked against the Canadian WHMIS Ingredients Disclosure List. The List is composed of chemicals which must be identified on MSDSs if they are included in products which meet WHMIS criteria specified in the Controlled Products Regulations and are present above the threshold limits listed on the IDL

| | |
|---|---|
| **Tar, coal, high-temperature** | **65996-89-6** |
| | 0.1 % (related to Pitch, coal tar, high-temperature) |
| **Naphthalene** | **91-20-3** |
| | 1 % |
| **Phenanthrene** | **85-01-8** |
| | 1 % |
| **Fluoranthene** | **206-44-0** |
| | 1 % |
| **Anthracene** | **120-12-7** |
| | 1 % |
| **Acenaphthene** | **83-32-9** |
| | 1 % |
| **Benzo(b)fluoranthene** | **205-99-2** |
| | 0.1 % |
| **Benzo[a]pyrene** | **50-32-8** |
| | 0.1 % |

| | |
|---|---|
| **Benz[a]anthracene** | **56-55-3** |
| | 0.1 % |
| **Chrysene** | **218-01-9** |
| | 0.1 % |
| **Indeno(1,2,3-cd)pyrene** | **193-39-5** |
| | 0.1 % |
| **TOLUENE** | **108-88-3** |
| | 1 % |
| **Benzene** | **71-43-2** |
| | 0.1 % |

**WHMIS Classification**
D2A , D2B

**Component Analysis - Inventory**
**Tar, coal, high-temperature (65996-89-6)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | No | Yes | Yes | Yes | No | No | Yes | Yes | No | No | Yes |

**The above listed complex substance contains the following constituents ( -)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No | No | No | No | No | No | No | No | No | No | No | No | No | No | No |

**POLYCYCLIC AROMATIC HYDROCARBONS (Not Available)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No | No | No | No | No | No | No | No | No | No | No | No | No | No | No |

**Naphthalene (91-20-3)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | Yes | No | No | Yes | Yes | Yes | Yes | Yes |

**Phenanthrene (85-01-8)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | Yes | No | No | Yes | Yes | Yes | Yes | Yes |

**Fluoranthene (206-44-0)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | NSL | EIN | Yes | No | Yes | Yes | No | No | No | Yes | Yes | No | Yes | Yes |

**Anthracene (120-12-7)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | Yes | No | No | Yes | Yes | Yes | Yes | Yes |

**Acenaphthene (83-32-9)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | Yes | No | No | Yes | Yes | No | Yes | Yes |

**Benzo(b)fluoranthene (205-99-2)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No | No | EIN | No | No | No | No | No | No | No | No | Yes | No | Yes | Yes |

**Dibenzofuran (132-64-9)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | No | Yes | No | Yes | Yes | No | Yes | Yes |

**Benzo[a]pyrene (50-32-8)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | No | Yes | No | No | Yes | No | No | Yes | Yes | Yes | Yes | Yes |

**Benz[a]anthracene (56-55-3)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | NSL | EIN | No | No | No | No | No | No | No | Yes | Yes | No | Yes | Yes |

**Benzo(k)fluoranthene (207-08-9)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No | No | EIN | No | No | No | No | No | No | No | No | Yes | Yes | Yes | Yes |

**Chrysene (218-01-9)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | No | No | No | Yes | No | No | No | Yes | No | Yes | Yes |

**Indeno(1,2,3-cd)pyrene (193-39-5)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | NSL | EIN | No | No | No | No | No | No | No | No | Yes | Yes | Yes | Yes |

**TOLUENE (108-88-3)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes | Yes | Yes |

**Benzene (71-43-2)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes | Yes | Yes |

**Phenol (108-95-2)**

| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes | Yes | Yes |

**U.S. Inventory (TSCA)**
Listed on inventory.

## Section 16 - OTHER INFORMATION

**NFPA Ratings**
Health: 2 Fire: 1 Reactivity: 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

**Summary of Changes**
Updated: 7/20/2018; SDS SUMMARY OF CHANGES: SECTION 15 - CA Proposition 65

**Key / Legend**
ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania*; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CFR - Code of Federal Regulations (US); CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EC – European Commission; EEC - European Economic Community; EIN - European Inventory of (Existing Commercial Chemical Substances); EINECS - European Inventory of Existing Commercial Chemical Substances; ENCS - Japan Existing and New Chemical Substance Inventory; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; F - Background (for Venezuela Biological Exposure Indices); IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; ISHL - Japan Industrial Safety and Health Law; IUCLID - International Uniform Chemical Information Database; JP - Japan; Kow - Octanol/water partition coefficient; KR KECI Annex 1 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR KECI Annex 2 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL) , KR - Korea; LD50/LC50 - Lethal Dose/ Lethal Concentration; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of LIsts™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX – Mexico; Ne- Non-specific; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; Nq - Non-quantitative; NSL – Non-Domestic Substance List (Canada); NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PEL- Permissible Exposure Limit; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; Sc - Semi-quantitative; STEL - Short-term Exposure Limit; TCCA – Korea Toxic Chemicals Control Act; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TW – Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); VN (Draft) - Vietnam (Draft); WHMIS - Workplace Hazardous Materials Information System (Canada).

**Other Information**

**Disclaimer:**
The information set forth in this Safety Data Sheet does not purport to be all-inclusive and should be used only as a guide. While the information and recommendations set forth herein are believed to be accurate, the company makes no warranty regarding such information and recommendations and disclaims all liability from reliance thereon.

# Document 12

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | FT-4115-PS | Tar Seal Oil Flow (P-118 & P-119) 24VDC PWR Supply | 101 | 9 | Good | Complete | Complete |
| Unit 1 | TT-4117 | Future Tar BOC temp | 101 | 10 | Good | Complete | Complete |
| Unit 1 | LT-4110 | Tar Seal Oil Tank Level (future) | 101 | 11 3rd Floor | Good | Complete | Complete |
| Unit 1 | TT-4102 | Dehydrator Circulation Flow Temp | 101 | 12 Roof | Good | Complete | Complete |
| Unit 1 | TV-4101 | Dehydrator BOC Temp (Pitch to Dehyd) | 101 | 13 TOC | Good | Complete | Complete |
| Unit 1 | FT-4111 | Residue Outlet Flow | 101 | 14 Roof | Good | Complete | Complete |
| Unit 1 | TT-4109 | Creo TOC Temp | 101 | 15 Roof | Good | Complete | Complete |
| Unit 1 | LT-4101 | Dehydrator Level | 101 | 16 Dehyd Column | Good | Complete | Complete |
| Unit 1 | FT-4101 | Wet Tar Feed Flow | 101 | 17 Mezz | Good | Complete | Complete |
| Unit 1 | LV-4101 | Dehydrator Level | 101 | 18 Mezz | Good | Complete | Complete |
| Unit 1 | FT-4123 | Dry Tar Feed to Col | 101 | 19 Roof | Good | Complete | Complete |
| Unit 1 | FV-4123 | Dry Tar Feed to Col | 101 | 20 Roof | Good | Complete | Complete |
| Unit 1 | FT-4103 | Dehydrator Circ Flow | 101 | 21 Roof | Good | Complete | Complete |
| Unit 1 | FV-4103 | Dehydrator Circ Flow | 101 | 22 Roof | Good | Complete | Complete |
| Unit 1 | TV-4104 | CREO SIDESTREAM | 101 | 23 Roof on CREO COL | Good | Complete | Complete |
| Unit 1 | TV-4105 | RCO K.D. Condenser Temp | 101 | 24 Mezzanine | Good | Complete | Complete |
| Unit 1 | TV-4106 | LCO K.D. Condenser Temp | 101 | 25 Mezzanine west of platform | Good | Complete | Complete |
| Unit 1 | TV-4107 | HO K.D. Condenser Temp | 101 | 26 Mezzanine west of platform | Good | Complete | Complete |
| Unit 1 | TV-4132 | Tar Seal Oil Temp | 101 | 27 3rd Floor | Good | Complete | Complete |
| Unit 1 | TV-4135A | RCO Condenser Temp (Splitter Valves)Feeds to RCO Cond A/O | 101 | 28 Mezzanine | Good | Complete | Complete |
| Unit 1 | TV-4135B | RCO Condenser Temp (Splitter Valves)Feeds to LCO Cond A/C | 101 | 29 Mezzanine | Good | Complete | Complete |
| Unit 1 | LT-4103 | Med Creo | 101 | 30 Roof | Good | Complete | Complete |
| | LT-4104 | RCO Receiver Level | 101 | 31 MEZZ | Good | Complete | Complete |
| Unit 1 | LT-4105 | LCO Receiver Level | 101 | 32 MEZZ | Good | Complete | Complete |
| Unit 1 | LT-4106 | HO Receiver Level | 101 | 33 MEZZ | Good | Complete | Complete |
| Common | PT-4302 | 3rd Floor Transducer J/B Supply Press | 101 | 34 | Good | Complete | Complete |
| Unit 1 | LV-4102 | Tar Column Level (Pitch to Flash) | 101 | 35 TOC | Good | Complete | Complete |
| Unit 1 | DT-4101 | Wet Tar Feed Density | 101 | 36 3rd Floor Micromotion Flow Transmitter | Good | Complete | Complete |
| Unit 2 | PT-4201 | Tar TOC Pressure | 201 | 1 Roof | Good | Complete | Complete |
| Unit 2 | PV-4201 | Tar TOC Pressure | 201 | 2 3rd Floor above P-218 (south pump) | Good | Complete | Complete |
| Unit 2 | PT-4202 | Creo Col Pressure | 201 | 3 Roof | Good | Complete | Complete |
| Unit 2 | PV-4202 | Creo Col Pressure | 201 | 4 3rd Floor above P-219 (north pump) | Good | Complete | Complete |
| Unit 2 | PT-4203 | Flash Col Pressure | 201 | 5 Roof | Good | Complete | Complete |
| Unit 2 | PV-4203 | Flash Col Pressure | 201 | 6 3rd Floor 14' above and north of P-219 | Good | Complete | Complete |
| Unit 2 | PT-4204 | Dehyd Pressure | 201 | 7 2nd Floor above Dehyd Cond | Good | Complete | Complete |
| Unit 2 | FT-4215 | Tar Seal Oil Pumps Flow (P-218 & P-219) | 201 | 8 | Good | Complete | Complete |
| Unit 2 | FT-4215 | Tar Seal Oil Flow (P-218 & P-219) 24VDC PWR SUP | 201 | 9 | Good | Complete | Complete |
| Unit 2 | TT-4217 | Tar BOC temp | 201 | 10 Tar Column (1st landing) | Good | Complete | Complete |
| Unit 2 | LT-4210 | Tar Seal Oil Tank Level | 201 | 11 3rd Floor | Good | Complete | Complete |
| Unit 2 | TT-4202 | Dehydrator Circulation Temp | 201 | 12 Roof | Good | Complete | Complete |
| Unit 2 | FT-4211 | Residue Outlet Flow | 201 | 13 | Good | Complete | Complete |
| Unit 2 | TT-4203 | Tar TOC Temp | 201 | 14 Roof | Good | Complete | Complete |
| Unit 2 | TT-4209 | Creo TOC Temp | 201 | 15 Roof | Good | Complete | Complete |
| Unit 2 | FT-4201 | Wet Tar Feed Flow | 201 | 17 Mezz | Good | Complete | Complete |
| Unit 2 | LV-4201 | Dehydrator Level | 201 | 18 Mezz | Good | Complete | Complete |
| Unit 2 | FT-4223 | Dry Tar Feed to Col | 201 | 19 Roof | Good | Complete | Complete |
| Unit 2 | FV-4223 | Dry Tar Feed to Col | 201 | 20 Roof | Good | Complete | Complete |
| Unit 2 | FT-4203 | Dehydrator Circ Flow | 201 | 21 Roof | Good | Complete | Complete |
| Unit 2 | TV-4204 | CREO SIDESTREAM | 201 | 23 ROOF ON CREO COL | Good | Complete | Complete |
| Unit 2 | TV-4205 | RCO K.D. Condenser Temp | 201 | 24 Mezzanine | Good | Complete | Complete |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Unit 2 | TV-4206 | LCO K.D. Condenser Temp | 201 | 25 | Mezzanine west of platform | Good | Complete | Complete |
| Unit 2 | TV-4207 | HO K.D. Condenser Temp | 201 | 26 | Mezzanine west of platform | Good | Complete | Complete |
| Unit 2 | TV-4232 | Tar Seal Oil Temp | 201 | 27 | 3rd Floor | Good | Complete | Complete |
| Unit 2 | TV-4235A | RCO Condenser Temp Feeds to RCO Cond A/O | 201 | 28 | Mezzanine | Good | Complete | Complete |
| Unit 2 | TV-4235B | RCO Condenser TempFeeds to LCO Cond A/C | 201 | 29 | Mezzanine | Good | Complete | Complete |
| Unit 2 | LT-4203 | Med Creo | 201 | 30 | MEZZ | Good | Complete | Complete |
| Unit 2 | LT-4204 | RCO Receiver Level | 201 | 31 | MEZZ | Good | Complete | Complete |
| Unit 2 | LT-4205 | LCO Receiver Level | 201 | 32 | MEZZ | Good | Complete | Complete |
| Unit 2 | LT-4206 | HO Receiver Level | 201 | 33 | MEZZ | Good | Complete | Complete |
| Unit 2 | PT-4205 | Tar Column BOC Pressure | 201 | 35 | Tar Column (1st landing) | Good | Complete | Complete |
| Unit 2 | DT-4201 | Wet Tar Feed Density | 201 | 36 | 3rd Floor Micromotion Flow Transmitter | Good | Complete | Complete |
| Unit 1 | LT-4106-PS | 24 VDC Power for LT-4106 HDO Condenser Level Transmitter | 303 | 1 | | Good | Complete | Complete |
| Unit 1 | LT-4105-PS | 24 VDC Power for LT-4105 LDO Condenser Level Transmitter | 303 | 2 | | Good | Complete | Complete |
| Unit 1 | LT-4104-PS | 24 VDC Power for LT-4104 RCO Condenser Level Transmitter | 303 | 3 | | Good | Complete | Complete |
| Unit 2 | LT-4206-PS | 24 VDC Power for LT-4206 HDO Condenser Level Transmitter | 303 | 4 | | Good | Complete | Complete |
| Unit 2 | LT-4205-PS | 24 VDC Power for LT-4205 LDO Condenser Level Transmitter | 303 | 5 | | Good | Complete | Complete |
| Unit 2 | LT-4204-PS | 24 VDC Power for LT-4204 RCO Condenser Level Transmitter | 303 | 6 | | Good | Complete | Complete |
| Unit 1 | FT-4123-PS | 24 VDC Power for FT-4123 Dry Tar Feed Flowmeter | 303 | 12 | | Good | Complete | Complete |
| Unit 1 | FT-4111-PS | 24 VDC Power for FT-4111 Residue Cooler Flowmeter | 303 | 13 | | Good | Complete | Complete |
| Unit 2 | FT-4223-PS | 24 VDC Power for FT-4223 Dry Tar Feed Flowmeter | 303 | 17 | | Good | Complete | Complete |
| Unit 2 | FT-4211=P: | 24 VDC Power for FT-4211 Residue Cooler Flowmeter | 303 | 18 | | Good | Complete | Complete |
| Common | PT-4301 | 1st Floor Transducer J/B Supply Press | 100 | 31 | | Good | Complete | Complete |
| Common | LV-4307 | Decanter Oil Level | 100 | 32 | | Good | Complete | Complete |
| Common | TV-4304 | Tempered Water Temp | 100 | 33 | | Good | Complete | Complete |
| Common | FT-4301 | Pitch to Storage Line Purge | 100 | 34 | 3rd Floor Pitch Manifold | Good | Complete | Complete |
| Common | SV-4320 | Decanter Vapor Selection Solenoid Valve | 200 | 34 | | Good | Complete | Complete |
| Unit 2 | ZSH-4220 | Unit 2 Decanter Vapor Valve Open | 200 | 35 | | Good | Complete | Complete |
| Unit 2 | ZSL-4220 | Unit 2 Decanter Vapor Valve Closed | 200 | 36 | | Good | Complete | Complete |
| Unit 1 | ZSH-4120 | Unit 1 Decanter Vapor Valve Open | 100 | 35 | | Good | Complete | Complete |
| Unit 1 | ZSL-4120 | Unit 1 Decanter Vapor Valve Closed | 100 | 36 | | Good | Complete | Complete |

# Document 13

Public Record Claimed Exempt

Public Record Claimed Exempt

Public Record Claimed Exempt

Public Record Claimed Exempt

# Document 14

Public Record Claimed Exempt

Public Record Claimed Exempt

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# Document 15

Koppers Repair scope

Added item

Blue = Mechanical Bought off

Green = Problem

| Equip | Unit | System | Item2 | Type | Size | Location | P&ID | Task | Contractor buyoff | Koppers buyoff | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Flash Column 8 | 1 | ALL | 1 | Flange | 12 | Top Outlet | 4432 | Change Gasket | GS | NLS | |
| Flash Column 8 | 1 | ALL | 2 | Blind Flange | 1 | Vessel wall - top | 4432 | Change Gasket | GS | NLS | |
| Flash Column 8 | 1 | ALL | 3 | Flange | 3 | Vessel wall - top | 4432 | Change Gasket | GS | NLS | |
| Flash Column 8 | 1 | ALL | 4 | Blind Flange | 4 | Vessel wall - top | 4432 | Change Gasket | GS | NLS | |
| Flash Column 8 | 1 | ALL | 5 | Flange | 6 | Pitch to Flash Sparger | 4432 | Change Gasket | GS | NLS | short bolted |
| Flash Column 8 | 1 | ALL | 6 | Orifice | 4 | Pitch to Flash Sparger | 4432 | Pull, inspect, change gaskets | N/A | | No orifice to install |
| Flash Column 8 | 1 | ALL | 7 | Hand Valve | 2 | HV-2582 Pitch to Flash Sparger | 4432 | Replace Valve | GS | NLS | |
| Flash Column 8 | 1 | ALL | 8 | Flange | 4 | Pitch to Residue Cooler | 4432 | Change Gasket | GS | NLS | |
| Flash Column 8 | 1 | ALL | 9 | Blind Flange | 4 | Vessel wall - bottom | 4432 | Change Gasket | GS | NLS | |
| Flash Column 8 | 1 | ALL | 10 | Manway | 18 | Manway | 4432 | Remove | Manway | NLS | |
| Flash Column 8 | 1 | ALL | 10A | Control valve | 2 | LV-4102 | 4432 | Replace | GS | NLS | |
| Flash Column 8 | 1 | ALL | 10B | Flange | 4 | Top SE side by barrel ladder | 4432 | Change Gasket | GS | NLS | |
| Flash Column 8 | 1 | ALL | 140 | Flange | 12 | Flanged 90 off top of V101 to roof | 4432 | Change Gasket | GS | NLS | |
| Flash Column 8 | 1 | ALL | 141 | Flange | 12 | Flanged 90 off top of V101 to roof | 4432 | Change Gasket | GS | NLS | |
| Flash Column 8 | 1 | ALL | 142 | Flange | 4 | E-111 connections | 4432 | Pull exchanger | GS | NLS | Install Bypass around exchanger. In progress |
| Dehydrator Column 7 | 1 | ALL | 11 | Relief Valve | 3 to 4 | Vessel wall - top | 4432 | Replace valve | GS | NLS | |
| Dehydrator Column 7 | 1 | ALL | 11 A | Exp Jt #4 | 12 | Main column overhead | 4432 | Pull exp jt, Test, Reinstall if good | GS | NLS | |
| Dehydrator Column 7 | 1 | ALL | 11 B | Exp Jt #5 | 8 | from to Main column overhead | 4432 | Pull exp jt, Test, Reinstall if good | GS | NLS | |
| Dehydrator Column 7 | 1 | ALL | 11 C | Exp Jt #6 | 12 | from to Main column overhead | 4432 | Pull exp jt, Test, Reinstall if good | GS | NLS | |
| Dehydrator Column 7 | 1 | ALL | 12 | Flange | 3 | Vessel wall - top | 4432 | Change gasket | GS | NLS | |
| Dehydrator Column 7 | 1 | ALL | 13 | Flange | 8 | Line to Dehydrator Condenser | 4432 | Change gasket | GS | NLS | |
| Dehydrator Column 7 | 1 | ALL | 14 | Blind | 1 1/2 | Vessel wall -top | 4432 | Add 1 1/2" blind | GS | NLS | |
| Dehydrator Column 7 | 1 | ALL | 15 | Valve | 1 | HV-2581 Vessel wall - top | 4432 | Replace valve | N/A | | DEAD LINE per Kyle |
| Dehydrator Column 7 | 1 | ALL | 16 | Flange | 6 | Line from Dehydrator Condenser | 4432 | Change gasket | GS | NLS | |
| Dehydrator Column 7 | 1 | ALL | 17 | Flange | 2 | Pitch to Dehydrator | 4432 | Change gasket | GS | NLS | |
| Dehydrator Column 7 | 1 | ALL | 18 | Valve | 1.5 | Pitch to Dehydrator | 4432 | Replace valve | GS | NLS | |
| Dehydrator Column 7 | 1 | ALL | 19 | Flange | 3 | Line from Residue Cooler | 4432 | Change gasket | GS | NLS | |
| Dehydrator Column 7 | 1 | ALL | 20 | Orifice | 3 | Line from Residue Cooler | 4432 | Pull sparger, Inspect, change gasket | GS | NLS | |
| Dehydrator Column 7 | 1 | ALL | 21 | Flange | 4 | Line to Dehydrator Pumps | 4432 | Change gasket | GS | NLS | |
| Dehydrator Column 7 | 1 | ALL | 22 | Valve | 4 | HV-2562 from Residue Cooler | 4432 | Replace valve | GS | NLS | |
| Dehydrator Column 7 | 1 | ALL | 23 | Y-Strainer | 4 | Line from Residue Cooler | 4432 | Change gaskets | GS | NLS | |
| Dehydrator Column 7 | 1 | ALL | 24 | Manway | 18 | Top Manway | 4432 | Remove | Manway | NLS | |
| Dehydrator Column 7 | 1 | ALL | 25 | Manway | 18 | Bottom Manway | 4432 | Remove | Manway | NLS | |
| Dehydrator Column 7 | 1 | ALL | 52 | Blind Flange | 2 | Cleanout Port - Y cleanouts on V-101 | 4432 | | GS | NLS | |

Koppers Repair scope

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|---|---|---|---|---|---|---|---|---|---|---|---|
| Dehydrator Column 7 | 1 | ALL | 53 | Blind Flange | 2 | Cleanout Port - Y cleanouts on V-101 | 4432 | | GS | NLS | |
| Dehydrator Column 7 | 1 | ALL | 54 | Blind Flange | 3 | Cleanout Port - Y cleanouts on V-101 | 4432 | | GS | NLS | |
| Tar Column 6 | 1 | ALL | 26 | Flange | 12 | Line to RCO Condenser | 4432 | Change gasket | GS | NLS | |
| Tar Column 6 | 1 | ALL | 27 | Flange | 2 | Line from RCO pumps | 4432 | Change gasket | GS | NLS | |
| Tar Column 6 | 1 | ALL | 28 | Blind Flange | 1 | Vessel wall transition | 4432 | Change gasket | GS | NLS | |
| Tar Column 6 | 1 | ALL | 29 | Flange | 6 | Sparger | 4432 | Change gasket | GS | NLS | |
| Tar Column 6 | 1 | ALL | 30 | Orifice | 4 | Sparger | 4432 | Pull sparger, inspect, change gasket | GS | NLS | |
| Tar Column 6 | 1 | ALL | 31 | Valve | 2 | HV-2564 Sparger | 4432 | Replace valve | GS | NLS | |
| Tar Column 6 | 1 | ALL | 32 | Valve | 2 | HV-2512 Sparger | 4432 | Replace valve | GS | NLS | |
| Tar Column 6 | 1 | ALL | 33 | Orifice | 4 | Sparger | 4432 | Pull sparger, inspect, change gasket | GS | NLS | |
| Tar Column 6 | 1 | ALL | 34 | Valve | 2 | HV-2563 | 4432 | Replace valve | GS | NLS | |
| Tar Column 6 | 1 | ALL | 35 | Utility Connection | 3/4 | Line to Sparger | 4432 | Replace valve | GS | NLS | |
| Tar Column 6 | 1 | ALL | 36 | Utility Connection | 1/2 | Line to Dehydrator Sparger | 4432 | Replace valve | GS | NLS | |
| Tar Column 6 | 1 | ALL | 37 | Flange | 6 | Tar Column PRV | 4432 | Change gasket | GS | NLS | |
| Tar Column 6 | 1 | ALL | 38 | Relief Valve | 4 | Tar Column PRV | 4432 | Replace valve | GS | NLS | short bolted |
| Tar Column 6 | 1 | ALL | 38 A | Valves | 1 | Replace valves | 4432 | Replace valve | GS | NLS | |
| Tar Column 6 | 1 | ALL | 39 | Blind Flange | 6 | Vessel wall middle | 4432 | Change gasket | N/A | | Couldn't find at location |
| Tar Column 6 | 1 | ALL | 40 | Flange | 8 | Sparger | 4432 | Change gasket | GS | NLS | |
| Tar Column 6 | 1 | ALL | 41 | Blind Flange | 8 | Vessel wall middle | 4432 | Change gasket | GS | NLS | short bolted |
| Tar Column 6 | 1 | ALL | 42 | Flange | 12 | Line to Creosote Column | 4432 | Change gasket | GS | NLS | |
| Tar Column 6 | 1 | ALL | 43 | Flange | 2 | Line from Creosote Column | 4432 | Change gasket | GS | NLS | |
| Tar Column 6 | 1 | ALL | 44 | Blind Flange | 4 | Vessel wall bottom | 4432 | Change gasket | GS | NLS | |
| Tar Column 6 | 1 | ALL | 45 | Blind Flange | 12 | Vessel wall bottom | 4432 | Change gasket | GS | NLS | short bolted |
| Tar Column 6 | 1 | ALL | 46 | Flange | 6 | Reboiler Return Sparger | 4432 | Change gasket | GS | NLS | short bolted |
| Tar Column 6 | 1 | ALL | 47 | Orifice | 6 | Reboiler Return Sparger | 4432 | Pull sparger, inspect, change gasket | GS | NLS | short bolted |
| Tar Column 6 | 1 | ALL | 47 A | Flange | 6 | Reboiler Return Sparger | 4432 | Change gasket | GS | NLS | |
| Tar Column 6 | 1 | ALL | 48 | Manway | 18 | Top Manway | 4432 | Remove | Manway | NLS | |
| Tar Column 6 | 1 | ALL | 49 | Manway | 18 | Middle Manway | 4432 | Remove | Manway | NLS | |
| Tar Column 6 | 1 | ALL | 50 | Manway | 18 | Middle Manway | 4432 | Remove | Manway | NLS | |
| Tar Column 6 | 1 | ALL | 51 | Manway | 18 | Bottom Manway | 4432 | Remove | Manway | NLS | |
| Tar Column 6 | 1 | ALL | 52 | Blind | 1 1/2 | Tower top 2nd deck down | 4432 | Change gasket 300# | GS | NLS | |
| Tar Column 6 | 1 | ALL | 52 B | Control valve | | TV-4101 | 4432 | Replace Control valve | GS | NLS | |
| Tar Column 6 | 1 | ALL | 52 C | Control valve | | FV-4123 | 4432 | Replace Control valve | GS | NLS | need air |
| Tar Column 6 | 1 | ALL | 52 D | Instrument | | FT-4123 | 4432 | Replace Instrument | GS | NLS | |
| Tar Column 6 | 1 | ALL | 52 E | Instrument | | FT-4103 | 4432 | Replace Control valve | GS | NLS | short bolted |
| Tar Column 6 | 1 | ALL | 52 F | Instrument | | PT-4105 | 4432 | Replace Instrument | GS | NLS | Common device with G |
| Tar Column 6 | 1 | ALL | 53G | Instrument | | PI-4105 | 4432 | Tempered Water Temp | GS | NLS | Common device with F |
| Tar Column 6 | 1 | ALL | 55H | Instrument | | FT-4111 | 4432 | | N/A | | per Ken valve is not needed. |
| Tar Column 6 | 1 | ALL | 55I | Instrument | | LT-4101 | 4432 | Dehydrator BOC Temp | GS | NLS | |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| Creosote Column 5 | 1 | ALL | S5 | Flange | 12 | Top outlet | 4433 | Change gasket | GS | NLS | |
| Creosote Column 5 | 1 | ALL | S5 A | Exp Jt #7 | 12 | Top line | 4433 | Pull exp jt, Test, Reinstall if good | GS | NLS | |
| Creosote Column 5 | 1 | ALL | S6 | Flange | 3 | Line from LDO pumps | 4433 | Change gasket | GS | NLS | Cut pipe, pull Sparger ou and blind nozzle. |
| Creosote Column 5 | 1 | ALL | S7 | Blind Flange | 3 | Line from LDO pumps | 4433 | Change gasket | GS | NLS | |
| Creosote Column 5 | 1 | ALL | S8 | Blind Flange | 3 | Vessel wall - middle | 4433 | Change gasket 300# | GS | NLS | |
| Creosote Column 5 | 1 | ALL | S9 | Blind Flange | 3 | Vessel wall - middle | 4433 | Change gasket | GS | NLS | |
| Creosote Column 5 | 1 | ALL | 60 | Blind Flange | 3 | Vessel wall - middle | 4433 | Change gasket | GS | NLS | |
| Creosote Column 5 | 1 | ALL | 61 | Blind Flange | 12 | Creo Sidestream expansion joint | 4433 | Change gasket | GS | NLS | |
| Creosote Column 5 | 1 | ALL | 61D | Control valve | 12 | TV-4104 | 4433 | Change valve | GS | NLS | |
| Creosote Column 5 | 1 | ALL | 61 A | Exp. Jt. #8 | 12 | Creo Sidestream expansion joint | 4433 | Pull exp jt, Test, Reinstall if good | GS | NLS | |
| Creosote Column 5 | 1 | ALL | 62 C | Exp. Jt. #9 | 12 | Creo Sidestream expansion joint | 4433 | Pull exp jt, Test, Reinstall if good | GS | NLS | |
| Creosote Column 5 | 1 | ALL | 61 B | Flange | 4 | LT 4103 | 4433 | Install Instrument | GS | NLS | Pull transmitter and install piping and blind |
| Creosote Column 5 | 1 | ALL | 62 | Valve | 3 | HV-2481 - Bottom outlet | 4433 | Replace valve | GS | NLS | |
| Creosote Column 5 | 1 | ALL | 63 | Valve | 2 | HV-2482 - Bottom outlet | 4433 | Replace valve | GS | NLS | short bolted |
| Creosote Column 5 | 1 | ALL | 63 A | Flange | 2 | V109 bottom outlet | 4433 | | GS | NLS | short bolted |
| Creosote Column 5 | 1 | ALL | 63 B | Flange | 2 | V109 bottom outlet | 4433 | | GS | NLS | |
| Creosote Column 5 | 1 | ALL | 64 | Valve | 2 | HV-2483 - Bottom outlet to V-101 | 4433 | Replace valve | GS | NLS | |
| Creosote Column 5 | 1 | ALL | 65 | Valve | 3 | HV-2484 - Bottom outlet to LDO pum | 4433 | Replace valve | GS | NLS | |
| Creosote Column 5 | 1 | ALL | 66 | Valve | 3 | HV-2485 - Bottom outlet to LDO pum | 4433 | Replace valve | GS | NLS | |
| Creosote Column 5 | 1 | ALL | 67 | Utility Connection | 1 | HV-2485 - Bottom outlet to LDO pum | 4433 | Replace valve | GS | NLS | |
| Creosote Column 5 | 1 | ALL | 68 | Valve | 3 | HV-2486 - Bottom outlet to LDO pum | 4433 | Replace valve | GS | NLS | short bolted |
| Creosote Column 5 | 1 | ALL | MW-1 | Manway | | Top Manway | 4433 | Remove | Manway | NLS | |
| Creosote Column 5 | 1 | ALL | MW-2 | Manway | | Middle Manway | 4433 | Remove | Manway | NLS | |
| Creosote Column 5 | 1 | ALL | MW-3 | Manway | | Middle Manway | 4433 | Remove | Manway | NLS | |
| Creosote Column 5 | 1 | ALL | MW-4 | Manway | | Bottom Manway | 4433 | Remove | Manway | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 69 | Flange | 12 | Top Inlet from V-101 | 4434 | Change gasket | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 69-A | Plugs | | Olets off of 90 inlet of condenser are | 4434 | | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 69-B | Plugs | | Olets off of 90 inlet of condenser are | 4434 | | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 70 | Ball Valve | 3/4 | HV-2509 for PT 4101 | 4434 | Replace valve | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 71 | Flange | 8 | Outlet to LDO Condenser | 4434 | Change gasket | GS | NLS | short bolted |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 72 | Valve | 1 | HV-2510 for PI | 4434 | Replace valve | GS | NLS | missing PI |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 73 | Blind Flange | 8 | Outlet to LDO Condenser | 4434 | Change gasket | N/A | | No connection |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 74 | Flange | 4 | Inlet from General Transfer Line | 4434 | Change gasket | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 75 | Utility Connection | 3/4 | Inlet from General Transfer Line | 4434 | Replace valve | GS | NLS | need to add elbow to piping |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 76 | Valve | 1 | Line to LDO Condenser | 4434 | Replace valve | GS | NLS | missing PI |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 77 | Valve | 2 | HV-2516 Inlet from General Transfer | 4434 | Replace valve | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 78 | Valve | 1 | HV-2515 for PI from tar feed pumps | 4434 | Replace valve | GS | NLS | missing PI |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 78 A | Control valve | 2 | TV-4135A | 4434 | Replace TV-4135B | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 78 B | Control valve | 2 | TV-4135B | 4434 | Replace TV-4135A | GS | NLS | |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 78 C | Control valve | 2 | LV-4101 | 4434 | Replace LV-4101 | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 78 D | Instrument | | FT-4101 | 4434 | Replace FT | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 79 | Valve | 4 | HV-2517 RCO Condenser Bottom He | 4434 | Replace valve | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 80 | Valve | 1 | HV-2519 RCO outlet to RCO pumps | 4434 | Replace valve | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 81 | Valve | 2 | HV-2518 from S-104 | 4434 | Replace valve | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 82 | Flange | 2 | E-104 Top Head | 4434 | Change gasket | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 83 | Valve | 2 | HV-2506 E-104 Tempered Water Ret | 4434 | Replace valve | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 84 | Utility Connection | 3/4 | E-104 shell side | 4434 | Replace valve | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 84 A | Flange | 6 | E-101 shell side-expansion joint | 4434 | Pull exp jt, Test, Reinstall if good | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 84 B | Flange | 6 | E-104 shell side-expansion joint | 4434 | Pull exp jt, Test, Reinstall if good | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 84 C | Flange | 6 | 6" expansion joint between E-1-4 / E | 4434 | Pull exp jt, Test, Reinstall if good | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 85 | Flange | 6 | E-104 outlet to separator pot | 4434 | Change gasket | GS | NLS | short bolted |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 86 | Valve | 3/4 | E-104 shell side drain | 4434 | Replace valve | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 87 | Flange | 2 | E-104 bottom head | 4434 | Change gasket | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 87 A | Control valve | 1 | TV-4105 | 4434 | Replace valve | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 88 | Utility Connection | 1/2 | E-104 tempered water inlet | 4434 | Replace valve | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 89 | Valve | 2 | HV-2508 tempered water inlet | 4434 | Replace valve | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 90 | Flange | 6 | S-104 Vapor outlet | 4434 | Change gasket | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 91 | Flange | 2 | S-104 Liquid outlet | 4434 | Change gasket | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 91 A | Instrument | 3 | LT valve LT-4104 | 4434 | Replace valve | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 91 B | Instrument | 3 | LT valve LT-4104 | 4434 | Replace valve | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 91 C | Instrument | 1 | Scewed gate valve drain, E-101 LT-4 | 4434 | Replace valve | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 91 D | Instrument | 3 | E-101 LT-4104 | 4434 | Change gasket | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 91 E | Instrument | 1 | Scewed gate valve vent, E-101 LT-41 | 4434 | Replace valve | GS | NLS | |
| RCO Condenser / KD 4 Condenser / | 1 | ALL | 91 F | Instrument | | PT-4101 | 4434 | Tar TOC Pressure | GS | NLS | changing to 1/2 " tubing |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 92 | Flange | 12 | E-102 Inlet from V-109 | 4435 | Replace gasket | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 92-A | Exp. Jt #1 | 6 | E-102 Inlet from V-109- expansion jo | 4435 | Pull exp jt, Test, Reinstall if good | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 93 | Valve | 3/4 | HV-2179 for PT-4102 | 4435 | Replace valve | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 94 | Flange | 8 | E-102 Shell side to Dehydrator | 4435 | Replace gasket | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 95 | Valve | 1 | HV-2188 for PI to dehydrator column | 4435 | Replace valve | GS | NLS | Needs PI |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 96 | Valve | 2 | HV-2189 to General Transfer Line | 4435 | Replace valve | N/A | | No connections |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 97 | Flange | 4 | E-102 Inlet from RCO Condenser | 4435 | Replace gasket | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 98 | Flange | 6 | Outlet to K/D Condenser | 4435 | Replace gasket | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 99 | Valve | 4 | E-102 Bottom outlet | 4435 | Replace valve | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 99-B | Flange | 4 | E-102 Bottom outlet | 4435 | Replace gasket | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 100 | Valve | 2 | HV-2187 from S-105 to E-102 bottom | 4435 | Replace valve | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 101 | Utility Connection | 3/4 | HV-2185 on S-105 outlet | 4435 | Replace valve | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 102 | Utility Connection | 1 | HV-2191 on E-102 bottom outlet | 4435 | Replace valve | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 103 | Flange | 2 | E-105 Top head Tempered water ret | 4435 | Replace gasket | GS | NLS | |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 103 A | Flange | 2 | Top of E105 to twr | 4435 | Replace gasket | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 103 B | Flange | 2 | Top of E105 to twr | 4435 | Replace gasket | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 104 | Flange | 6 | E-105 outlet to Separator Pot | 4435 | Replace gasket | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 105 | Valve | 3/4 | Utility connection on E-105 | 4435 | Replace valve | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 106 | Flange | 6 | E-105 Inlet from E-102 | 4435 | Replace gasket | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 107 | Ball Valve | 3/4 | HV-2182 E-105 shell side drain | 4435 | Replace valve | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 108 | Flange | 2 | E-105 bottom outlet | 4435 | Replace gasket | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 109 | Utility Connection | 3/4 | E-105 Bottom outlet | 4435 | Replace valve | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 109-B | Control valve | 1 | TV-4106 | 4435 | | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 109-C | HV-2183 | 2 | E-105 Bottom outlet | 4435 | | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 110 | Flange | 6 | S-105 vapor outlet | 4435 | Replace gasket | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 111 | Flange | 2 | S-105 liquid outlet | 4435 | Replace gasket | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 112 | Sightglass | 2 | S-105 liquid outlet | 4435 | Replace gasket(s) | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 112 A | Instrument | 3 | LT on E-102 LT-4105 | 4435 | Replace valve | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 112 B | Instrument | 3 | LT on E-102 LT-4105 | 4435 | Replace valve | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 112 C | Instrument | | E-102 LT-4105 | 4435 | Replace gasket | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 112 D | Instrument | 1 | E-102 LT-4105 | 4435 | Replace valve | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 112 E | Instrument | 1 | E-102 LT-4105 | 4435 | Replace valve | GS | NLS | |
| LDO Condenser / KD 3 Condenser / | 1 | ALL | 112 F | Instrument | | PT-4102 | 4435 | Creo Col Pressure | GS | NLS | changing to 1/2 " tubing |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 113 | Flange | 12 | HDO Condenser inlet from Flash Colu | 4431 | Change gasket | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 113-A | Flange | 12 | HDO Condenser inlet from Flash Colu | 4431 | Pull and inspect | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 113-B | Flange | 12 | HDO Condenser inlet from Flash Colu | 4431 | Pull and inspect | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 113-C | RV | 3 | HDO Condenser inlet from Flash Colu | 4431 | Pull and inspect | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 113-D | Exp. Jt.#2 | 6 | HDO Condenser inlet from Flash Colu | 4434 | Pull exp jt, Test, Reinstall if good | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 114 | Flange | 4 | HDO shell side outlet to Residue cool | 4431 | Change gasket | GS | NLS | short bolted |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 115 | Flange | 4 | HDO shell side inlet | 4431 | Change gasket | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 115 A | PI | | E 103 | 4431 | Change PI | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 116 | Utility Connection | 1 | HDO shell side inlet | 4431 | Replace valve | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 117 | Valve | 4 | HV-2464 HDO shell side inlet | 4431 | Replace valve | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 118 | Valve | 4 | HV-2463 HDO shell side inlet | 4431 | Replace valve | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 119 | Valve | 2 | HV-2462 from General Transfer Line | 4431 | Replace valve | GS | NLS | Locked out valve on ground |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 120 | Flange | 6 | HDO condenser outlet to KD conden | 4431 | Change gasket | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 120 A | Exp. Jt.#3 | 6 | Expansion joint between E106 and E | 4431 | Pull exp jt, Test, Reinstall if good | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 120 B | Exp. Jt.#3 | 6 | Expansion joint | 4431 | Pull exp jt, Test, Reinstall if good | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 121 | Valve | 3 | HV-2420 HDO Condenser Bottom Ou | 4431 | Replace valve | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 121 A | Instrument | 3 | LT Valve E103 LT-4106 | 4431 | Replace valve | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 121 B | Instrument | 3 | LT Valve E103 LT-4106 | 4431 | Replace valve | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 121 C | Instrument | 1 | Threaded drain valve E103 LT-4106 | 4431 | Replace valve | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 121 D | Instrument | 3 | E 103 LT-4106 | 4431 | Change gasket | GS | NLS | |

Koppers Repair scope

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|---|---|---|---|---|---|---|---|---|---|---|---|
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 121 E | Instrument | 1 | E 103 LT-4106 | 4431 | Replace valve | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 122 | Flange | 2 | HDO KD condenser Cooling water ret | 4431 | Change gasket | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 123 | Valve | 2 | HDO KD condenser Cooling water ret | 4431 | Replace valve | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 124 | Utility Connection | 3/4 | HDO KD Condenser shell side | 4431 | Replace plug | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 125 | Flange | 6 | HDO KD Condenser to separator pot | 4431 | Change gasket | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 126 | Valve | 3/4 | HDO KD Condenser shell side liquid d | 4431 | Replace valve | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 127 | Valve | 2 | HDO KD Condenser bottom head | 4431 | Replace valve | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 128 | Control valve | 1.5 | TV-4107 | 4431 | Replace valve | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 129 | Flange | 6 | S-106 Vapor outlet | 4431 | Change gasket | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 130 | Flange | 2 | S-106 Liquid outlet | 4431 | Change gasket | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 131 | Sightglass | 2 | S-106 Liquid outlet | 4431 | Change gasket(s) | GS | NLS | Sightglass later spool now. |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 132 | Utility Connection | 1/2 | S-106 Liquid outlet | 4431 | Replace valve | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 133 | Valve | 2 | HV-2419 S-106 Liquid outlet | 4431 | Replace valve | GS | NLS | |
| HDO Condenser / KD 2 Condenser / | 1 | ALL | 133 A | Instrument | | PT-4103 | 4431 | Flash Col Pressure | GS | NLS | changing to 1/2 " tubing |
| Tar Seal Oil Tank 1 | 1 | ALL | 134 | Gate Valve | 1 1/2 | HV-2236 Seal oil tank to reservoir po | 4436 | | GS | NLS | |
| Tar Seal Oil Tank 1 | 1 | ALL | 135 | Manway | 20 | Tar Seal Oil Tank | 4436 | | Manway | NLS | |
| Tar Seal Oil Tank 1 | 1 | ALL | 136 | Flange | 6 | Tar Seal Oil Tank Top | 4436 | | GS | NLS | |
| Tar Seal Oil Tank 1 | 1 | ALL | 136 A | Flange | 6 | Tar Seal Oil Tank Top V-106 | 4436 | | GS | NLS | |
| Tar Seal Oil Tank 1 | 1 | ALL | 137 | Blind Flange | 6 | Tar Seal Oil Tank Top | 4436 | | GS | NLS | |
| Tar Seal Oil Tank 1 | 1 | ALL | 138 | Valve | 1 | Tar Seal Oil to K/O pot | 4436 | | N/A | | No connection exists |
| Tar Seal Oil Tank 1 | 1 | ALL | 139 | Control valve | 1 | TV-4132 | 4436 | Replace TV-4231 | GS | NLS | |
| Tar Seal Oil Tank 1 | 1 | ALL | 139A | Control valve | 1 | PV-4101 | 4436 | Replace valve | GS | NLS | short bolted |
| Tar Seal Oil Tank 1 | 1 | ALL | 139B | Control valve | | PV-4102 | 4436 | Creo Col Pressure | GS | NLS | |
| Tar Seal Oil Tank 1 | 1 | ALL | 139C | Control valve | | PV-4103 | 4436 | Flash Col Pressure | GS | NLS | |
| Tar Seal Oil Tank 1 | 1 | ALL | 139D | Instrument | | LT-4110 | 4436 | | GS | NLS | |
| Tar Seal Oil Tank 1 | 1 | ALL | 139E | Instrument | | FT-4115 | 4436 | | GS | NLS | needs 1 gasket |
| Tar Seal Oil Tank 1 | 1 | ALL | 139F | Control valve | | FV-4103 | 4436 | | N/A | | per Ken valve is not needed. |
| Instruments | 1 | ALL | | Control valve | | TV-4108 | 4437 | Dehydrator Cond Temp | GS | NLS | dans list |
| Instruments | 1 | ALL | | Control valve | | LV-4307 | 4438 | | GS | NLS | dans list |
| Instruments | 1 | ALL | | Instrument | | PT-4104 | 4437 | Dehyd Pressure | GS | NLS | |
| Instruments | 1 | ALL | | Control valve | | TV-4304 | 4644 | | GS | NLS | |
| Noras valves | 1 | ALL | 1n | Valve | 2 | HV-3398 | 4444 | | | NLS | Chammer |
| Noras valves | 1 | ALL | 2n | Valve | | new | 4436 / 4446 | | TJ | NLS | |
| Noras valves | 1 | ALL | 3n | Valve | | new | 4437 / 4446 | | TJ | NLS | |
| Noras valves | 1 | ALL | 4n | Valve | 3 | HV-2233 | 4438 / 4446 | | TJ | NLS | |
| Noras valves | 1 | ALL | 5n | Valve | 3 | HV-2360 | 4439 / 4446 | | TJ | NLS | |
| Noras valves | 1 | ALL | 6n | Valve | 2 | HV-2233 | 4440 / 4446 | | | NLS | Chammer |
| Noras valves | 1 | ALL | 7n | Valve | 2 | HV-2360 | 4441 / 4446 | | | NLS | Chammer |
| Noras valves | 1 | ALL | 8n | Control valve | | FV-4120 Unit 1 | 4438 | | GS | NLS | |

Koppers Repair scope

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|---|---|---|---|---|---|---|---|---|---|---|---|
| Noras valves | 1 | ALL | 9n | Control valve | | FV-4220 Unit 3 | 4438 | | GS | NLS | |
| Noras valves | 1 | ALL | 10n | Valve | 4 | new | 4442 | | | NLS | Martin |
| Noras valves | 1 | ALL | 11n | Valve | 4 | new | 4442 | | | NLS | Martin |
| Noras valves | 1 | ALL | 12n | Valve | 6 | new | 4442 | | | NLS | Martin |
| Noras valves | 1 | ALL | 13n | Valve | 1 1/2 | HV-2542 | 4454 | | | NLS | Doran |
| Noras valves | 1 | ALL | 14n | Valve | 1 1/2 | HV-2533 | 4454 | | | NLS | Doran |
| Noras valves | 1 | ALL | 15n | Valve | | HV-2511 | 4434 | | TJ | NLS | |
| Noras valves | 1 | ALL | 16n | Valve | 4 | HV-2475 | 4437 | | | NLS | |
| Noras valves | 1 | ALL | 17n | Valve | 4 | HV-2476 | 4437 | | | NLS | |
| Noras valves | 1 | ALL | 18n | Valve | 4 | HV-2468 | 4437 | | | NLS | |
| Noras valves | 1 | ALL | 19n | Valve | 4 | HV-2469 | 4437 | | | NLS | |
| Noras valves | 1 | ALL | 20n | Valve | 3 | HV-8951 | 4644 | | | NLS | |
| Noras valves | 1 | ALL | 21n | Valve | 2 | HV-3412 | 4441 | | | NLS | |
| Noras valves | 1 | ALL | 22n | Valve | 2 | HV-3405 | 4441 | | | NLS | |
| Noras valves | 1 | ALL | 23n | Valve | 2 | HV-3349 | 4445 | | | NLS | |
| Noras valves | 1 | ALL | 24n | Valve | 2 | HV-3346 | 4445 | | | NLS | |
| Noras valves | 1 | ALL | 25n | Valve | 2 | HV-3391 | 4444 | | TJ | NLS | |
| Noras valves | 1 | ALL | 26n | Valve | 2 | HV-3389 | 4444 | | | NLS | |
| Noras valves | 1 | ALL | 27n | Valve | 2 | HV-9023 | 4464 | | TJ | NLS | |

# Document 16

## Koppers Rpt Comps Group List

| Equip | Unit | System | Item2 | Type | Size | Location | P&ID | Task | Contractor buyoff | Koppers buyoff | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Creosote Column 6 | 2 | ALL | 601 | Exp. Jt.# 7 | 12 | Top line | 4443 | Pull exp jt, Test, Reinstall if good | 4-19 D | NLS | |
| Creosote Column 6 | 2 | ALL | 602 | Flange | 12 | Top Outlet | 4443 | Change Gasket | 4-16 D | NLS | |
| Creosote Column 6 | 2 | ALL | 603 | Manway | 20 | Top Manway | 4443 | Open and close after work is compl | 4-21 D | NLS | |
| Creosote Column 6 | 2 | ALL | 604 | Manway | 20 | Middle Manway | 4443 | Open and close after work is compl | 4-21 D | NLS | |
| Creosote Column 6 | 2 | ALL | 605 | Manway | 20 | Middle Manway | 4443 | Open and close after work is compl | 4-21 D | NLS | |
| Creosote Column 6 | 2 | ALL | 606 | Flange | 3 | LT-4203 | 4443 | Change Gasket | | NLS | Bolts are short |
| Creosote Column 6 | 2 | ALL | 607 | Instrument | 0.5 | LT-4203 | 4443 | Replace Instrument | 4-21 D | NLS | |
| Creosote Column 6 | 2 | ALL | 608 | Flange | 3 | LT-4203 | 4443 | Change Gasket | 4-16 D | NLS | |
| Creosote Column 6 | 2 | ALL | 609 | Valve | 3 | HV-3340 - Bottom outlet | 4443 | Replace Valve | 4-16 D | NLS | |
| Creosote Column 6 | 2 | ALL | 610 | Flange | 3 | To LDO Pumps | 4443 | Change Gasket | 4-16 D | NLS | |
| Creosote Column 6 | 2 | ALL | 612 | Flange | 3 | Line from LDO pumps | 4443 | Change Gasket | 4-16 D | NLS | |
| Creosote Column 6 | 2 | ALL | 613 | Control valve | 12 | TV-4204 | 4443 | Replace Control valve | 4-21 D | NLS | |
| Creosote Column 6 | 2 | ALL | 614 | Blind Flange | 1.5 | Line from LDO pumps | 4443 | Change Gasket | 4-16 D | NLS | |
| Creosote Column 6 | 2 | ALL | 615 | Exp. Jt.# 9 | 12 | Creo Sidestream expansion joint | 4443 | Pull exp jt, Test, Reinstall if good | 4-21 D | NLS | |
| Creosote Column 6 | 2 | ALL | 616 | Exp. Jt.# 8 | 12 | Creo Sidestream expansion joint | 4443 | Pull exp jt, Test, Reinstall if good | 4-21 D | NLS | |
| Creosote Column 6 | 2 | ALL | 617 | Valve | 3 | HV-3342 | 4443 | Replace Valve | | NLS | Changeout valve assembly for for steamout- NO Valve in stock |
| Creosote Column 6 | 2 | ALL | 618 | Valve | 2 | HV-3341 - Bottom outlet to LDO pumps | 4443 | Replace Valve | 4-16 D | NLS | |
| Creosote Column 6 | 2 | ALL | 619 | Valve | 3 | HV-3344 | 4443 | DELETE Valve and blind tee | | NLS | DELETE Valve and blind tee |
| Flash Column 3 | 2 | ALL | 301 | Flange | 12 | Top Outlet | 4442 | Change Gasket | 4-17 D | NLS | |
| Flash Column 3 | 2 | ALL | 303 | Flange | 4 | Pitch to Flash Sparger | 4442 | Change Gasket | 4-17 D | NLS | |
| Flash Column 3 | 2 | ALL | 304 | Orifice | 4 | Pitch to Flash Sparger | 4442 | Pull, inspect, change gaskets | 4-17 D | NLS | missing |
| Flash Column 3 | 2 | ALL | 305 | Control valve | 2 | LV-4202 | 4442 | Replace Control valve | 4-20 D | NLS | |
| Flash Column 3 | 2 | ALL | 306 | Y cleanout | 3 | 3" Return to main column from pumps | 4442 | Change Gasket | 4-19 D | NLS | |
| Flash Column 3 | 2 | ALL | 307 | Y cleanout | 3 | 3" Return to main column from pumps | 4442 | Change Gasket | 4-16 D | NLS | |
| Flash Column 3 | 2 | ALL | 308 | Y cleanout | 3 | 3" Return to main column from pumps | 4442 | Change Gasket | 4-16 D | NLS | |
| Flash Column 3 | 2 | ALL | 309 | Flange | 3 | Vessel wall - top | 4442 | Change Gasket | 4-18 D | NLS | |
| Flash Column 3 | 2 | ALL | 310 | Blind Flange | 1 | Vessel wall - top | 4442 | Change Gasket | 4-18 D | NLS | |
| Flash Column 3 | 2 | ALL | 311 | Flange | 4 | Pitch to Residue Cooler | 4442 | Change Gasket | 4-18 D | NLS | |
| Flash Column 3 | 2 | ALL | 312 | Blind Flange | 4 | Vessel wall - top | 4442 | Change Gasket | 4-17 D | NLS | |
| Flash Column 3 | 2 | ALL | 313 | Flange | 4 | E-211 | 4442 | Pull E-211 Residue cooler | 4-19 D | NLS | |
| Flash Column 3 | 2 | ALL | 314 | Flange | 4 | E-211 | 4442 | Pull E-211 Residue cooler | 4-19 D | NLS | |
| Flash Column 3 | 2 | ALL | 315 | Flange | 4 | E-211 | 4442 | Pull E-211 Residue cooler | 4-19 D | NLS | |
| Flash Column 3 | 2 | ALL | 316 | Flange | 4 | E-211 | 4442 | Pull E-211 Residue cooler | 4-19 D | NLS | |
| Flash Column 3 | 2 | ALL | 317 | Flange | 4 | E-211 | 4442 | Pull E-211 Residue cooler | 4-19 D | NLS | |
| Flash Column 3 | 2 | ALL | 318 | Valve | 2 | HV-3388 | 4442 | Replace Valve | 4-20 D | NLS | loose bolts |
| Flash Column 3 | 2 | ALL | 319 | Valve | 4 | HV-3799 | 4442 | Replace Valve | 4-18 D | NLS | |
| Flash Column 3 | 2 | ALL | 320 | Flange | 4 | Nozzle to HV-3799 | 4442 | Change Gasket | 4-17 D | NLS | |
| Flash Column 3 | 2 | ALL | 321 | Valve | 4 | HV-3796 | 4442 | Replace Valve | 4-17 D | NLS | |
| Flash Column 3 | 2 | ALL | 322 | Manway | 18 | Manway | 4442 | Open and close after work is compl | | NLS | Manway- waiting on release by Koppers possible entry |
| Flash Column 3 | 2 | ALL | 323 | PSV 201-02 | 3 by 4 | PSV-201-02 | 4442 | Remove, inspect and reinstall | 4-18 D | NLS | loose bolts |
| Flash Column 3 | 2 | ALL | 324 | Exp. Jt.# 6 | 12 | Expansion joint # | 4442 | Pull exp jt, Test, Reinstall if good | 4-21 D | NLS | short bolts |
| Flash Column 3 | 2 | ALL | 325 | PSV-201-03 | 3 by 4 | PSV-201-03 | 4442 | Remove, inspect and reinstall | | NLS | |
| Flash Column 3 | 2 | ALL | 326 | Control valve | 1 | Flash column bleeder near 4"HV-3799 | 4442 | Save valve, Change Gasket | 4-21 D | NLS | |
| Flash Column 3 | 2 | ALL | 327 | Valve | 1 | Flash column bleeder near | 4442 | Replace Valve | 4-18 D | NLS | |
| Flash Column 3 | 2 | ALL | 328 | Valve | 1 | E-211 piping | 4442 | Replace Valve | 4-20 D | NLS | |
| Flash Column 3 | 2 | ALL | 329 | Flange | 4 | E-211 piping | 4442 | Change Gasket | 4-19 D | NLS | |
| Flash Column 3 | 2 | ALL | 330 | Flange | 4 | E-211 piping | 4442 | Change Gasket | | NLS | Bolts are short |
| Flash Column 3 | 2 | ALL | 331 | Flange | 12 | Flash column | 4442 | Change Gasket | 4-19 D | NLS | |
| Flash Column 3 | 2 | ALL | 332 | Flange | 4 | E-211 piping | 4442 | Change Gasket | 4-19 D | NLS | |
| Flash Column 3 | 2 | ALL | 333 | Valve | 4 | E-211 piping | 4442 | Replace Valve | 4-21 D | NLS | |

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## Koppers Rpt Comps Group List

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Flash Column 3 | 2 | ALL | 334 | Valve | 4 | E-211 piping | 4442 | Replace Valve | 4-21 D | NLS | |
| Flash Column 3 | 2 | ALL | 335 | Flange | 4 | E-211 piping | 4442 | Change Gasket | 4-19 D | NLS | |
| Flash Column 3 | 2 | ALL | 336 | Valve | 0.75 | E-211 piping | 4442 | Replace Valve | | NLS | Need plug |
| Dehydrator Column 4 | 2 | ALL | 401 | Valve | 3 | HV-3387 | 4442 | Replace Valve | 4-20 D | NLS | |
| Dehydrator Column 4 | 2 | ALL | 402 | Control valve | 2 | TV-4201 | 4442 | Replace Control valve | 4-20 D | NLS | |
| Dehydrator Column 4 | 2 | ALL | 403 | Valve | 0.75 | HV-3804 Vessel wall -top | 4442 | Replace Valve | 4-19 D | NLS | |
| Dehydrator Column 4 | 2 | ALL | 404 | Exp. Jt.# 5 | 8 | from to Main column overhead | 4442 | Pull exp jt, Test, Reinstall if good | 4-19 D | NLS | |
| Dehydrator Column 4 | 2 | ALL | 405 | Valve | 1.5 | HV-3386 Pitch to Dehydrator | 4442 | Replace Valve | | NLS | |
| Dehydrator Column 4 | 2 | ALL | 406 | Flange | 6 | Line from Dehydrator Condenser | 4442 | Change Gasket | 4-17 D | NLS | |
| Dehydrator Column 4 | 2 | ALL | 407 | Flange | 3 | Pitch to Dehydrator | 4442 | Change Gasket | 4-17 D | NLS | |
| Dehydrator Column 4 | 2 | ALL | 408 | Flange | 4 | Line to Dehydrator Pumps | 4442 | Change Gasket | 4-21 D | NLS | |
| Dehydrator Column 4 | 2 | ALL | 409 | Orifice | 4 | Line from Residue Cooler | 4442 | Pull sparger, inspect, change gasket | 4-17 D | NLS | missing |
| Dehydrator Column 4 | 2 | ALL | 410 | Orifice | 3 | Line from Residue Cooler | 4442 | Change Gasket | 4-17 D | NLS | short bolts |
| Dehydrator Column 4 | 2 | ALL | 411 | Flange | 8 | Line to Dehydrator Condenser | 4442 | Change Gasket | 4-18 D | NLS | |
| Dehydrator Column 4 | 2 | ALL | 412 | Valve | 4 | HV-3363 from Residue Cooler | 4442 | Replace Valve | 4-20 D | NLS | |
| Dehydrator Column 4 | 2 | ALL | 413 | Y-Strainer | 4 | Line from Residue Cooler | 4442 | Change gaskets | 4-19 D | NLS | |
| Dehydrator Column 4 | 2 | ALL | 414 | Instrument | 4 | FT-4203 | 4442 | Replace Instrument | 4-20 D | NLS | |
| Dehydrator Column 4 | 2 | ALL | 415 | Manway | 18 | 1 | 4442 | Open and close after work is compl | | NLS | Manway- waiting on release by Koppers possible entry |
| Dehydrator Column 4 | 2 | ALL | 416 | Manway | 18 | Bottom Manway | 4442 | Open and close after work is compl | | NLS | Manway- waiting on release by Koppers possible entry |
| Dehydrator Column 4 | 2 | ALL | 417 | Instrument | ???? | LT-4201 | 4442 | Pull rebuild and reinstall | | NLS | |
| Dehydrator Column 4 | 2 | ALL | 418 | Flange | 8 | Line to V-2018 | 4442 | Change Gasket | 4-19 D | NLS | |
| Dehydrator Column 4 | 2 | ALL | 419 | Flange | 4 | Line from Residue Cooler | 4442 | Change Gasket | 4-17 D | NLS | |
| Dehydrator Column 4 | 2 | ALL | 420 | Flange | 2 | Pitch to Dehydrator | 4442 | Change Gasket | 4-17 D | NLS | |
| Dehydrator Column 4 | 2 | ALL | 421 | Blind Flange | 6 | Off side of column | 4442 | Change Gasket | 4-19 D | NLS | |
| Dehydrator Column 4 | 2 | ALL | 422 | Pipe | 1.5 | Pitch to Dehydrator | 4442 | Change Gasket | 4-18 D | NLS | |
| Dehydrator Column 4 | 2 | ALL | 423 | Pipe | 4 | Pitch to Dehydrator | 4442 | Change Gasket | 4-20 D | NLS | |
| Dehydrator Column 4 | 2 | ALL | 424 | Valve | 1 | Line from Residue Cooler | 4442 | Replace Valve | 4-20 D | NLS | |
| Tar Column 5 | 2 | ALL | 501 | Control valve | 2 | FV-4223 | 4442 | Replace Control valve | 4-18 D | NLS | |
| Tar Column 5 | 2 | ALL | 502 | Valve | 2 | HV-3364 | 4442 | Replace Valve | 4-19 D | NLS | |
| Tar Column 5 | 2 | ALL | 503 | Valve | 4 | HV-3366 | 4442 | Replace Valve | 4-18 D | NLS | |
| Tar Column 5 | 2 | ALL | 504 | Valve | 4 | HV-3367 Sparger | 4442 | Replace Valve | 4-18 D | NLS | |
| Tar Column 5 | 2 | ALL | 505 | Flange | 6 | Sparger | 4442 | Pull sparger, inspect, change gasket | 4-19 D | NLS | |
| Tar Column 5 | 2 | ALL | 506 | Orifice | 4 | Sparger | 4442 | Change Gasket | 4-19 D | NLS | |
| Tar Column 5 | 2 | ALL | 507 | Valve | 4 | HV-3365 Sparger | 4442 | Replace Valve | 4-18 D | NLS | |
| Tar Column 5 | 2 | ALL | 508 | Instrument | 2 | FT-4223 | 4442 | Replace Instrument | 4-18 D | NLS | |
| Tar Column 5 | 2 | ALL | 509 | Utility Connection | 1 | Line to Sparger | 4442 | Replace Valve | 4-18 D | NLS | |
| Tar Column 5 | 2 | ALL | 510 | PSV-201-01 | 4 by 6 | PSV-201-01 | 4442 | Replace Valve | 4-21 D | NLS | |
| Tar Column 5 | 2 | ALL | 511 | Orifice | 4 | Sparger | 4442 | Pull sparger, inspect, change gasket | 4-19 D | NLS | missing |
| Tar Column 5 | 2 | ALL | 512 | Flange | 6 | Tar Column PRV | 4442 | Change Gasket | 4-20 D | NLS | |
| Tar Column 5 | 2 | ALL | 513 | Flange | 8 | Sparger | 4442 | Change Gasket | 4-19 D | NLS | |
| Tar Column 5 | 2 | ALL | 514 | Blind Flange | 8 | Vessel wall middle | 4442 | Change Gasket | 4-20 D | NLS | short bolts |
| Tar Column 5 | 2 | ALL | 516 | Instrument | ???? | PT-4205 | 4442 | Replace Instrument | | NLS | |
| Tar Column 5 | 2 | ALL | 517 | Flange | 6 | Reboiler Return Sparger | 4442 | Change Gasket | 4-20 D | NLS | |
| Tar Column 5 | 2 | ALL | 518 | Orifice | 6 | Reboiler Return Sparger | 4442 | Pull sparger, inspect, change gasket | 4-20 D | NLS | missing |
| Tar Column 5 | 2 | ALL | 519 | Valve | 4 | HV-3382 | 4442 | Replace Valve | 4-20 D | NLS | |
| Tar Column 5 | 2 | ALL | 520 | Blind Flange | 12 | Vessel wall bottom | 4442 | Change Gasket | 4-20 D | NLS | |
| Tar Column 5 | 2 | ALL | 521 | Flange | 2 | Line from Creosote Column | 4442 | Change Gasket | 4-20 D | NLS | |
| Tar Column 5 | 2 | ALL | 522 | Flange | 12 | Line to Creosote Column | 4442 | Change Gasket | 4-20 D | NLS | |
| Tar Column 5 | 2 | ALL | 523 | Blind Flange | 3 | Vessel wall middle | 4442 | Change Gasket | 4-21 D | NLS | |
| Tar Column 5 | 2 | ALL | 524 | Flange | 2 | Line from RCO pumps | 4442 | Change Gasket | 4-19 D | NLS | |
| Tar Column 5 | 2 | ALL | 525 | Orifice | 1.5 | From RCO pumps | 4442 | Pull, clean, inspect and reinstall | 4-19 D | NLS | |
| Tar Column 5 | 2 | ALL | 526 | Exp. Jt.# 4-loop | 12 | to RCO condenser | 4442 | Pull exp jt, Test, Reinstall if good | 4-21 D | NLS | |
| Tar Column 5 | 2 | ALL | 527 | Flange | 12 | Line to RCO Condenser | 4442 | Change Gasket | 4-20 D | NLS | short bolts |

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## Koppers Rpt Comps Group List

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|---|---|---|---|---|---|---|---|---|---|---|---|
| Tar Column 5 | 2 | ALL | 528 | Manway | 18 | Top Manway | 4442 | Open and close after work is compl | | NLS | Manway- waiting on release by Koppers possible entry |
| Tar Column 5 | 2 | ALL | 529 | Manway | 18 | Middle Manway | 4442 | Open and close after work is compl | | NLS | Manway- waiting on release by Koppers possible entry |
| Tar Column 5 | 2 | ALL | 530 | Manway | 18 | Bottom Manway | 4442 | Open and close after work is compl | | NLS | Manway- waiting on release by Koppers possible entry |
| Tar Column 5 | 2 | ALL | 531 | Manway | 18 | Bottom Manway | 4442 | Open and close after work is compl | | NLS | Manway- waiting on release by Koppers possible entry |
| Tar Column 5 | 2 | ALL | 532 | Flange | 6 | Top of Tar column | 4442 | Change Gasket | 4-19 D | NLS | |
| Tar Seal Oil Tank 9 | 2 | ALL | 901 | Control valve | 2 | PV-4201 | 4446 | Replace Control valve | 4-17 D | NLS | |
| Tar Seal Oil Tank 9 | 2 | ALL | 902 | Control valve | 1 | PV-4202 | 4446 | Replace Control valve | 4-17 D | NLS | |
| Tar Seal Oil Tank 9 | 2 | ALL | 903 | Control valve | 1.5 | PV-4203 | 4446 | Replace Control valve | | NLS | Bolts are short |
| Tar Seal Oil Tank 9 | 2 | ALL | 906 | Control valve | 1 | TV-4232 | 4446 | Replace Control valve | 4-17 D | NLS | |
| Tar Seal Oil Tank 9 | 2 | ALL | 907 | Blind Flange | 6 | Tar Seal Oil Tank Top | 4446 | Replace gasket | 4-16 D | NLS | |
| Tar Seal Oil Tank 9 | 2 | ALL | 908 | Flange | 6 | Tar Seal Oil Tank Top | 4446 | Replace gasket | 4-16 D | NLS | |
| Tar Seal Oil Tank 9 | 2 | ALL | 910 | Instrument | 3 | LT-4210 | 4446 | Replace Instrument | 4-16 D | NLS | |
| Tar Seal Oil Tank 9 | 2 | ALL | 911 | Manway | 24 | Tar Seal Oil Tank | 4446 | Open and close after work is compl | | NLS | Manway- waiting on release by Koppers possible entry |
| Tar Seal Oil Tank 9 | 2 | ALL | 912 | Instrument | 1 | FT-4215 | 4446 | Replace Instrument | 4-21 D | NLS | |
| Tar Seal Oil Tank 9 | 2 | ALL | 913 | Knife Gate Valve | 6 | Tar Seal Oil Tank Top | 4446 | Replace Valve | 4-16 D | NLS | |
| Dehydrator condensers 1 | 2 | ALL | 101 | Exp. Jt.# 10 | 8 | from Dehy column | 4437 | Pull exp jt, Test, Reinstall if good | 4-20 D | NLS | |
| Dehydrator condensers 1 | 2 | ALL | 102 | Control valve | 3 | TV-4208 | 4437 | Replace Control valve | 4-19 D | NLS | |
| Dehydrator condensers 1 | 2 | ALL | 103 | Flange | 4 | E-208 Reinstall | 4446 | Reconnect piping | 4-18 D | NLS | |
| Dehydrator condensers 1 | 2 | ALL | 104 | Flange | 8 | E-208 Reinstall | 4446 | Reconnect piping | 4-18 D | NLS | |
| Dehydrator condensers 1 | 2 | ALL | 105 | Flange | 4 | E-208 Reinstall | 4446 | Reconnect piping | 4-18 D | NLS | |
| Dehydrator condensers 1 | 2 | ALL | 106 | Valve | 3 | E-208 Reinstall | 4446 | Replace Valve | 4-18 D | NLS | |
| Dehydrator condensers 1 | 2 | ALL | 107 | Instrument | 1 | PT 4204 | 4446 | Replace Instrument | 4-21 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 201 | Flange | 12 | HDO Condenser inlet from Flash Colum | 4441 | Change Gasket | 4-21 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 202 | Valve | 3 | HV-3413 HDO Condenser Bottom Outle | 4441 | Replace Valve | 4-18 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 203 | Instrument | 0.5 | PT-4203 | 4441 | Replace Instrument | 4-21 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 204 | Flange | 4 | HDO shell side outlet to Residue cooler | 4441 | Change Gasket | | NLS | Bolts are short |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 205 | Flange | 4 | HDO shell side inlet | 4441 | Change Gasket | 4-17 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 206 | Valve | 4 | HV-3416 HDO shell side inlet | 4441 | Replace Valve | 4-16 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 207 | Utility Connection | 1 | HDO shell side inlet | 4441 | Replace Valve | | NLS | Need plug |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 211 | Valve | 2 | HV-3410 S-206 Liquid outlet | 4441 | Replace Valve | 4-16 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 212 | Flange | 6 | HDO condenser outlet to KD condenser | 4441 | Change Gasket | 4-17 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 213 | Exp. Jt.# 3 | 6 | HDO Condenser inlet from Flash Colum | 4441 | Pull exp jt, Test, Reinstall if good | 4-17 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 215 | Valve | 2 | HV-3411 HDO KD Condenser bottom he | 4441 | Replace Valve | 4-18 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 216 | Valve | 0.75 | HV-3407 HDO KD Condenser shell side | 4441 | Replace Valve | 4-16 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 217 | Flange | 6 | HDO KD Condenser to separator pot | 4441 | Change Gasket | 4-16 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 218 | Flange | 2 | HDO KD condenser Cooling water retur | 4441 | Change Gasket | 4-20 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 221 | Flange | 6 | S-206 Vapor outlet | 4441 | Change Gasket | 4-17 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 222 | Flange | 2 | S-106 Liquid outlet | 4441 | Change Gasket | 4-16 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 223 | Sightglass | 2 | S-106 Liquid outlet | 4441 | Change gasket(s) | 4-16 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 224 | Control valve | 1.5 | TV-4207 | 4441 | Replace Control valve | 4-18 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 225 | Heads | | HDO Condenser | 4441 | Remove and reinstall heads | 4-17 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 226 | Blind Flange | 1.5 | Flash Vaccum Pump | 4441 | Change Gasket | 4-16 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 227 | Valve | 6 | Flash Vaccum Pump | 4441 | Pull valve and reinstall | 4-20 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 228 | Valve | 6 | Flash Vaccum Pump | 4441 | Pull valve and reinstall | 4-21 D | NLS | |
| HDO Condenser / KD 2 Condenser / Separator Pot 2 | 2 | ALL | 229 | Blind Flange | 6 | Flash Vaccum Pump | 4441 | Install blind | 4-20 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 701 | Flange | 12 | Top inlet from V-101 | 4444 | Change Gasket | 4-21 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 702 | Valve | 0.75 | HV-3392 for PT 4201 | 4444 | Replace Valve | 4-21 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 703 | Instrument | 0.75 | PT-4201 | 4444 | Replace Instrument | 4-21 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 704 | Flange | 8 | Outlet to LDO Condenser | 4444 | Change Gasket | 4-16 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 705 | Flange | 4 | Inlet from General Transfer Line | 4444 | Change Gasket | 4-17 D | NLS | |

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## Koppers Rpt Comps Group List

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|---|---|---|---|---|---|---|---|---|---|---|---|
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 706 | Valve | 4 | HV-1352 | 4444 | Replace Valve | 4-17 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 707 | Control valve | 2 | TV-4235A | 4444 | Replace Control valve | 4-20 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 708 | Control valve | 2 | TV-4235B | 4444 | Replace Control valve | 4-17 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 709 | Valve | 0.75 | HV-1354 Line to LDO Condenser | 4444 | Replace Valve | 4-17 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 710 | Control valve | 3 | LV-4201 | 4444 | Replace Control valve | 4-17 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 712 | Instrument | 3 | FT-4201 | 4444 | Replace FT | 4-16 D | NLS | loose bolts |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 713 | Valve | 0.75 | HV-3397 RCO outlet to RCO pumps | 4444 | Replace Valve | 4-16 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 714 | Valve | 2 | HV-3395 from S-104 | 4444 | Replace Valve | 4-16 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 715 | Valve | 4 | HV-3394 RCO Condenser Bottom Head | 4444 | Replace Valve | 4-18 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 716 | Plug valve | 3 | LT valve LT-4204 | 4444 | Replace Valve | 4-16 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 717 | Exp. Jt.# 2 | 6 | 6" expansion joint between E-1-4 / E-1 | 4444 | Pull exp jt, Test, Reinstall if good | 4-17 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 718 | Flange | 6 | E-201 shell side to E-204 | 4444 | Change Gasket | 4-17 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 719 | Flange | 6 | E-201 shell side to E-205 | 4444 | Change Gasket | 4-17 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 720 | Control valve | 1 | TV-4205 | 4444 | Replace Control valve | 4-17 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 721 | Valve | 0.75 | HV-3390 E-204 shell side drain | 4444 | Replace Valve | 4-16 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 722 | Flange | 6 | E-204 outlet to separator pot | 4444 | Change Gasket | 4-19 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 723 | Flange | 2 | E-204 Top Head | 4444 | Change Gasket | 4-16 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 725 | Flange | 6 | S-204 Vapor outlet | 4444 | Change Gasket | 4-16 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 726 | Flange | 2 | S-204 Liquid outlet | 4444 | Change Gasket | 4-18 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 728 | Flange | 2 | E-204 bottom head | 4444 | Change Gasket | 4-16 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 729 | Utility Connection | 0.75 | E-204 | 4444 | Replace Valve | 4-18 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 730 | Utility Connection | 0.75 | Inlet from General Transfer Line | 4444 | Replace Valve | 4-17 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 731 | Heads | | RCO Condenser | 4444 | Remove and reinstall heads | 4-17 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 732 | Plug valve | 3 | LT valve LT-4204 | 4444 | Replace Valve | 4-16 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 733 | Sightglass | 2 | S-204 Liquid outlet | 4444 | Change Gasket | 4-16 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 734 | Blind | 2 | S-204 Separator | 4444 | Change Gasket | 4-16 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 735 | Blind | 2 | S-204 Separator | 4444 | Change Gasket | 4-16 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 736 | Blind | 1.5 | S-204 Drop to for VOC Pumps | 4444 | Change Gasket | 4-16 D | NLS | |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 737 | Blind | 0.75 | Top of Level guage | 4444 | Change Gasket | | NLS | Change NG&G on blind |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 738 | Valve | 4 | HV-1350 | 4444 | Replace Valve | | NLS | Change valve |
| RCO Condenser / KD 7 Condenser / Separator Pot 7 | 2 | ALL | 739 | Valve | 0.75 | HV-1351 | 4444 | Replace Valve | | NLS | Change valve |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 801 | Flange | 12 | E-202 inlet from V-209 | 4445 | Replace gasket | 4-20 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 804 | Flange | 8 | E-202 Shell side to Dehydrator | 4445 | Replace gasket | 4-16 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 805 | Flange | 4 | E-202 inlet from RCO Condenser | 4445 | Replace gasket | 4-17 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 806 | Flange | 6 | Outlet to K/D Condenser | 4445 | Replace gasket | 4-16 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 807 | Plug valve | 3 | LT-4205 | 4445 | Replace Valve | 4-16 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 808 | Valve | 4 | HV-3352 E-202 Bottom outlet | 4445 | Replace Valve | 4-16 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 809 | Valve | 2 | HV-3353 from S-105 to E-102 bottom o | 4445 | Replace Valve | 4-16 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 810 | Utility Connection | 0.75 | HV-3354 on E-202 bottom outlet | 4445 | Replace Valve | 4-16 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 811 | Utility Connection | 0.5 | HV-???? on S-105 outlet | 4445 | Replace Valve | 4-16 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 812 | Exp. Jt.# 1 | 6 | E-202 inlet from E-205- expansion joint | 4445 | Pull exp jt, Test, Reinstall if good | 4-16 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 813 | Flange | 6 | E-205 inlet from E-202 | 4445 | 4-9 D | 4-16 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 814 | Flange | 2 | E-205 Top head Tempered water return | 4445 | Replace gasket | 4-16 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 816 | Valve | 0.75 | HV-3345 for PT-4102 | 4445 | Replace Valve | 4-18 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 817 | Instrument | 0.75 | PT-4202 | 4445 | Replace Instrument | 4-21 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 818 | Flange | 6 | E-205 outlet to Separator Pot | 4445 | Replace gasket | 4-16 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 819 | Ball Valve | 0.75 | HV-3348 E-205 shell side drain | 4445 | Replace Valve | 4-18 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 820 | Flange | 2 | E-205 bottom outlet | 4445 | Replace gasket | 4-16 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 821 | Control valve | 1 | TV-4206 | 4445 | Replace Control valve | 4-17 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 823 | Sightglass | 2 | S-105 liquid outlet | 4445 | Replace gaskets | 4-16 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 824 | Flange | 2 | S-205 liquid outlet | 4445 | Replace gasket | 4-16 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 825 | Flange | 6 | S-205 vapor outlet | 4445 | Replace gasket | 4-16 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 826 | Heads | | RCO Condenser | 4445 | Remove and reinstall heads | 4-17 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 827 | Plug valve | 3 | LT-4205 | 4445 | Replace Valve | 4-16 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 828 | Blind | 2 | S-205 Separator | 4445 | Replace gasket | 4-16 D | NLS | |

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## Koppers Rpt Comps Group List

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|---|---|---|---|---|---|---|---|---|---|---|---|
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 829 | Blind | 2 | S-205 Separator | 4445 | Replace gasket | 4-16 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 830 | Blind | 1 5 | S-205 Separator | 4445 | Replace gasket | 4-16 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 831 | Flange | 8 | S-205 Separator | 4445 | Replace gasket | 4-19 D | NLS | |
| LDO Condenser / KD 8 Condenser / Separator Pot 8 | 2 | ALL | 832 | Plug | 8 | Bleeder valve | 4445 | Add plug | | NLS | Need plug |
| Grand Total | | | | | | | | | | | |

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1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

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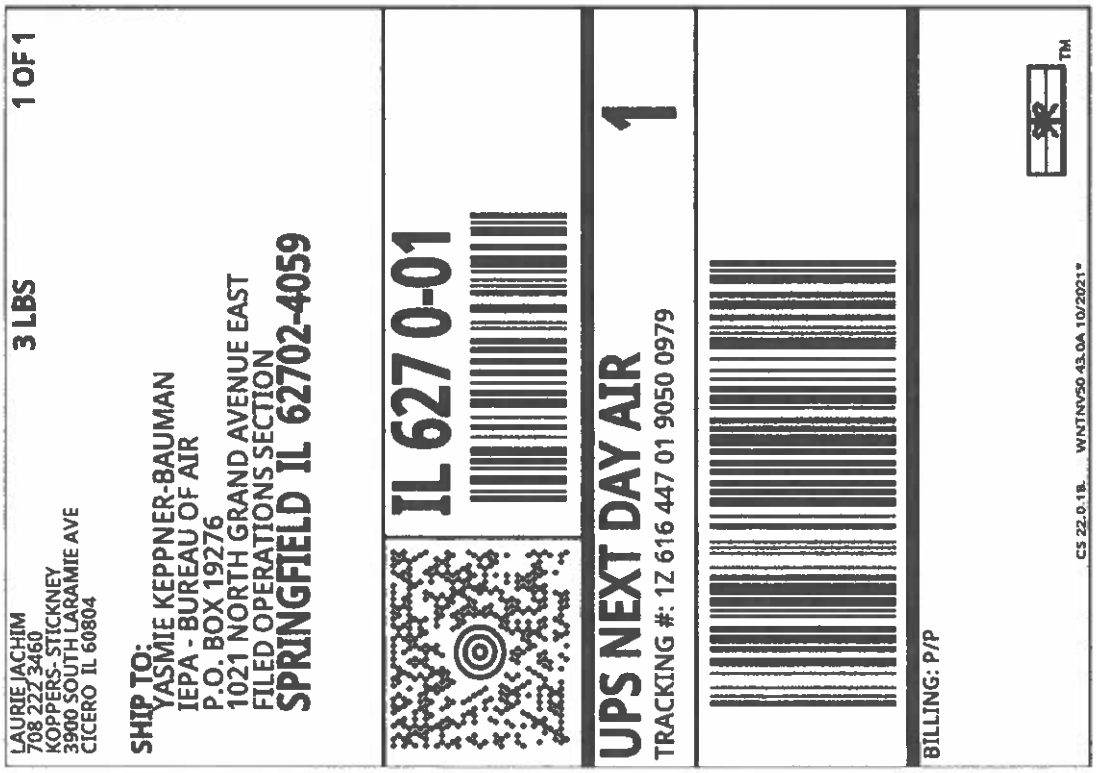

# Illinois EPA FOIA Exemption Reference Sheet

SID: 25461

Agency ID: 170000035076
Bureau ID: 031300AAJ
Site Name: Koppers Inc
Site Address1: 3900 S Laramie Ave
Site Address2:
Site City: Cicero
Media File Type: AIR
State: IL
Zip: 60804-4523

**This record has been determined to be partially or wholly exempt from public disclosure**

**Exemption Type:**

**Portion Removed**

**Exempt Doc #:** 88
**Document Date:** 10/22/2021
**Staff:** MDB

**Document Description:** SUPPLEMENTAL RESPONSE TO VIOLATION NOTICE (DOC. 4: STICKNEY TAR PLANT FIRE ANALYSIS, DOC. 6: FIGURES/TECHNICAL DIAGRAMS, DOC. 7: TAR PLANT OVERVIEW, DOC. 13: FIGURES/TECHNICAL DIAGRAMS, DOC. 14: FIGURES/TECHNICAL DIAGRAMS)

**Category ID:** 08
**Category Description:** COMPLIANCE
**Exempt Type:** Portion Removed
**Permit ID:** A-2021-00217
**Date of Determination:** 12/19/2023