

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR
1910.1200

Vacuum Tower Bottoms

Version Revision Date: SDS Number: Print Date: 4/01/2022
1.0 4/01/2022 VRAM00045 Date of last issue: 4/01/2022

SECTION 1. IDENTIFICATION

Product name : Vacuum Tower Bottoms

Product code : 002D3522

CAS-No. : 64741-56-6

Manufacturer or supplier's details

Manufacturer/Supplier : **Vertex Refining Alabama LLC**
400 Industrial Pkwy Ext. East
Saraland, AL 36571
USA

SDS Request : 251-679-7180

Customer Service : 251-679-7180

Emergency telephone number

Spill Information : 800-424-9300

Health Information : 800-424-9300

Recommended use of the chemical and restrictions on use

Recommended use : Refinery stream.

Restrictions on use :
This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Based on available data this substance / mixture does not meet the classification criteria.

GHS label elements

Hazard pictograms : No Hazard Symbol required

Signal word : No signal word

Hazard statements : PHYSICAL HAZARDS:
Not classified as a physical hazard under GHS criteria.
HEALTH HAZARDS:
Not classified as a health hazard under GHS criteria.
ENVIRONMENTAL HAZARDS:
Not classified as an environmental hazard under GHS criteria.

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Vacuum Tower Bottoms

Version 1.0 Revision Date: 4/01/2022 SDS Number: VRAM00045 Print Date: 4/01/2022
Date of last issue: 4/01/2022

Precautionary statements : **Prevention:**
No precautionary phrases.
Response:
No precautionary phrases.
Storage:
No precautionary phrases.
Disposal:
No precautionary phrases.

Other hazards which do not result in classification

Not classified as flammable but will burn.

Do not allow molten material to contact water or liquids as this can cause violent eruptions, splatter hot material, or ignite flammable material.

These deposits, (carbonaceous materials and iron sulphides), may be pyrophoric and self-ignite when brought into contact with air (opening of tank).

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 and has a high odour threshold, so do not rely on odour as an indication of hazard.

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

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

Hazardous components

Chemical name	Synonyms	CAS-No.	Concentration (% w/w)
Residues (Petroleum), Vacuum	Residues (petroleum), vacuum	64741-56-6	<= 100

Further information

Contains:

Chemical name	Identification number	Concentration [%]
Hydrogen sulfide	7783-06-4, 231-977-3	0.1 - <= 1

SECTION 4. FIRST-AID MEASURES

General advice : DO NOT DELAY.
Keep victim calm. Obtain medical treatment immediately.
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 : If inhalation of mists, fumes or vapour causes irritation to the

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Vacuum Tower Bottoms

Version
1.0

Revision Date:
4/01/2022

SDS Number:
VRAM00045

Print Date: 4/01/2022
Date of last issue: 4/01/2022

nose or throat, remove to fresh air.

If rapid recovery does not occur, obtain medical attention. Casualties suffering ill effects as a result of exposure to hydrogen sulphide should be removed 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 Cardiopulmonary Resuscitation (CPR) as required and transport to the nearest medical facility.

In case of skin contact

- : 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.
It should be noted this product contracts on cooling. Where a limb is encased, care should be taken to avoid the development of a tourniquet effect. In the event of this occurring, the adhering product must be softened and/or split to prevent restriction of blood flow.
All burns should receive medical attention.

In case of eye contact

- : Hot product -
If contact with hot product, immediately cool the burn area by flushing with large amounts of water.
Do not attempt to remove anything from the burn area.
Do not apply burn creams or ointments.
Transport to the nearest medical facility for additional treatment.
During transport do not cover the wound with dressing or sheet since these may adhere to the product.
All burns should receive medical attention.

Cold product -

Flush eye with copious quantities of water.
Remove contact lenses, if present and easy to do. Continue rinsing.
If persistent irritation occurs, obtain medical attention.

If swallowed

- : Under normal conditions of use, this is not expected to be a primary route of exposure.

Most important symptoms and effects, both acute and delayed

- : Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing.
Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision.
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,

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Vacuum Tower Bottoms

Version
1.0

Revision Date:
4/01/2022

SDS Number:
VRAM00045

Print Date: 4/01/2022
Date of last issue: 4/01/2022

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.

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.

Indication of any immediate medical attention and special treatment needed : Do not attempt to remove the product from the skin as it provides an airtight sterile covering, which will eventually fall away with the scab as the burn heals. If removal is attempted, mineral oil (not mineral spirits) or a mineral oil based ointment may be applied to help soften the product to facilitate removal. 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.

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 water in a jet.

Specific hazards during fire-fighting : Hazardous combustion products may include:
A complex mixture of airborne solid and liquid particulates and gases (smoke).
Carbon monoxide.
Unidentified organic and inorganic compounds.
Boil-over of tanks and violent eruptions may occur in the presence of water.
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.

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

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Vacuum Tower Bottoms

Version 1.0 Revision Date: 4/01/2022 SDS Number: VRAM00045 Print Date: 4/01/2022
Date of last issue: 4/01/2022

- Personal precautions, protective equipment and emergency procedures : Avoid contact with skin, eyes and clothing. Hot product should be handled so that there is no risk of burns. Use compressed air or fresh air respiratory equipment in confined spaces.
- Environmental precautions : 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 : Small spillage:
Allow product to cool and solidify.
Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers.
- Large spillage:
Prevent from spreading by making a barrier with sand, earth or other containment material.
Treat residues as for small spillage.
- Additional advice : For guidance on selection of personal protective equipment see Chapter 8 of this Safety Data Sheet.
Local authorities should be advised if significant spillages cannot be contained.
For guidance on disposal of spilled material see Chapter 13 of this Safety Data Sheet.
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SECTION 7. HANDLING AND STORAGE

- Technical measures : Avoid contact with hot liquid to prevent thermal burns.
- Advice on 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.
Vapours containing hydrogen sulphide will accumulate during storage or transport and will also be vented during filling of tanks. Stay upwind and away from newly opened hatches and allow to vent thoroughly before handling material. Steam may be used to vent hatches. Keep all sources of ignition away from loading area.
For quality, health and safety reasons do not exceed the recommended storage and handling temperature.
Clean, dry and heat resistant hoses (free of twists, etc.) should be used.
Do not use steam to empty pipelines and hoses.
Use compressed air to blow product from the system or apply a vacuum to suck the product from the system.
Do not use solvents to clear obstructions of pipelines.
Use local exhaust ventilation if there is risk of inhalation of
-

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Vacuum Tower Bottoms

Version
1.0

Revision Date:
4/01/2022

SDS Number:
VRAM00045

Print Date: 4/01/2022
Date of last issue: 4/01/2022

vapours, mists or aerosols.
Bulk storage tanks should be diked (bunded).

Avoidance of contact : Do not allow molten material to contact water or liquids as this can cause violent eruptions, splatter hot material, or ignite flammable material.
Reacts with strong oxidising agents.
Avoid contamination of thermal insulation near hot surfaces by oil and bitumen and replace lagging where necessary, with a non-absorbent type of insulation.
Self-heating, leading to auto-ignition at the surfaces of porous or fibrous materials impregnated with bitumen or condensates from bituminous fumes, can occur at temperatures below 100°C.

Further information on storage stability : Keep dry.
Keep container in a well-ventilated place.
Prevent all contact with water and with moist atmosphere.
In case of long-term storage, deposits may develop on walls and roofs of storage tanks.
These deposits, (carbonaceous materials and iron sulphides), may be pyrophoric and self-ignite when brought into contact with air (opening of tank).
Vapours containing hydrogen sulphide will accumulate during storage or transport and will also be vented during filling of tanks. Stay upwind and away from newly opened hatches and allow to vent thoroughly before handling material. Steam may be used to vent hatches. Keep all sources of ignition away from loading area.

Storage Temperature:
Temperature should be kept at least 30°C below flash point and should never exceed the industry recommended maximum safe working temperature of 200°C.

Packaging material : Suitable material: For containers or container linings, use stainless steel.
Unsuitable material: For containers or container linings avoid PVC, polyethylene or high density polyethylene.

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 sulfide	7783-06-4	TWA	5 ppm 7 mg/m ³	2009/161/EU
Further information: This value is for information where there is no national limit value available.				
Hydrogen sulfide		STEL	10 ppm	2009/161/EU

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Vacuum Tower Bottoms

Version
1.0

Revision Date:
4/01/2022

SDS Number:
VRAM00045

Print Date: 4/01/2022
Date of last issue: 4/01/2022

			14 mg/m3	
	Further information: This value is for information where there is no national limit value available.			
Hydrogen sulfide		STEL	5 ppm	ACGIH
	Further information: Central Nervous System impairment, Upper Respiratory Tract irritation			
Hydrogen sulfide		CEIL	20 ppm	OSHA Z-2
Hydrogen sulfide		Peak	50 ppm (10 minutes once only if no other measured exposure occurs)	OSHA Z-2
Hydrogen sulfide		TWA	1 ppm	ACGIH
Hydrogen sulfide		STEL	5 ppm	ACGIH

Biological occupational exposure limits

No biological limit allocated.

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/>

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:
Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated. Adequate ventilation to control airborne concentrations.

General Information:

Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping. Define procedures for safe handling and maintenance of controls. Educate and train workers in the hazards and control

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Vacuum Tower Bottoms

Version
1.0

Revision Date:
4/01/2022

SDS Number:
VRAM00045

Print Date: 4/01/2022
Date of last issue: 4/01/2022

measures relevant to normal activities associated with this product.
Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.
Drain down system prior to equipment break-in or maintenance.
Retain drain downs in sealed storage pending disposal or subsequent recycle.

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 unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure Breathing Apparatus. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for the combination of organic gases and vapours and particles meeting EN14387 and EN143 [Filter type A/P for use against certain organic gases and vapours with a boiling point >65°C (149°F) and for use against particles].

In areas where hydrogen sulphide vapours may accumulate, a positive-pressure air-supplied respirator is advised.

Hand protection
Remarks

: Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection. Heat resistant gloves and PVC or nitrile rubber gloves. 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. 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. 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

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Vacuum Tower Bottoms

Version 1.0 Revision Date: 4/01/2022 SDS Number: VRAM00045 Print Date: 4/01/2022
Date of last issue: 4/01/2022

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. Glove thickness should be typically greater than 0.35 mm depending on the glove make and model. When handling heated product wear heat resistant gloves.

- Eye protection : Wear safety glasses and face shield (preferably with a chin guard) if splashes are likely to occur.
- Skin and body protection : For normal operations with hot material wear chemical and heat resistant boots and overalls (with cuffs over gloves and legs over boots). The use of a neck apron is recommended.
- Protective measures : Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.
- Thermal hazards : When handling heated product, wear heat resistant gloves, safety hat with chin strap, face shield (preferably with a chin guard), safety glasses, heat resistant coveralls (with cuffs over gloves and legs over boots), neck protection and heavy duty boots, e.g. leather for heat resistance.

Environmental exposure controls

- General advice : Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour. Take appropriate measures to fulfill the requirements of relevant environmental protection legislation. Avoid contamination of the environment by following advice given in Chapter 6. If necessary, prevent undissolved material from being discharged to waste water. Waste water should be treated in a municipal or industrial waste water treatment plant before discharge to surface water.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : Solid at room temperature., Liquid at high temperatures.
- Colour : Data not available
- Odour : Data not available
- Odour Threshold : Data not available
- pH : Not applicable
- : Data not available
- Initial boiling point and boiling range : 400 - 537 °C / 752 - 999 °F
Method: Unspecified

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR
1910.1200

Vacuum Tower Bottoms

Version 1.0 Revision Date: 4/01/2022 SDS Number: VRAM00045 Print Date: 4/01/2022
Date of last issue: 4/01/2022

Flash point : 180 - 200 °C / 356 - 392 °F
Method: Unspecified

Evaporation rate : Data not available

Flammability (solid, gas) : Not applicable

Upper explosion limit / upper flammability limit : no data available

Lower explosion limit / Lower flammability limit : Data not available

Vapour pressure : Method: Unspecified
Data not available
Method: Unspecified
Data not available

Relative vapour density : Data not available

Density : 990 - 1,050 kg/m³ (15.0 °C / 59.0 °F)
Method: Unspecified

Solubility(ies)
Water solubility : negligible
Solubility in other solvents : Data not available

Partition coefficient: n-octanol/water : Data not available

Auto-ignition temperature : > 300 °C / 572 °F

Decomposition temperature : Data not available

Viscosity
Viscosity, kinematic : 275 - 380 mm²/s (50 °C / 122 °F)
Method: Unspecified

Explosive properties : NOT CLASS: Not classified

Oxidizing properties : Not applicable

Conductivity : This material is not expected to be a static accumulator.

SECTION 10. STABILITY AND REACTIVITY

Reactivity : The product does not pose any further reactivity hazards in

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Vacuum Tower Bottoms

Version 1.0 Revision Date: 4/01/2022 SDS Number: VRAM00045 Print Date: 4/01/2022
Date of last issue: 4/01/2022

	addition to those listed in the following sub-paragraph.
Chemical stability	: No hazardous reaction is expected when handled and stored according to provisions
Possibility of hazardous reactions	: Data not available
Conditions to avoid	: Heating above the maximum recommended storage and handling temperature, will cause degradation and evolution of flammable vapours.
Incompatible materials	: Do not allow molten material to contact water or liquids as this can cause violent eruptions, splatter hot material, or ignite flammable material. Reacts with strong oxidising agents. Avoid contamination of thermal insulation near hot surfaces by oil and bitumen and replace lagging where necessary, with a non-absorbent type of insulation. Self-heating, leading to auto-ignition at the surfaces of porous or fibrous materials impregnated with bitumen or condensates from bituminous fumes, can occur at temperatures below 100°C.
Hazardous decomposition products	: Hydrogen sulphide.

SECTION 11. TOXICOLOGICAL INFORMATION

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

Inhalation is not expected to be a relevant route of exposure except under conditions where exposure to vapours, aerosols or mists is possible.

Acute toxicity

Product:

Acute oral toxicity	: (rat): Remarks: Low toxicity: LD50 > 5000 mg/kg
Acute inhalation toxicity	: Remarks: Low toxicity by inhalation. Avoid vapours from heated materials to prevent exposure to potentially toxic/irritating fumes.
Acute dermal toxicity	: (Rabbit): Remarks: LD50 >2000 mg/kg Low toxicity: Based on available data, the classification criteria are not met.

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Vacuum Tower Bottoms

Version
1.0

Revision Date:
4/01/2022

SDS Number:
VRAM00045

Print Date: 4/01/2022
Date of last issue: 4/01/2022

equal to 0.1% is on OSHA's list of regulated carcinogens.

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.

IARC	
Residues (Petroleum), Vacuum	Occupational exposures to hard bitumens and their emissions during mastic asphalt work are 'possibly carcinogenic to humans' (IARC Group 2B). Occupational exposures to straight-run bitumens and their fume condensates during road paving are 'possibly carcinogenic to humans' (IARC Group 2B).

Reproductive toxicity

Product:

:
Remarks: Not a developmental toxicant., Based on available data, the classification criteria are not met., Does not impair fertility.

STOT - single exposure

Product:

Remarks: Inhalation of vapours or mists may cause irritation to the respiratory system.

STOT - repeated exposure

Product:

Remarks: Based on available data, the classification criteria are not met.

Aspiration toxicity

Product:

Not an aspiration hazard.

Further information

Product:

Remarks: Classifications by other authorities under varying regulatory frameworks may exist., 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.

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Vacuum Tower Bottoms

Version 1.0 Revision Date: 4/01/2022 SDS Number: VRAM00045 Print Date: 4/01/2022
Date of last issue: 4/01/2022

SECTION 12. ECOLOGICAL INFORMATION

Basis for assessment : Incomplete ecotoxicological data are available for this product. The information given below is based partly on a knowledge of the components and the ecotoxicology of similar products.

Ecotoxicity

Product:

Toxicity to fish (Acute toxicity) : Remarks: LL/EL/IL50 > 100 mg/l
Practically non toxic:
Based on available data, the classification criteria are not met.

Toxicity to daphnia and other aquatic invertebrates (Acute toxicity) : Remarks: LL/EL/IL50 > 100 mg/l
Practically non toxic:
Based on available data, the classification criteria are not met.

Toxicity to algae (Acute toxicity) : Remarks: LL/EL/IL50 > 100 mg/l
Practically non toxic:
Based on available data, the classification criteria are not met.

Toxicity to fish (Chronic toxicity) : Remarks: NOEC/NOEL > 100 mg/l

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Remarks: NOEC/NOEL > 100 mg/l

Toxicity to microorganisms (Acute toxicity) : Remarks: LL/EL/IL50 > 100 mg/l
Practically non toxic:
Based on available data, the classification criteria are not met.

Persistence and degradability

Product:

Biodegradability : Remarks: Not readily biodegradable.

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Has the potential to bioaccumulate.

Mobility in soil

Product:

Mobility : Remarks: If it enters soil, it will adsorb to soil particles and will

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Vacuum Tower Bottoms

Version
1.0

Revision Date:
4/01/2022

SDS Number:
VRAM00045

Print Date: 4/01/2022
Date of last issue: 4/01/2022

not be mobile.
In water will either float or sink, showing little tendency to disperse.

Other adverse effects

Product:

Additional ecological information : Causes physical fouling of aquatic organisms.
Does not have ozone depletion potential, photochemical ozone creation potential or global warming potential.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Recover or recycle if possible.
Waste product should not be allowed to contaminate soil or water.
Waste, spills or used product is dangerous waste.

Disposal should be in accordance with applicable regional, national, and local laws and regulations.
Local regulations may be more stringent than regional or national requirements and must be complied with.

Contaminated packaging : Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand.

SECTION 14. TRANSPORT INFORMATION

National Regulations

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

UN/ID/NA number : UN 3257
Proper shipping name : ELEVATED TEMPERATURE LIQUID, N.O.S.
Class : 9
Packing group : III
Labels : 9
ERG Code : 128
Marine pollutant : no

International Regulations

IATA-DGR

UN/ID No. : UN 3257 (Not permitted for transport)
Proper shipping name : ELEVATED TEMPERATURE LIQUID, N.O.S.
Class : 9
Packing group : Not Assigned
Remarks : IATA - Forbidden for transport on passenger and cargo air-

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Vacuum Tower Bottoms

Version 1.0 Revision Date: 4/01/2022 SDS Number: VRAM00045 Print Date: 4/01/2022
Date of last issue: 4/01/2022

craft in molten state.

IMDG-Code

UN number : UN 3257
Proper shipping name : ELEVATED TEMPERATURE LIQUID, N.O.S.
Class : 9
Packing group : III
Labels : 9
Marine pollutant : no

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

Not applicable for product as supplied. MARPOL Annex 1 rules apply for bulk shipments by sea.

Special precautions for user

Remarks : Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.
Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

Additional Information : Not dangerous for conveyance under UN, IMO, ADR/RID, IATA codes if transported at ambient temperature. MARPOL Annex 1 rules apply for bulk shipments by sea. IATA - Forbidden for transport on passenger and cargo aircraft in molten state. Not dangerous for conveyance under UN, IMO, ADR/RID, IATA codes if transported at ambient temperature.

SECTION 15. REGULATORY INFORMATION

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.

The components with RQs are given for information., Vertex HSSE classifies this material as an "oil" under the CERCLA Petroleum Exclusion, therefore releases to the environment are not reportable under CERCLA.

SARA 304 Extremely Hazardous Substances Reportable Quantity

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

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : No SARA Hazards

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Vacuum Tower Bottoms

Version 1.0 Revision Date: 4/01/2022 SDS Number: VRAM00045 Print Date: 4/01/2022
Date of last issue: 4/01/2022

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 sulfide	7783-06-4	0.9999 %
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US State Regulations

Pennsylvania Right To Know

Hydrogen sulfide	7783-06-4
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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.

The components of this product are reported in the following inventories:

TSCA : All components listed.

SECTION 16. OTHER INFORMATION

Further information

NFPA Rating (Health, Fire, Reactivity) 0, 1, 0

Full text of other abbreviations

2009/161/EU	: 2009/161/EU
ACGIH	: USA. ACGIH Threshold Limit Values (TLV)
OSHA Z-2	: USA. Occupational Exposure Limits (OSHA) - Table Z-2
2009/161/EU / STEL	: Short term exposure limit
2009/161/EU / TWA	: Limit Value - eight hours
ACGIH / TWA	: 8-hour, time-weighted average
ACGIH / STEL	: Short-term exposure limit
ACGIH / STEL	: Short-Term Exposure Limit (STEL)
OSHA Z-2 / CEIL	: Acceptable ceiling concentration
OSHA Z-2 / Peak	: Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift
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

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR
1910.1200

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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 für 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_HPVS = 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

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1.0	4/01/2022	VRAM00045	Date of last issue: 4/01/2022

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

A vertical bar (|) in the left margin indicates an amendment from the previous version.

|| **Due to a change in detail in Section 15, this document has been released as a significant change.**

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 Vertex HSSE, material suppliers' data, CONCAWE, EU IUCLID date base, EC 1272 regulation, etc).

Revision Date : 4/01/2022

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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