



Material Safety Data Sheet (MSDS)

| Product | VTB | | |
|------------|---------------------|---------------------|-------------------------------|
| CAS No. | Date of preparation | Date of preparation | Department of Team |
| 64741-56-6 | 2018-03-22 | 2019-02-20 | Safety / Health Planning Team |

1. IDENTIFICATION

A. Product name

- VTB

B. Recommended use and restriction on use

- General use : Not available
- Restriction on use : Not available

C. Manufacturer / Supplier / Distributor information

○ Manufacturer / Supplier / Distributer information

- Company name : GS Caltex
- Address : 508, Nonhyeon-ro, Gangnam-gu, Seoul, 135-985 Korea
- Telephone number : 1544-5151
- Emergency telephone number : 1544-5151
- Fax number : 02-565-5168

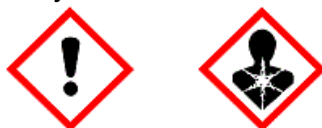
2. HAZARD IDENTIFICATION

A. GHS Classification

- Skin corrosion/irritation : Category2
- Serious eye damage/irritation : Category2B
- Germ cell mutagenicity : Category2
- Reproductive toxicity : Category2
- Specific target organ toxicity(Repeated exposure) : Category2

B. GHS label elements

○ Hazard symbols



○ Signal words

- Warning

○ Hazard statements

- H315 Causes skin irritation
- H320 Cause eye irritation.
- H341 Suspected of causing genetic defects
- H361 Suspected of damaging fertility or the unborn child
- H373 May cause damage to organs through prolonged or repeated exposure (Refer Section SDS 11)

○ Precautionary statements

1) Prevention

- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P260 Do not breathe dust/fume.
- P264 Wash hands thoroughly after handling.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.

2) Response

- P302+P352 IF ON SKIN: Wash with plenty of soap and water.
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P308+P313 If exposed or concerned: Get medical advice/attention.
- P314 Get medical advice/attention if you feel unwell.
- P321 Specific treatment
- P332+P313 If skin irritation occurs: Get medical advice/attention.
- P337+P313 If eye irritation persists: Get medical advice/attention.
- P362 Take off contaminated clothing and wash before reuse.

3) Storage

- P405 Store locked up.

4) Disposal

- P501 Dispose of contents/container in accordance with local/regional/national/international regulation

C. Other hazards which do not result in classification : (NFPA Classification)**○ NFPA grade (0 ~ 4 level)**

- Health : 1 , Flammability : 1, Reactivity : 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | Trade names and Synonyms | CAS No. | Content(%) |
|------------------------------|--------------------------|------------|------------|
| Residues (petroleum), vacuum | - | 64741-56-6 | 100 |

4. FIRST AID MEASURES**A. Eye contact**

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.
- Get medical attention immediately.

B. Skin contact

- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Wash contaminated clothing thoroughly before re-using.
- Get medical attention immediately.
- Go to the hospital immediately if symptoms(flare, irritate) occur.
- Wash thoroughly after handling.

C. Inhalation contact

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.
- Get medical attention immediately.
- If breathing is stopped or irregular, give artificial respiration and supply oxygen.

D. Ingestion contact

- Please be advised by doctor whether induction of vomit is demanded or not.
- Rinse your mouth with water immediately.
- Get medical attention immediately.

E. Delayed and immediate effects and also chronic effects from short and long term exposure

- Not available

F. Notes to physician

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.
- If exposed or concerned, get medical attention/advice.

5. FIREFIGHTING MEASURES

A. Suitable (Unsuitable) extinguishing media

- Dry chemical, carbon dioxide, regular foam extinguishing agent, spray
- Avoid use of water jet for extinguishing

B. Specific hazards arising from the chemical

- Not available

C. Special protective actions for firefighters

- Cool containers with water until well after fire is out.
- Keep unauthorized personnel out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Use appropriate extinguishing measure suitable for surrounding fire.
- Keep containers cool with water spray.

6. ACCIDENTAL RELEASE MEASURES**A. Personal precautions, protective equipment and emergency procedures**

- Do not touch spilled material. Stop leak if you can do it without risk.
- Move container to safe area from the leak area.
- Remove all sources of ignition.
- Avoid skin contact and inhalation.
- Cleanup and disposal under expert supervision is advised.
- Keep unauthorized people away, isolate hazard area and deny entry.

B. Environmental precautions

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.

C. Methods and materials for containment and cleaning up

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notification to central government, local government. When emissions at least of the standard amount
- Dispose of waste in accordance with local regulation.
- Appropriate container for disposal of spilled material collected.
- Small liquid state spills: Appropriate container for disposal of spilled material collected.
- Put the spilled material in an appropriate containers and clean the contaminated area

7. HANDLING AND STORAGE**A. Precautions for safe handling**

- Get the manual before use.
- Refer to Engineering controls and personal protective equipment.
- Dealing only with a well-ventilated place.
- Operators should wear antistatic footwear and clothing.
- Contaminated work clothing should not be allowed out of the workplace.

B. Conditions for safe storage, including any incompatibilities

- Check regularly for leaks.
- Do not use damaged containers.
- Avoid direct sunlight.
- Keep sealed when not in use.
- Prevent static electricity and keep away from combustible materials or heat sources.
- Collected them in sealed containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**A. Exposure limits**

- ACGIH TLV

- Not available
- **OSHA PEL**
- Not available

B. Engineering controls

- Business owner is recommended to maintain below recommended exposure limits for the working place with general exhaust of gas/vapour/mist/fume.

C. Individual protection measures, such as personal protective equipment

- **Respiratory protection**
 - Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.
 - Respiratory protection is ranked in order from minimum to maximum.
 - Consider warning properties before use.
 - Dust, mist, fume-purifying respiratory protection
 - Air-purifying respirator with high-efficiency particulate filtering
 - Any respiratory protection with a electromotion fan(for dust, mist, fume-purifying)
 - Self-contained breathing apparatus with a corpuscle filter of high efficiency
 - For Unknown Concentration or Immediately Dangerous to Life or Health : Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a full facepiece.
- **Eye protection**
 - Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.
 - Provide an emergency eye wash station and quick drench shower in the immediate work area.
- **Hand protection**
 - Wear appropriate glove.
- **Skin protection**
 - Wear appropriate clothing.
- **Others**
 - Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---|----------------|
| A. Appearance | |
| - Appearance | Solid(Other) |
| - Color | Black |
| B. Odor | Not available |
| C. Odor threshold | Not available |
| D. pH | Not available |
| E. Melting point/Freezing point | 30~130°C |
| F. Initial Boiling Point/Boiling Ranges | 401 °C |
| G. Flash point | 306 °C |
| H. Evaporation rate | Not available |
| I. Flammability(solid, gas) | Not available |
| J. Upper/Lower Flammability or explosive limits | Not available |
| K. Vapour pressure | > 5hPa at 20°C |
| L. Solubility | 1.02E-013 mg/L |
| M. Vapour density | >1 |
| N. Specific gravity(Relative density) | 2.3 (at 15°C) |
| O. Partition coefficient of n-octanol/water | 17.87 |
| P. Autoignition temperature | Not available |
| Q. Decomposition temperature | Not available |
| R. Viscosity | Not available |
| S. Molecular weight | Not available |

10. STABILITY AND REACTIVITY

A. Chemical Stability

- This material is stable under recommended storage and handling conditions.

B. Possibility of hazardous reactions

- Hazardous Polymerization will not occur.

C. Conditions to avoid

- Avoid contact with incompatible materials and condition.
- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces

D. Incompatible materials

- Not available

E. Hazardous decomposition products

- May emit flammable vapour if involved in fire.

11. TOXICOLOGICAL INFORMATION**A. Information on the likely routes of exposure**

- ☐ **(Respiratory tracts)**
 - Not available
- ☐ **(Oral)**
 - Not available
- ☐ **(Eye-Skin)**
 - Cause eye irritation.
 - Causes skin irritation

B. Delayed and immediate effects and also chronic effects from short and long term exposure

- ☐ **Acute toxicity**
 - * **Oral**
 - [Residues (petroleum), vacuum] : LD50 > 2000 mg/kg Rat
 - * **Dermal**
 - [Residues (petroleum), vacuum] : LD50 > 2000 mg/kg Rat
 - * **Inhalation**
 - Not available
- ☐ **Skin corrosion/irritation**
 - Causes skin irritation
- ☐ **Serious eye damage/irritation**
 - Cause eye irritation.
- ☐ **Respiratory sensitization**
 - Not available
- ☐ **Skin sensitization**
 - Not available
- ☐ **Carcinogenicity**
 - * **IARC**
 - [Residues (petroleum), vacuum] : Group 2B
 - * **OSHA**
 - Not available
 - * **ACGIH**
 - Not available
 - * **NTP**
 - Not available
 - * **EU CLP**
 - Not available
- ☐ **Germ cell mutagenicity**
 - Suspected of causing genetic defects
- ☐ **Reproductive toxicity**
 - Suspected of damaging fertility or the unborn child
- ☐ **STOT-single exposure**
 - Not available
- ☐ **STOT-repeated exposure**

- May cause damage to organs through prolonged or repeated exposure
- ☐ **Aspiration hazard**
 - Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

- ☐ **Fish**
 - Not available
- ☐ **Crustaceans**
 - Not available
- ☐ **Algae**
 - Not available

B. Persistence and degradability

- ☐ **Persistence**
 - [Residues (petroleum), vacuum] : log Kow 17.87 (Estimate)
- ☐ **Degradability**
 - Not available

C. Bioaccumulative potential

- ☐ **Bioaccumulative potential**
 - [Residues (petroleum), vacuum] : BCF 3.162 (Estimate)
- ☐ **Biodegradation**
 - Not available

D. Mobility in soil

- [Residues (petroleum), vacuum] : Koc 3228000000000000 (Can be adsorbed in the soil)

E. Other adverse effects

- Not available

13. DISPOSAL CONSIDERATIONS

A. Disposal methods

- Since more than two kinds of designated waste is mixed, it is difficult to treat separately, then can be reduction or stabilization by incineration or similar process.
- If water separation is possible, pre-process with Water separation process.
- Dispose by incineration.

B. Special precautions for disposal

- The user of this product must dispose by oneself or entrust it to a waste disposer, a person who recycles other's waste or establishes and operates waste disposal facilities.
- Dispose of waste in accordance with all applicable laws and regulations.

14. TRANSPORT INFORMATION

A. UN No. (IMDG CODE/IATA DGR)

- Not applicable

B. Proper shipping name

- Not applicable

C. Hazard Class

- Not applicable

D. IMDG CODE/IATA DGR Packing group

- Not applicable

E. Marine pollutant

- Not applicable

F. Special precautions for user related to transport or transportation measures

- Local transport follows in accordance with Dangerous goods Safety Management Law.
- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
- EmS FIRE SCHEDULE : Not available
- EmS SPILLAGE SCHEDULE : Not available
- Air transport(IATA): Not subject to IATA regulations.

15. REGULATORY INFORMATION**A. National and/or international regulatory information**

- ☐ **POPs Management Law**
 - Not applicable
- ☐ **Information of EU Classification**
 - * **Classification**
 - Not applicable
- ☐ **U.S. Federal regulations**
 - * **OSHA PROCESS SAFETY (29CFR1910.119)**
 - Not applicable
 - * **CERCLA Section 103 (40CFR302.4)**
 - Not applicable
 - * **EPCRA Section 302 (40CFR355.30)**
 - Not applicable
 - * **EPCRA Section 304 (40CFR355.40)**
 - Not applicable
 - * **EPCRA Section 313 (40CFR372.65)**
 - Not applicable
- ☐ **Rotterdam Convention listed ingredients**
 - Not applicable
- ☐ **Stockholm Convention listed ingredients**
 - Not applicable
- ☐ **Montreal Protocol listed ingredients**
 - Not applicable

16. OTHER INFORMATION**A. Reference**

- The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.
- This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS, NLM, SIDS, IPCS

B. Issue date

- 2018-03-22

C. Revision number and Last date revised

- 1 times, 2019-02-08

D. Other

- This SDS is prepared according to the Globally Harmonized System (GHS).