MSDS(Material Safety Data Sheet)

(This data is prepared in accordance with Article 41 of the Industrial Safety and Health Act.)

1. Chemical Product and Company Identification

1) Products name: **ANTIRUST 332A**

2) Recommended use of the chemical and restrictions on use
- ○ Recommanded use : Rust Preventive Oil
- ○ Ristrict on use : No data

3) Manufacture/Supplier information
- ○ Manufacturer : DH CHEMICALS Co., Ltd.
- ○ Supply firm : DH CHEMICALS Co., Ltd.
- ○ Address : 601-13 Namsan-dong, Sungsangu, Changwon City, Gyeongnam Province, S. KOREA
- ○ Tel. : +82-55-283-3241/4, Fax.: +82-55-283-3245
- ○ Department in charge: Laboratory

2. Hazards Identification

1) Classification of the substance or mixture

Acute toxicity(Aspiration: dust / mist): Category 4
Specific target organ toxicity, single exposure : Category 2
Specific target organ toxicity, repeated exposure : Category 2
Aspiration Hazard: Category 1
Chronic aquatic toxicity: Category 2

2) GHS labels, including precautionary statements
- ○ Symbol

- ○ Signal word : Danger

- ○ Hazard statement

H304 : May be fatal if swallowed and enters airways.
H332 : Harmful if inhaled.
H371: May cause damage to organs <or state all organs affected, if known>
<state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>
H373 : May cause damage to organs <or state all organs affected, if known>
through prolonged or repeated exposure <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>.
H413 : May cause long lasting harmful effects to aquatic life.

- ○ Precautionary statement

- Prevention

P210 Keep away from heat/sparks/ flames/hot surfaces. -- No smoking.
P233 Keep container tightly closed.
P240 Ground / bond container and receiving equipment.
P241 Use explosion-proof electrical, ventilating and lighting equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P264 Wash … thoroughly after handling.
P270 Do no eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P280 Wear protective gloves,protective clothing, eye protection and face protection.

- Response
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P303 + P361 + P353 If on skin (or hair):
Remove/Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P309 + P311 IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.
P312 Call a POISON CENTER or doctor/physician if you feel unwell.
P314 Get medical advice/attention if you feel unwell.
P331 Do NOT induce vomiting.
P370 + P378 In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO_2) for extinction.

- Storage
P403+P235 Store in a well-ventilated place. Keep cool.
P405: Store locked up.

- Disposal
P501 Dispose of contents and container in accordance with local regulations.

3) Other hazards which do not result in classification

NFPA / Material name	Health	Fire	Reactivity
1. Hydrotreated light distillate	1	0	0
2.Distillates(Petroleum), Hydrotreated light paraffinic	1	1	0
3. Calcium sulfonate	1	1	0
4. Sorbitan monooleate	1	1	0
5.(Z)-9-Octavius decenoic acid 1,2,3-One propane ester	1	0	0
6. Secret	1	1	0

3. Composition and Information on Ingredients

Component	Synonyms	CAS No.	Content(vol.%)
1. Hydrotreated light distillate	No reference	64742-47-8	55 ~ 65
2. Distillates(Petroleum), Hydrotreated light paraffinic	Mineral oil, petroleum distillates, hydrotreated light paraffinic	64742-55-8	5 ~ 15
3. Calcium sulfonate	No reference	Secret	10 ~ 20

4. Sorbitan monooleate	Mono-9-octadecenoate, Sorbitan	1338-43-8	1 ~ 10
5.(Z)-9-Octavius decenoic acid 1,2,3-One propane ester	No reference	122-32-7	1 ~ 10
6. Secret	No reference	Secret	1 ~ 10

4. First Aid Measures

1) Eye contact
Flush thoroughly with enough water.
In case of direct eye contact, wash the material with enough water over 20minutes.
If irritation, swelling, pain, tear or dazzle occurs get medical assistance.
If wearing contact lens examine contact lens first.

2) Skin contact
Launder contaminated clothing and shoes before reuse.
Remove contaminated clothing and shoes and wash contact areas with soap and water over 15 minutes
If irritation occurs, get medical assistance.

3) Inhalation
If shows difficulty in breathing, supply oxygen.
If breathing has stopped, try artificial respiration and get immediate medical assistance.
Keep the patient warm and stable.
Move the patient non-contaminated area in fresh air.
If inhales the material, get medical assistance.

4) Ingestion
In case of unconsciousness, prevent airway obstruction by turning head.
In case of intake and drink the chemical materials, seek immediate medical attention.
In case of irritation or abnormal symptom, get medical assistance.
Do not induce vomiting

5) Acute and Delayed symptoms/effects
No reference

6) Note to physician
Notify medical personnel of contaminated situations and have them take appropriate protective measures.

5. Fire Fighting Measures

1) Appropriate (inappropriate) Extinguishing Media
Appropriate extinguishing media:
Dry chemical, carbon dioxide (CO_2), water fog, foam
Inappropriate extinguishing media: No reference
⬭ Big Fire
Extinguish from protective area or safe distance area.
Use a general extinguish media and fine-water spray.
Don’t access when tank is in flame.
Extinguish fire completely by sufficient cooling the container with water.
Build ditch or dike as fire hydrants for further processing.

Do not spray water directly.
Take care possibility of explosion when tank or trailer firing.
In case of big fire, use unmanned hydrant and leave as it fires in case of emergency.
Avoid breathing the substance and vapors cased by fire.

2) Specific Toxic Substance

Vapor can make explosive substances with mixture of air.
Vapor is heavier than air.
Vapor or gas can be ignited from a distance ignition source or fire and spread out quickly.
Irritating, corrosive or toxic gas can be out by fire or flame.
Easily ignited by fire, flame or blaze.
If exposed by fire, it can be bursted or exploded.
If flowed into groundwater, it has a possibility of fire or explosion.

3) Protective measure and Actions for fire extinguishing

Keep away container from fire area.
Sprinkle with water for hours to cool container after extinguished.
Stop leak firstly and spray water sufficiently.
Sprinkle with high-pressure water not to scatter on leaked materials.
Do not breathe material itself or combustion products.
Sprinkle with water at defense area or from a safe distance.

6. Accidental Release Measures

1) Body protective measures

Use all devices after proper grounding procedure.
Eliminate ignition source such as flame, blare and spark.
Reduce generating vapor by water spraying.
Ventilate fully before entering into confined space.
Refer to related document, information and related company or experts.
Stop leaking if possible to do so without hazard.
Don’t make direct contact with the leaked liquid or don’t cross the leaked liquid.
Foam can be used to reduce generating vapor.

2) Environmental protective measures

- ㅇ Air : Ventilate properly.
- ㅇ Land: Build a dike to ground spilled liquid.
- ㅇ Water: Prevent liquid from entering sewers, water courses, or low areas.

3) Purification or Elimination measures

○ Small spill

Use proper container to store the leaked liquid for later disposal.
Absorb and eliminate the leaked liquid by using deactivating material.
Prevent liquid from entering sewers, water courses, or low area.
Absorb and eliminate contaminated material using non-flame explosion proof device.

○ Large leak

Remove ignition source.
Build a dike to treat leaked liquid.
Collect leaked liquid in clean and dried confined container and eliminate remaining by using deactivating material
Consider evacuation over 300m at early stage.
Reduce generating vapor by water spraying.
Quarantine expose area and forbid to enter except on business.

7. Handling and Stroage

1) Safety handling

Wear face protection.
Store in the confined container.
Avoid breathing gas or particle material.
Use proper ventilation system such as all ventilation system or local ventilation system.
Wash body and clothing after using the liquid.
Avoid contact with ignition source such as flame, blare and static electricity.
Avoid direct contact with body.

2) Stroage

Store in the confined container.
Store in apart from a sewage.
Store in clean and cool area.
Use and store in accordance with related government rules and regulations.
Store in well-ventilated place.
Avoid contact with ignition source.

8. Exposure Control and Personal Protection

1) Exposure limits and biological exposure limits of chemical

※ Exposure limits and biological exposure for the product, because there is no reference material specific data.

(1) Hydrotreated light distillate

○ KOSHA : TWA 200㎎/㎥(skin)
○ ACGIH : TWA 200㎎/㎥
○ Biological exposure limits : EU HSPA(Hydrocarbins Solvents Producer Association)
Recommended TWA - 1200mg/m3

(2) Distillates(Petroleum), Hydrotreated light paraffinic

○ KOSHA : No reference
○ ACGIH : No reference
○ Biological exposure limits : No reference

(3) Calcium sulfonate

○ KOSHA : No reference
○ ACGIH : No reference
○ Biological exposure limits : No reference

(4) Sorbitan monooleate

○ KOSHA : No reference
○ ACGIH : No reference
○ Biological exposure limits : No reference

(5) (Z)-9-Octavius decenoic acid 1,2,3-One propane ester

○ KOSHA : No reference
○ ACGIH : No reference
○ Biological exposure limits : No reference

(6) Secret

○ KOSHA : No reference
○ ACGIH : No reference
○ Biological exposure limits : No reference

2) Proper engineering controls

Install local ventilation system and control to keep proper wind speed.
The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:
Adequate ventilation should be provided so that exposure limits are not exceeded. Use explosion-proof ventilation equipment.

3) Personal protections

Use authentic respiratory protection certified by KOSHA.
(Korea Occupational Safety and Health agency

○ Respiratory :
- Use the respiratory protection device having the mark (Safety) given by the Korea Occupational Safety & Health Agency.
- Use organic filtering respirators or equivalent respirator fors work controlled by poor engineering actions or if the worker is likely to be exposed to danger.

○ Eyes:
- Use the face protection gear on which safety glasses can be worn to protect the eyes from airborn matte or hazardous fluid.
- Install the face washing equipment and emergency cleaning equipment (shower) in an area near the workplac
- If the mist is expected to have a bad effect on health, wear the safety glasses before starting to work.

○ Hands
- As continual/long-term exposure is expected to cause a skin disorder, wear the impervious protective rubber/PVC glove.
- Wear the proper chemical resistant gloves.

○ Body :
- Wear impervious rubber/PVC protective apron before working to protect the body if a leak or spill occurs. If necessary, put on the impervious overall protective clothing.
- Wear the proper chemical-resistant protective clothing.

9. Physical and Chemical Properties

1) Appearance : Clear Brown liquid

2) Odor : Petroleum solvent odor

3) Odor threshold : NO reference

4) pH : NO reference

5) Melting point/freezing point : NO reference

6) Initial boiling point or boiling range : >200℃(235~275℃)

7) Flash point : >90℃(104℃)

8) Evaporation rate : <1.0(n-BuAc=100)

9) Flammability(solid, gas) : Not applicable

10) Upper/lower flammability or explosive limits : NO reference

11) Vapor pressure : <1mmHg(20℃)

12) Solubility : NO reference

13) Vapor density : >1.0(AIR=1)

14) Specific gravity : 0.85~0.88 (15/4 ℃)

15) Partition coeficient: n-octano/water : NO reference

16) Auto-ignition temperature : NO reference

17) Decomposition temperature : NO reference

18) Viscosity : 6.5~9.0cst(40℃)

19) Molecular weight : NO reference

10. Stability and Reactivity

1) Chemical stability :
Flammable liquid or Vapor.
Hazardous polymerization will not polymerize.
In use, may form flammable/explosive vapour-air mixture
Container May Explode If Heated
Highly flammable : May cause a fire if exposed to heat, sparks, flames or friction
Leaks cause hazardous materials spills, fires, and explosions
Heat, especially under confinement, can cause explosion
May burst into flame spontaneously when in contact with air
Vapours may cause drowsiness and dizziness
Harmful by inhalation, in contact with skin and if swallowed

2) Prohibited conditions :
Avoid heat, sparks and open flame.

3) Prohibited materials :
Prohibited materials for mixing: Strong oxidizers

4) Toxicant during decomposition :
Combustion may produce carbon monoxide, carbon dioxide and other asphyxiants.

11. Toxicological Information

1) Information on the likely routes of exposure
○ Inhalation : Harmful if inhaled
○ Ingestion : Harmful if ingestion
○ Skin contact : Harmful if absorbed through skin
○ Eye contact : Harmful if absorbed into eye

2) Delayed and immediate effects and chronic effectsfrom short or long term exposure
(1) Hydrotreated light distillate
○ Acute toxicity
- Oral : LD50 > 10000 ㎎/㎏ (rabbit)
- Dermal : LD50 > 10000 ㎎/㎏ (rabbit)
- Inhalation : No data
○ Skin corrosion/irritation : Weak irritating
○ Serious eye damage/eye irritation : Weak irritating
○ Respiratory sensitization : No data
○ Skin sensitization : No data

○ Carcinogenicity : No data

KOSHA	No data
IARC	No data
OSHA	No data
ACGIH	No data
NTP	No data
EU CLP	No data

○ Germ cell mutagenicity : No data
○ Reproductive toxicity : No data
○ Specific target organ systemic toxicity(single exposure) : No data
○ Specific target organ systemic toxicity(repeated exposure) : No data
○ Aspiration hazard : No data

(2) Distillates(Petroleum), Hydrotreated light paraffinic
○ Acute toxicity
- Oral : LD50 > 5000 ㎎/㎏ (rat)
- Dermal : LD50 > 2000 ㎎/㎏ (rabbit)
- Inhalation : Mist LC 2.18㎎/ℓ (rat)

○ Skin corrosion/irritation : Weak irritating
○ Serious eye damage/eye irritation : Non irritating
○ Respiratory sensitization : No data
○ Skin sensitization : Non sensitization(Guinea Pig)
○ Carcinogenicity : No data

KOSHA	No data
IARC	No data
OSHA	No data
ACGIH	No data
NTP	No data
EU CLP	No data

○ Germ cell mutagenicity : No data
○ Reproductive toxicity : No data
○ Specific target organ systemic toxicity(single exposure) : No data
○ Specific target organ systemic toxicity(repeated exposure) : No data
○ Aspiration hazard : No data

(3) Calcium sulfonate
○ Acute toxicity
- Oral : NO reference
- Dermal : NO reference
- Inhalation : NO reference

○ Skin corrosion/irritation : No data
○ Serious eye damage/eye irritation : No data
○ Respiratory sensitization : No data
○ Skin sensitization : No data
○ Carcinogenicity : No data

KOSHA	No data
IARC	No data
OSHA	No data
ACGIH	No data
NTP	No data
EU CLP	No data

○ Germ cell mutagenicity : No data
○ Reproductive toxicity : TCLo / RAT / intake / 300 mg/m3/4H nervous system, skeletal muscle
○ Specific target organ systemic toxicity(single exposure) : No data
○ Specific target organ systemic toxicity(repeated exposure) : No data
○ Aspiration hazard : No data

(4)Sorbitan monooleate

○ Acute toxicity
- Oral : LD50 > 2000 ㎎/㎏ (rat)
- Dermal : NO reference
- Inhalation : NO reference

○ Skin corrosion/irritation : 250㎍ rabbit - Weak irritating
○ Serious eye damage/eye irritation :No data
○ Respiratory sensitization : No data
○ Skin sensitization : No data
○ Carcinogenicity : No data

KOSHA	No data
IARC	No data
OSHA	No data
ACGIH	No data
NTP	No data
EU CLP	No data

○ Germ cell mutagenicity : No data
○ Reproductive toxicity : No data
○ Specific target organ systemic toxicity(single exposure) : No data
○ Specific target organ systemic toxicity(repeated exposure) : No data
○ Aspiration hazard : No data

(5) (Z)-9-Octavius decenoic acid 1,2,3-One propane ester

○ Acute toxicity
- Oral : NO reference
- Dermal : NO reference
- Inhalation : NO reference

○ Skin corrosion/irritation : NO reference
○ Serious eye damage/eye irritation :No data
○ Respiratory sensitization : No data
○ Skin sensitization : No data
○ Carcinogenicity : No data

KOSHA	No data
IARC	No data
OSHA	No data
ACGIH	No data
NTP	No data
EU CLP	No data

○ Germ cell mutagenicity : No data
○ Reproductive toxicity : No data
○ Specific target organ systemic toxicity(single exposure) : No data
○ Specific target organ systemic toxicity(repeated exposure) : No data
○ Aspiration hazard : No data

(6) Secret

○ Acute toxicity
- Oral : NO reference
- Dermal : NO reference
- Inhalation : NO reference

○ Skin corrosion/irritation : NO reference
○ Serious eye damage/eye irritation :No data
○ Respiratory sensitization : No data
○ Skin sensitization : No data
○ Carcinogenicity : No data

KOSHA	No data

IARC	No data
OSHA	No data
ACGIH	No data
NTP	No data
EU CLP	No data

○ Germ cell mutagenicity : No data
○ Reproductive toxicity : No data
○ Specific target organ systemic toxicity(single exposure) : No data
○ Specific target organ systemic toxicity(repeated exposure) : No data
○ Aspiration hazard : No data

12. Ecological Information

I. Aquatic and land eco-toxicity

(1) Hydrotreated light distillate
○ Fish : No data
○ Crustacean : No data
○ Bird : No data

(2) Distillates(Petroleum), Hydrotreated light paraffinic
○ Fish : LC50 > 5000 ㎎/ℓ 96 hr Oncorhynchus mykiss
○ Crustacean : EC50 > 1000 ㎎/ℓ 48 hr Daphnia magna
○ Bird : No data

(3) Calcium sulfonate
○ Fish : No data
○ Crustacean : No data
○ Bird : No data

(4) Sorbitan monooleate
○ Fish : LD50 > 100 ㎎/ℓ Oryzias latipes
○ Crustacean : EC50 8.6 ㎎/ℓ Daphnia magna
○ Bird : No data

(5) (Z)-9-Octavius decenoic acid 1,2,3-One propane ester
○ Fish : LC50 0.00000000078 ㎎/ℓ 96 hr
○ Crustacean : LC50 0.0000000000000000546 ㎎/ℓ 48 hr
○ Bird : EC50 0.000000000135 ㎎/ℓ 96 hr

(6) Secret
○ Fish : No data
○ Crustacean : No data
○ Bird : No data

II. Persistency and resolvability

(1) Hydrotreated light distillate
○ Persistency : No data
○ Resolvability : No data

(2) Distillates(Petroleum), Hydrotreated light paraffinic
○ Persistency : No data
○ Resolvability : No data

(3) Calcium sulfonate
○ Persistency : No data
○ Resolvability : No data

(4) Sorbitan monooleate
- Persistency : No data
- Resolvability : No data

(5) (Z)-9-Octavius decenoic acid 1,2,3-One propane ester
- Persistency : No data
- Resolvability : No data

(6) Secret
- Persistency : No data
- Resolvability : No data

III. Bio-concentration

(1) HEAVY ALKYLATE NAPHTHA(PETROLEUM)
- Bio-resolvability : No data
- Concentration : No data

(2) HEAVY ALKYLATE NAPHTHA(PETROLEUM)
- Bio-resolvability : No data
- Concentration : No data

(3) Calcium sulfonate
- Bio-resolvability : No data
- Concentration : No data

(4) Sorbitan monooleate
- Bio-resolvability : No data
- Concentration : No data

(5) (Z)-9-Octavius decenoic acid 1,2,3-One propane ester
- Bio-resolvability : No data
- Concentration : No data

(6) Secret
- Bio-resolvability : No data
- Concentration : No data

IV. Soil mobility : NO reference

V. Other hazard influence : NO reference

13. Disposal Considerations

1) Disposal methods

Follow federal, state and local regulations. This material is a RCRA hazardous waste.

2) Disposal cautions

Do not flush material to drain or storm sewer. Contract to authorized disposal service.

14. Transport Information

Not a hazardous substance as defined by ADR/RID, IMDG, IATA/CAO

1) UN number : UN transport hazard classification not available

2) UN Proper Shipping Name : Not applicable

3) Transport hazard classes : Not applicable

4) Packing group, if applicable : Not applicable

5) Environmental hazards : Not applicable

6) Special precautions for user
○ Emergency management type of fire : Non-applicable
○ Eemergency management type of leak : Non-applicable

15. Regulatory Information

1) Industrial safety and health act (Korea) : Occupation environment measurement material

2) Toxic chemical substance subject to management act (Korea) : Not applicable

3) Hazardous material safety act (Korea) : Not applicable

4) Wastes control act (Korea) : Not applicable

5) Other related regulation
○ Persistent Organic Pollutants Act : N/A
○ EU Classification (Confirm classification) : NO reference
○ EU Classification Information : NO reference

16. Other Information

1) References
○ UN RTDG : Recommendations on the transport of dangerous goods
○ IUCLID : Dataset
○ IARC : Agents reviewed by the IARC monographs
○ ASTDR : http://www.atsdr.cdc.gov/toxprofiles/tp56.html
○ KOSHA : Material Safety Data Sheet
○ ACGIH : 2008 Guide to occupational exposure values

2) Date of preparation of the first version of the SDS : 2013.01.21.

3) Revised frequency and Date of preparation of the latest version of the SDS : 5th revision, May 9, 2019

4) Others : 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.