Material Safety Data Sheet (MSDS)

1. IDENTIFICATION

A. Product Name

GT 4VAG 5W-30

B. Recommended use of the chemical and restrictions on use

Engine Oil

C. Information of manufacturer, supplier

1) Company

Hanval INCORPORATED.

2) Address

Head Office : 13th Floor KSCFC Bldg., 15, Boramae-ro-5-gil, Dongjak-gu, Seoul

Factory : 375 Gongdan-Ro, Onsan-Eup, Ulju-Gun, Ulsan, Korea

3) Emergency Telephone No

82-2-3284-3400

82-52-711-6501

4) Departments

Technical & Marketing Dept.

Technical R&D Center

2. HAZARD IDENTIFICATION

A. Classification

None : None

B. Label element, including precautionary statements

1) Symbols

None

2) Signal word(s)

None

3) Hazard statement(s):

None

4) Precautionary statement(s)

○ Prevention

None

○ Response

None

○ Storage

None

○ Disposal

None

C. Other hazards which do not result in classification

NFPA Code : Health: 2, Flammability: 1, Reactivity: 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical identity	Common name, synonym	Cas No.	Percentages(%)
1-Decene tetramer, hydrogenated mixed with 1-Decene, trimer hydrogenated		68649-12-7 / KE-09509	60 ~ 80
Polyol esters of fatty acids		Confidential	~ 5
Mineral Oil		Not Determined	~ 10
첨가제 혼합물		Confidential	10 ~ 20
Zinc Alkydithiophosphate		Confidential	~ 1
Methacrylate copolymer		Confidential	~ 1

4. FIRST AID MEASURES

A. Eye contact

Wash affected eyes for at least 15 minutes under running water with eyelids held open.

B. Skin contact

Wash thoroughly with soap and water.

Remove contaminated clothing and shoes

C. Inhalation

If difficulties occur after vapor/aerosol has been inhaled,

remove to fresh air and seed medical attention.

D. Ingestion

Rinse mouth immediately and then drink plenty of water, seek medical attention.

E. Most important symptoms/effect, acute and delayed

○ Inhalation

Short term exposure: Irritation, headache, sleepiness, dizziness, adjustment (feature) loss, a blood disorder

Long-term exposure: Irritation, headache

○ Skin contact

Short term exposure: Allergic reactions.

Long-term exposure: Irritation, Allergic reactions.

○ Eye contact

Short term exposure: Irritation

Long-term exposure: Allergic reactions.

○ On ingestion

Short term exposure : vomiting, shortness of breath, headache, sleepiness, dizziness, emotional disorders, trembling, adjust (feature) loss, impaired vision, a heart condition, convulsions, lethargy

- Long-term exposure:

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

Treat symptomatically. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE-FIGHTING MEASURES

A. Flash Point

236 ℃ (COC)

B. FIRE-FIGHTING MEASURES

○ Recommanded extinguishing media :

Dry extinguishing media, carbon dioxide, water spray, alcohol-resistant foam

○ Prohibited extinguishing media :

High pressure water shoot

○ Large fire :

No Data. Water spray, alcohol-resistant foam

C. Specific hazards arising from the chemical

Not available

D. Extinguishment

- Move containers from fire area, if you can do without the risk.
- Keep unauthorized personnel out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Notify your local firestation and inform the location of the fire and characteristics hazard.
- Keep containers cool with water spray.

- Vapor or gas is burned at distant ignition sources can be spread quickly.

6. ACCIDENTAL RELEASE MEASURES

A. Necessary actions to protect human health

Eliminate all sources of ignition, adequate ventilation

B. Necessary actions to protect the environment

Do not abandon your product to rivers.

C. Purification and removal methods

After absorbing material to absorb using the disposal, burning.

7. HANDLING AND STORAGE

A. Precautions for safe handling

Avoid contact with skin. Use proper bonding and/or grounding procedures. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source).

B. Conditions for safe storage. including incompatibilities

Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Storage containers should be grounded and bonded. Drums must be grounded and bonded and equipped with self-closing valves, pressure vacuum bungs and flame arresters.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits and biological exposure limits of chemical

○ ACGIH TLV

- [Distillates (petroleum), hydrotreated heavy paraffinic] : TWA 5 mg/m3, Inhalable particulate matter(Mineral oil, Pure, highly and severely refined)

○ OSHA PEL

- Not available

B. Engineering management :

Ventilation: local exhaust ventilation system, install and maintain appropriate control over the wind speed to make it.

C. Personal protection 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.
- Any chemical cartridge respirator with organic vapor cartridge(s).
- Any chemical cartridge respirator with a full facepiece and organic vaporcartridge(s).
- Any air-purifying respirator with a full facepiece and an organic vapor canister.
- 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.

○ Eyes 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.

○ Hands protection : Chemical resistance protective gloves

○ Human body protection : Wearing of closed work clothing is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance (physical state, color etc.)

Transparent brown

B. Odor

Mild petroleum odour

C. Odor threshold

No data available.

D. pH

No data available.

E. Melting point/freezing point

No data available.

F. Initial boiling point and boiling range

More than 300℃

G. Boiling point(℃)

No data available.

H. Evaporation rate

No data available.

I. Flammability(solid, gas)

No data available.

J. Upper/lower flammability or explosive limits

No data available.

K. Vapor pressure

Less than 0.1kPa at 20℃

L. Solubility

No data available.

M. Vapor density

More than 5 (Air =1)

N. Specific gravity

0.8529(water = 1) 15℃

O. Partition coefficient: n-octanol/water

No data available.

P. Auto-ignition temperature

No data available.

Q. Decomposition temperature

No data available.

R. Viscosity:

11.35 ~ 12.35 cSt (100℃)

S. Molecular weight

No data available.

10. STABILITY AND REACTIVITY

A. Chemical stability

Material is stable under normal conditions

B. Toxicant generation possibility during reaction

No hazardous reactions when stored and handled according to instructions.

C. Prohibited conditions

Heat, sparks, open flame, other ignition sources, and oxidizing conditions.

D. Prohibited materials

An Oxidizing agent

E. Toxicant during decomposition

Carbon oxides

11. TOXICOLOGICAL INFORMATION

A. Information on the likely routes of exposures

○ Inhalation exposure:

- Not available

○ Ingestion exposure:

- Not available

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

○ Acute toxicity:

* Oral

- [Distillates (petroleum), hydrotreated heavy paraffinic] : LD50 > 15000 ㎎/㎏ Rat

* Dermal

- [Distillates (petroleum), hydrotreated heavy paraffinic] : LD50 > 5000 ㎎/㎏ Rabbit

* Inhalation

- [Distillates (petroleum), hydrotreated heavy paraffinic] : LC50 >5.53 ㎎/ℓ Rat

○ Skin corrosion/irritation:

- Not available

○ Serious eye damage/irritation:

- Not available

○ Respiratory sensitization:

- Not available

○ Skin sensitization:

- Not available

○ Carcinogenicity:

* IARC

- Not available

* OSHA

- Not available

* ACGIH

- [Distillates (petroleum), hydrotreated heavy paraffinic] : A4

* NTP

- Not available

* EU CLP

- [Distillates (petroleum), hydrotreated heavy paraffinic] : Carc.1B

○ Germ cell mutagenicity:

- Not available

○ Reproductive toxicity:

- Not available

○ Specific target organ systemic toxicity-single exposure:

- Not available

○ Specific target organ systemic toxicity-repeated exposure:

- Not available

○ Aspiration hazard:

- Not available

C. Numerical measures of toxicity(such as acute toxicity estimate)

No data available.

12. ECOLOGICAL INFORMATION

A. Aquatic, terrestrial organisms toxicity

○ Fish

- [Distillates (petroleum), hydrotreated heavy paraffinic] : LC50 > 5000 ㎎/ℓ 96 hr Oncorhynchus mykiss

- [Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts] : LC50 1 ~ 5 ㎎/ℓ 96 hr Pimephales promelas

○ Crustaceans

- [Distillates (petroleum), hydrotreated heavy paraffinic] : EC50 > 1000 ㎎/ℓ 48 hr Daphnia magna

- [Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts] : EC50 1 ~ 1.5 ㎎/ℓ 48 hr Daphnia magna

○ Algae

- [Distillates (petroleum), hydrotreated heavy paraffinic] : EC50 > 1000 ㎎/ℓ 96 hr Scenedesmus subspicatus

- [Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts] : EC50 1 ~ 5 ㎎/ℓ 96 hr Selenastrum capricornutum

B. Persistence and degradability

○ Persistence

- [Distillates (petroleum), hydrotreated heavy paraffinic] : log Kow = 3.9 ~ 6 (Estimates)

○ Degradability

- Not available

C. Bio-accumulative potential

○ Bioaccumulative potential

- [Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts] : BCF 3.162

○ Biodegration

- [Distillates (petroleum), hydrotreated heavy paraffinic] : Biodegradability = 6 (%) 28 day (Aerobic, Domestic wastewater, does not decompose easily)

D. Mobility in soil

- Not available

E. Other adverse effects

- Not available

13. DISPOSAL CONSIDERATIONS

A. Disposal methods

- Since more than two kinds of designaed waste is mixed, it is difficult to treat seperatly, 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.
- Incinerate the oil by separating the oil and water
- The remainder of the water after separation will be processed in a water pollution prevention facilities.
- Do incineration or stabilization of the residue after disposal as the method of evaporation and concentration.
- Do incineration of the residue after disposal as the method of agglomeration and precipitation.

B. Disposal considerations(Specify disposal container and methods)

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

14. TRANSPORT INFORMATION

A. UN Number

- Not available

B. UN Proper Shipping Name

- Not available

C. Transport hazard class

- Not available

D. Packing group, if applicable

- Not available

E. Environmental hazards

- Not available

F. Special precautions for user

- 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

15. REGULATORY INFORMATION

A. Safety, health and environmental regulations

○ POPs Management Law

- Not applicable

○ Information of EU Classification

* Classification

- [Distillates (petroleum), hydrotreated heavy paraffinic] : Carc. Cat. 2 R45

* Risk Phrases

- [Distillates (petroleum), hydrotreated heavy paraffinic] : R45

* Safety Phrase

- [Distillates (petroleum), hydrotreated heavy paraffinic] : S53, S45

○ 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. References and sources for data

1) HANVAL Technical R&D Center
2) Globally Harmonized System of classification and labelling of chemicals(GHS), first revised edition, United Nations.
3) United States National Library of Medicine.
4) EINECS (European Inventory of Existing Commercial chemical Substances)
5) IARC(International Agency for Research on Cancer.)
6) NIOSH (The National Institute for Occupational Safety and Health)
7) IUCLID Dataset
8) ACGIH (American Conference of Governmental Industrial Hygienists.)
9) Transport of Dangerous Goods-UN
10) Korea Occupational Safety & Health Agency
11) U.S Department of Health and Human Services
12) MSDS of raw material from supplier

B. Originated date

2014. 04. 01

C. Revision number and date

1) Revision number: 1
2) Final revision data : 2018. 02. 11

D. Etcetera

This data is written on the basis of knowledge in our R&D center. The purpose of this is providing health and environment-related information. (It does not mean the physical properties and warranty of product.)