SAFETY DATA SHEET

According to OSHA Hazcom Standard 29 CFR 1910.1200

Gasoline(MG-3)_ENG

Date of issue: 2016-04-15 Revision date: 2024-02-29 Version: 8.2

1. IDENTIFICATION

A. Product name

- Gasoline(MG-3)_ENG

B. Recommended use and restriction on use

- General use : Fuels and additives
- Restriction on use : Observe the law and regulation.

C. Manufacturer / Supplier / Distributor information

○ Manufacturer information

- Company name : HD Hyundai Oilbank Co., Ltd.
- Address : 182 Pyung-sin 2, Daesan-eup, Seosan-si, Chungcheongnam-do 356-874, S.Korea
- Emergency telephone number : +82-41-660-5675

○ Supplier/Distributer information

- Company name : HD Hyundai Oilbank Co., Ltd.
- Address : 182 Pyung-sin 2, Daesan-eup, Seosan-si, Chungcheongnam-do 356-874, S.Korea
- Emergency telephone number : +82-41-660-5675

2. HAZARD IDENTIFICATION

A. GHS Classification

- Flammable liquids : Category1
- Acute toxicity (dermal) : Category5
- Acute toxicity (inhalation: vapor) : Category4
- Skin corrosion/irritation : Category2
- Serious eye damage/irritation : Category2
- Germ cell mutagenicity : Category1B
- Carcinogenicity : Category1A
- Reproductive toxicity : Category2
- Aspiration hazard : Category1
- Acute aquatic toxicity : Category3

B. GHS label elements

○ Hazard symbols

○ Signal words

- Danger

○ Hazard statements

- H224 Extremely flammable liquid and vapour
- H304 May be fatal if swallowed and enters airways
- H313 May be harmful if contact with skin.
- H315 Causes skin irritation
- H319 Causes serious eye irritation
- H332 Harmful if inhaled
- H340 May cause genetic defects
- H350 May cause cancer
- H361 Suspected of damaging fertility or the unborn child
- H402 Harmful to aquatic organisms.

○ Precautionary statements

1) Prevention

- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P233 Keep container tightly closed.
- P240 Ground and bond container and receiving equipment.
- P241 Use explosion-proof electrical/ventilating/lighting/equipment.
- P242 Use non-sparking tools.
- P243 Take action to prevent static discharges.
- P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
- P264 Wash hands thoroughly after handling.
- P271 Use only outdoors or in a well-ventilated area.
- P273 Avoid release to the environment.
- P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

2) Response

- P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- P302+P312 IF ON SKIN: Call a POISON CENTER/doctor if you feel unwell.
- P302+P352 IF ON SKIN: Wash with plenty of soap and water.
- P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- 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.
- P312 Call a POISON CENTER or doctor/physician if you feel unwell.
- P321 Specific treatment
- P331 Do NOT induce vomiting.
- P332+P313 If skin irritation occurs: Get medical advice/attention.
- P337+P313 If eye irritation persists: Get medical advice/attention.
- P362+P364 Take off contaminated clothing and wash before reuse.
- P370+P378 In case of fire: Use Suitable extinguishing media for extinction(Refer Section MSDS 5).

3) Storage

- P403+P235 Store in a well-ventilated place. Keep cool.
- 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

- Not available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
Gasoline	-	86290-81-5	87~93
t-Butyl methyl ether	2-Methoxy-2-methylpropane, Methyl tert-butyl ether(MTBE)	1634-04-4	7~13
* Contains the following substances			
Xylene	Xylol ; Methyltoluene	1330-20-7	<5
Toluene	Methylbenzene ; Methylbenzol ; Phenyl methane ; Methacide ; Toluol ; 1-Methylbenzene	108-88-3	<3
Benzene	Benzol ; Benzole ; Bicarburet of hydrogen ; Coal naphtha ; Clohexatriene ; Phene ; Phenyl hydride ; Polystream ; Pyrobenzol ; Pyrobenzole ; Cyclohexatriene ; Benzine ; 1,3,5-Cyclohexatriene ;	71-43-2	<0.7

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.
- Go to the hospital immediately if symptoms(flare, irritate) occur.
- Remove contact lenses if worn.

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.
- Remove contaminated clothing, shoes and isolate.
- Wash thoroughly after handling.
- Wear gloves when washing the patient, and please avoid contact with contaminated clothing.

C. Inhalation contact

- Take specific treatment if needed.
- When exposed to large amounts of steam and mist, move to fresh air.
- 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.
- If swallowed, large amounts of water to drink and do not induce vomiting.

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

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

B. Specific hazards arising from the chemical

- Causes serious eye irritation
- Causes skin irritation
- Extremely flammable liquid and vapour
- Harmful if inhaled
- Harmful to aquatic organisms.

C. Special protective actions for firefighters

- Avoid inhalation of materials or combustion by-products.
- Cool containers with water until well after fire is out.
- Do not approach the tank surrounded by fire until it is extinguished.
- In case of conflagration, use automatic fire sprinkler. Major fire may require withdrawal, allowing the object itself to burn.
- Keep unauthorized personnel out.

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.
- Handle the damaged containers or spilled material after wearing appropriate protective equipment
- Move container to safe area from the leak area.
- Must work against the wind, let the upwind people to evacuate.
- Remove all sources of ignition.

B. Environmental precautions

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

C. Methods and materials for containment and cleaning up

- Appropriate container for disposal of spilled material collected.
- Dike for later disposal.
- Disposal of waste shall be in compliance with the Wastes Control Act
- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notify the central and local government if the emission reach the standard threshold.

7. HANDLING AND STORAGE

A. Precautions for safe handling

- Avoid contact with incompatible materials.
- Avoid direct physical contact.
- Comply with all applicable laws and regulations for handling
- Dealing only with a well-ventilated place.
- Do not handle until all safety precautions have been read and understood.

B. Conditions for safe storage, including any incompatibilities

- Avoid direct sunlight.
- Check regularly for leaks.
- Do not apply any physical shock to container.
- Do not apply direct heat.
- Do not use damaged containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits

○ ACGIH TLV

- [Gasoline] : TWA, 300 ppm (890 mg/m3) STEL, 500 ppm (1480 mg/m3)
- [t-Butyl methyl ether] : TWA, 50 ppm (180 mg/m3)
- [Xylene] : TWA 20 ppm
- [Toluene] : TWA 20 ppm (75 mg/m3)
- [Benzene] : TWA, 0.5 ppm (1.6 mg/m3) STEL, 2.5 ppm (8 mg/m3)

○ OSHA PEL

- [Xylene] : 100 ppm, 435 mg/m3
- [Toluene] : 200 ppm, (C) 300 ppm

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

- Any air-purifying respirator with a full facepiece and an organic vapor canister.
- Any chemical cartridge respirator with a full facepiece and organic vaporcartridge(s).
- Any chemical cartridge respirator with organic vapor cartridge(s).
- Consider warning properties before use.
- 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.
- Respiratory protection is ranked in order from minimum to maximum.
- Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.

○ Eye protection

- Provide an emergency eye wash station and quick drench shower in the immediate work area.
- Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.

○ Hand protection

- Wear appropriate chemical resistant glove.

○ Skin protection

- Wear appropriate chemical resistant protective clothing.

○ Others

- Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance	
- Appearance	Clear Colorless Liquid
- Color	Not available
B. Odor	Mild petroleum
C. Odor threshold	Not available
D. pH	중성(6~8)
E. Melting point/Freezing point	-90.5℃
F. Initial Boiling Point/Boiling Ranges	30℃ ~ 210℃
G. Flash point	-30℃
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	7.6%/1.2%

K. Vapour pressure	6.5~13.5psi (37.8℃)
L. Solubility	Not available
M. Vapour density	3.0~4.0 (air=1)
N. Specific gravity(Relative density)	0.7~0.8 (water=1)
O. Partition coefficient of n-octanol/water	2.1~6
P. Autoignition temperature	208~456℃
Q. Decomposition temperature	Not available
R. Viscosity	0.5CST(25℃)
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

- Contact with other combustible material may cause fire.
- Cylinders exposed to fire may vent and release flammable gas.

C. Conditions to avoid

- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces
- Avoid contact with incompatible materials and condition.
- Avoid contact with heat, sparks, flame or other ignition sources.

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

- May be fatal if swallowed and enters airways

○ Oral

- Not available

○ Eye·Skin

- Causes skin irritation

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

○ Acute toxicity

* Oral
  - Product (ATEmix) : >5000mg/kg
  - [Gasoline] : LD50 14000 ㎎/㎏ Rat
  - [t-Butyl methyl ether] : LD50 > 2000 ㎎/㎏ Rat (OECD TG 401, GLP) (ECHA)
  - [Xylene] : LD50 3523 mg/kg Rat (EU Method B.1) (ECHA)
  - [Toluene] : LD50 5580 mg/kg Rat (EU Method B.1) (ECHA)
  - [Benzene] : LD50 > 2000 mg/kg Rat (OECD TG 401) (ECHA)
* Dermal
  - Product (ATEmix) : 2000mg/kg < ATEmix <= 5000mg/kg
  - [Gasoline] : LD50 > 3750 ㎎/㎏ Rabbit
  - [t-Butyl methyl ether] : LD50 > 2000 ㎎/㎏ Rat (OECD TG 402, GLP) (ECHA)
  - [Xylene] : LD50 12126 mg/kg Rabbit (ECHA)

- [Toluene] : LD50 > 5000 mg/kg Rabbit (ECHA)
- [Benzene] : LD50 > 8260 mg/kg (9.4 mL/kg) Guinea pig and rabbit (OECD TG 402) (ECHA)

* Inhalation
  - Product (ATEmix) : 2.0mg/L 4hr < ATEmix <= 10.0mg/L 4hr
  - [Gasoline] : vapor LC50 > 5.2 ㎎/ℓ 4 hr Rat
  - [t-Butyl methyl ether] : LC50 85.0 mg/L/4 hr Rat(ECHA)
  - [Xylene] : Vapor LC50 10~20 mg/L 4 hr (NIER)
  - [Toluene] : Vapor LC50 28.1 mg/L 4 hr Rat (OECD TG 403) (ECHA)
  - [Benzene] : Vapor LC50 43.7 mg/L 4 hr Rat (OECD TG 403) (ECHA)

○ Skin corrosion/irritation
- Causes skin irritation

○ Serious eye damage/irritation
- Causes serious eye irritation

○ Respiratory sensitization
- Not available

○ Skin sensitization
- Not available

○ Carcinogenicity
* IARC
  - [Gasoline] : Group 2B
  - [t-Butyl methyl ether] : Group 3
  - [Xylene] : Group 3
  - [Toluene] : Group 3
  - [Benzene] : Group 1
* OSHA
  - Not available
* ACGIH
  - [Gasoline] : A3
  - [t-Butyl methyl ether] : A3
  - [Xylene] : A4
  - [Toluene] : A4
  - [Benzene] : A1
* NTP
  - [Benzene] : K
* EU CLP
  - [Gasoline] : Carc. 1B (Note P)
  - [Benzene] : Carc. 1A

○ Germ cell mutagenicity
- May cause genetic defects

○ Reproductive toxicity
- Suspected of damaging fertility or the unborn child

○ STOT-single exposure
- Not available

○ STOT-repeated exposure
- Not available

○ Aspiration hazard
- May be fatal if swallowed and enters airways

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

○ Fish

- [Gasoline] : LC50 82 ㎎/ℓ 96 hr (IUCLID)
- [t-Butyl methyl ether] : LC50 672 ㎎/ℓ 96 hr Pimephales promelas (ECHA)
- [Xylene] : LC50 7.6 mg/L 96 hr Oncorhynchus mykiss (OECD TG 203) (ECHA)
- [Toluene] : LC50 5.5 mg/L 96 hr, NOEC 1.39 mg/L 40 d Oncorhynchus kistutch (ECHA)
- [Benzene] : LC50 5.3 mg/L 96 hr Oncorhynchus mykiss, NOEC 0.8 mg/L 32 d Pimephales promelas (ECHA)

○ Crustaceans

- [Gasoline] : EC50 170 ㎎/ℓ 24 hr (IUCLID)
- [t-Butyl methyl ether] : EC50 472 ㎎/ℓ 96 hr Daphnia magna (ECHA)
- [Xylene] : NOEC 1.17 mg/L 7 d Ceriodaphnia dubia (ECHA)
- [Toluene] : EC50 3.78mg/L 48hr, NOEC 0.74 mg/L 7 d Ceriodaphnia dubia (ECHA)
- [Benzene] : EC50 10 mg/L 48 hr Daphnia magna (ECHA)

○ Algae

- [Gasoline] : EC50 56 ㎎/ℓ 72 hr Selenastrum capricornutum (IUCLID)
- [t-Butyl methyl ether] : ErC50 > 800 ㎎/ℓ 72 hr Other(Desmodesmus subspicatus)(ECHA)
- [Xylene] : EC50 4.7 mg/L 72 hr Raphidocelis subcapitata (OECD TG 201) (ECHA)
- [Toluene] : EC50 134 mg/L 3 hr Chlorella vulgaris and Chlamydomonas angulosa (ECHA)
- [Benzene] : EC50 32 mg/L 72 hr Raphidocelis subcapitata (ECHA)

B. Persistence and degradability

○ Persistence

- [Gasoline] : log Kow 2 (2-7) (ICSC)
- [t-Butyl methyl ether] : Log Kow 0.94(HSDB)
- [Xylene] : log Pow 3.12 (ECHA)
- [Toluene] : log Pow 2.73 (20 °C) (ECHA)
- [Benzene] : log Pow 2.13 (25 °C) (ECHA)

○ Degradability

- Not available

C. Bioaccumulative potential

○ Bioaccumulative potential

- [Gasoline] : BCF 340 (Estimate)
- [t-Butyl methyl ether] : BCF 1.5(EHCA)
- [Toluene] : BCF 90 (ECHA)

○ Biodegradation

- [t-Butyl methyl ether] : 1.8 %, 28 day; Non-degradable (ECHA)
- [Xylene] : 94 % 28 d, Readily biodegradable (OECD TG 301 F, GLP) (ECHA)
- [Toluene] : 69 % 5 d, Readily biodegradable (ECHA)
- [Benzene] : Not readily biodegradable (NIER)

D. Mobility in soil

- [Xylene] : log Koc ca. 2.73 dimensionless (OECD TG 121) (ECHA)

E. Other adverse effects

- [Gasoline] : NOEC: 10mg/L/72hr(Algae)
- [t-Butyl methyl ether] : fish:Pimephales promelas: NOEC, 31d, = 299 mg/L, other guideline: ASTM E1241-92, GLP crustaceans:Americamysis bahia: NOEC, 28d, = 26 mg/L, EPA OPPTS 850.1350, GLP algae:Desmodesmus subspicatus: NOEC, 72h, = 470 mg/L, other guideline: Directive 88/302/EEC(ECHA)

13. DISPOSAL CONSIDERATIONS

A. Disposal methods

- It shall be treated by incineration
- Oil water separation technology shall be applied as pre-waste treatment if it is applicable
- Stabilization and minimization treatment by incineration or similar method can be applied, if more than two kinds of designated wastes are in mixture state and it is impractical to separate them

B. Special precautions for disposal

- Anyone with business license number who generates industrial wastes shall treat the waste by him/herself or by entrusting to the legal entities who treat the wastes, recycle the wastes of others or install and operate the waste treatment facilities according to the Wastes Control Act
- Dispose of waste in accordance with all applicable laws and regulations.

14. TRANSPORT INFORMATION

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

- 1203

B. Proper shipping name

- GASOHOL GASOLINE MIXED WITH ETHYL ALCOHOL, WITH NOT MORE THAN 10% ALCOHOL

C. Hazard Class

- 3

D. IMDG CODE/IATA DGR Packing group

- II

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 : F-E (Non-water-reactive flammable liquids)
- EmS SPILLAGE SCHEDULE : S-E (Flammable liquids, floating on water)

15. REGULATORY INFORMATION

A. National and/or international regulatory information

○ POPs Management Law

- [Gasoline] : Not applicable
- [t-Butyl methyl ether] : Not applicable
- [Xylene] : Not applicable
- [Toluene] : Not applicable
- [Benzene] : Not applicable

○ Information of EU Classification

* Classification
  - [Gasoline] : H304,H340,H350
  - [t-Butyl methyl ether] : H225,H315
  - [Xylene] : H226,H312,H315,H332
  - [Toluene] : H225,H304,H315,H336,H361,H373
  - [Benzene] : H225,H304,H315,H319,H340,H350,H372

○ U.S. Federal regulations

* OSHA PROCESS SAFETY (29CFR1910.119)
  - Not applicable
* CERCLA Section 103 (40CFR302.4)
  - [t-Butyl methyl ether] : 453.599 kg 1000 lb
  - [Xylene] : 45.3599 kg 100 lb

- [Toluene] : 453.599 kg 1000 lb
- [Benzene] : 4.53599 kg 10 lb

* EPCRA Section 302 (40CFR355.30)
  - Not applicable
* EPCRA Section 304 (40CFR355.40)
  - Not applicable
* EPCRA Section 313 (40CFR372.65)
  - [t-Butyl methyl ether] : Applicable
  - [Xylene] : Applicable
  - [Toluene] : Applicable
  - [Benzene] : 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

- 2016-04-15

C. Revision number and Last date revised

- 9 times, 2024-02-29

D. Other

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