

Safety Data Sheet(SDS)

Last revised date : 26-12-2022

1. Identification

1) Product identifier : ABS/GF_FR VG-4920F

2) Recommended use of the chemical and restrictions on use

○ Recommended use of the chemical

Others(Synthetic Resin Plastics)

○ Restrictions on use

Use for recommended use only

3) Details of the supplier of the safety data sheet

○ Seller

Company name : Lotte Chemical Corporation

Address : 05551 Lotte World Tower, 300, Olympic-ro, Songpa-gu, Seoul, 05551 Rep. of KOREA

Telephone number :

Basic Chemicals	+82-2-829-4114	Advanced Materials	+82-31-596-3114
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Emergency phone number

Yeosu Plant	+82-61-688-2100	Ulsan Plant	+82-52-278-3500
Daesan Plant	+82-41-689-5900	Yeosu Plant(Advanced Materials)	+82-61-689-1100

Fax number : +82-2-834-6070

2. Hazards identification

1) Hazard classification

- Carcinogenicity Category 2

2) Allocation label elements

Hazard pictograms



Signal word

- WARNING

Hazard statements

H351 Suspected of causing cancer

Precautionary statements

- Prevention

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

- Response

P308+P313 If exposed or concerned: Get medical advice/attention.

- Storage

P405 Store locked up.

- Disposal

P501 Discard the contents/containers in accordance with the laws and laws related to waste.

3) Other hazards:

According to experience and information provided, this product does not affect harmful effects when using and handling it as a regulation.

3. Composition/Information on ingredients

Chemical name	Common name	CAS No.	Content(wt%)
polymer with 1,3-butadiene and ethenylbenzene	ABS Resin	9003-56-9	$\geq 54 \sim \leq 64$
Glass, oxide	-	65997-17-3	$\geq 18 \sim \leq 22$
Diantimony trioxide	Antimony trioxide	1309-64-4	$\geq 2 \sim \leq 4$

4. First-aid measures

1) Following eye contact

- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Seek immediate medical assistance.

2) Following skin contact

- For minor skin contact, avoid spreading material on unaffected skin.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Remove and isolate contaminated clothing and shoes.
- Seek immediate medical assistance.

3) Following inhalation

- Administer oxygen if breathing is difficult.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Keep victim warm and quiet.
- Move to fresh air.

4) Following ingestion

- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Seek immediate medical assistance.

5) Delayed and immediate effects and also chronic effects from short and long term exposure

- Suspected of causing cancer

6) Advice to physician

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Exposures require specialized first aid with contact and medical follow-up .

5. Fire-Fighting measures

1) Suitable (and unsuitable) extinguishing media

- Suitable extinguishing media
 - Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.
 - CO₂.
 - Use dry sand or earth to smother fire.
 - Dry chemical.
 - Water spray.
- Unsuitable extinguishing media
 - Direct water.

2) Special hazards arising from the substance or mixture

- Pyrolytic product
 - Can decompose at high temperatures forming toxic gases.
 - Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- Risk of fire and explosion
 - Containers may explode when heated.
 - Some may burn but none ignite readily.
- Other
 - May cause toxic effects if inhaled.

3) Special protective equipment for firefighters

- Substance may be transported in a molten form.
- Dike fire-control water for later disposal; do not scatter the material.
- Evacuate area and fight fire from a safe distance.
- Fire involving Tanks: ALWAYS stay away from tanks engulfed in fire.

- Fire involving Tanks: Cool containers with flooding quantities of water until well after fire is out.
- Fire involving Tanks: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Fire involving Tanks: For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
- Fire involving Tanks: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Move containers from fire area if you can do it without risk.
- Rescuers should put on appropriate protective gear.

6. Accident release measures

- 1) Personal precautions, protective equipment and emergency procedures
 - Clean up spills immediately, observing precautions in Protective Equipment section.
 - Cover with plastic sheet to prevent spreading.
 - Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
 - ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
 - Please note that materials and conditions to be avoided.
 - Stop leak if you can do it without risk.
- 2) Environmental precautions
 - Prevent entry into waterways, sewers, basements or confined areas.
- 3) Methods and materials for containment and cleaning up
 - Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
 - Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container.
 - Absorb the liquid and scrub the area with detergent and water.

7. Handling and storage

- 1) Precautions for safe handling
 - Avoid breathing vapors from heated material.
 - Do not enter storage area unless adequately ventilated.
 - Follow all MSDS/label precautions even after container is emptied because they may retain product residues.
 - Handling refer to engineering control/personal protection section.
 - Loosen closure cautiously before opening.
 - Please note that materials and conditions to be avoided.
 - Use care in handling/storage.
- 2) Conditions for safe storage (including any incompatibilities)
 - Empty drums should be completely drained, properly bunged, and promptly returned to a drum reconditioner, or properly disposed of.

8. Exposure controls & personal protection

1) Chemical exposure limits, Biological exposure standard

Components	ACGIH regulations	Biological limit values
Glass, oxide	No data available	No data available
Diantimony trioxide	0.02 mg/m ³ TWA (inhalable particulate matter)	No data available

2) Appropriate engineering controls

- Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

3) Personal protective equipment

- Respiratory protection
 - If you have a direct contact or exposed to the material, wear the appropriate form of respiratory protection certified.
- Eye protection
 - If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles.
- Hand protection
 - Wear chemical safety gloves.
- Skin protection
 - Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

9. Physical and chemical information

Property name	Values	Source
Appearance		
Physical state	Soild	
Color	Depends on customer needs	
Odor	Odorless	
Odor threshold	No data available	
pH	No data available	
Melting point/freezing point	No data available	
Initial boiling point and boiling range(°C)	No data available	
Flash point(°C)	No data available	
Evaporation rate	No data available	
Flammability(solid, gas)	1.6mm V-0 (UL94)	
Upper/lower flammability or explosive limits	No data available	

Vapour pressure	No data available	
Solubility(ies)	Insolubility	
Vapour density	No data available	
Relative density	No data available	
n-octanol/water partition coefficient	No data available	
Auto ignition temperature	No data available	
Decomposition temperature	400°C	
Viscosity(mm ² /s, 40°C)	No data available	
Molecular weight(mass)	50,000-250,000	
Specific gravity	1.12 ~ 1.30	

10. Stability and reactivity

1) Chemical stability and Possibility of hazardous reactions

- Can decompose at high temperatures forming toxic gases.
- Containers may explode when heated.
- Fire may produce irritating, corrosive and/or toxic gases.
- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- Some may burn but none ignite readily.

2) Conditions to avoid

- Ignition source(heat, spark, flame, etc.).

3) Incompatible materials

- Combustibles, reducing material.

4) Hazardous decomposition products

- Corrosive/toxic fume.
- Irritating, corrosive and/or toxic gas.

11. Toxicological information

1) Information on the likely routes of exposure

- No data available

2) Health hazard information

- Acute toxicity
 - Acute toxicity(Oral) PRODUCT : Not classified
 - Glass, oxide
 - : LD50> 2000 mg / kg experimental species: Rat, (route of administration: gavage, Female / Male, OECD TG 423, GLP)
 - Diantimony trioxide
 - : fatal dose> 7500 mg / kg experimental species: Rat, (the route of administration: Diet)
 - Acute toxicity(Dermal) PRODUCT : Not classified
 - Diantimony trioxide
 - : LD50> 8300 mg / kg experimental species: Rabbit
 - Acute toxicity(Inhalation:Gases) PRODUCT : Not classified
 - No data available
 - Acute toxicity(Inhalation:Vapours) PRODUCT : Not classified
 - No data available
 - Acute toxicity(Inhalation:Dust/mist) PRODUCT : Not classified
 - Diantimony trioxide
 - : LC50> 5.2 mg / ℓ 4 hr experiment Species: Rat, (female / male, OECD TG 403, GLP)
- Skin corrosion/irritation PRODUCT : Not classified
 - Glass, oxide
 - : Edema Score: 0/0, fully Restored, no irritant, Rabbit, OECD TG 404
 - Diantimony trioxide
 - : No irritation, albino Rabbits
- Serious eye damage/eye irritation PRODUCT : Not classified
 - Glass, oxide
 - : No irritation, Human
 - Diantimony trioxide
 - : Not irritant, Rabbit, corneal opacity (0), Iris (0), conjunctival hyperemia (0.4), conjunctival edema (0), OECD TG 405
- Respiratory sensitization PRODUCT : Not classified
 - No data available
- Skin sensitization PRODUCT : Not classified
 - Glass, oxide
 - : No hypersensitivity
 - Diantimony trioxide
 - : No sensitization, Guinea pig, GLP, female, guinea pig maximization test (GMPT): dose levels: 2 ml of a 50% (w / w) suspension in vehicle, reaction: 0/20, OECD TG 406
- Carcinogenicity PRODUCT : Category 2

- Diantimony trioxide
 - : Ministry of Environment(Category 2)
- Germ cell mutagenicity PRODUCT : Not classified
 - Glass, oxide
 - : In Vitro - Genetic Toxicity: Chinese Hamster Ovary (CHO))
 - Diantimony trioxide
 - : In vitro gene using my mammalian cell culture mutagenicity tests results, voice, regardless of the metabolic activation system existence (OECD Guideline 476) Voice, regardless of the return using the in vitro microbial mutagenesis test, metabolic activation system existence (OECD Guideline 471) in vitro regardless of the chromosomal abnormalities in mammalian culture test using the resulting cell, metabolic activity-based or without voice, (OECD Guideline 473) in vivo test for chromosomal abnormalities using mammalian erythrocytes result, speech. (OECD Guideline 474) results, negative Chromosomal Aberration Test Using in vivo mammalian bone marrow cells. (OECD Guideline 475, GLP) in vivo unscheduled DNA synthesis using the mammalian liver (UDS) test results, the voice. (OECD Guideline 486)
- Reproductive toxicity PRODUCT : Not classified
 - Diantimony trioxide
 - : There does not affect the quality or the period of estrus females in the male sperm. No histopathological evaluation of reproductive tissues. 50, 100 mg / kg i.p. Search after toxic (lethal) of high level is observed, in the intake rats range check developmental toxicity study using the GLP antimony trioxide, NOEC (maternal toxicity) = Evaluated a 6.07 mg / m³, the highest dose, NOEC (developmental toxicity)> 6.07 mg / m³, rat, OECD TG 414, GLP
- Specific target organ toxicity single exposure PRODUCT : Not classified
 - Diantimony trioxide
 - : Oral: (1) No toxic effects / 2 Microscopic examination no pathological damage associated with any organic substrate in the transdermal after single application: the significant local reactions or overt signs of systemic toxicity were not observed. Inhalation: During the period after the exposure step and exposure no clinical signs / an animal makes many enemies appear gray lesions (0.1-0.2 mm diameter) to the macroscopic changes in the lung (rat / male / female / OECD TG 403 / GLP)
- Specific target organ toxicity repeated exposure PRODUCT : Not classified
 - Glass, oxide
 - : Inhalation (Ambassietic): The rat was exposed to the inhalation of the E-glass fine fibers (Code 104E) fibers for 7 hours for a maximum of 1, 3 days, 8 days or 14 days of actual exposure. 3 weeks. After sacrificing the lungs, BAL fluid was examined for the total concentration of total cells, granules and the total concentration of proteins. This analysis showed that the total number of cells, granule fraction and total protein concentration gradually increased as the accumulated repetition exposure period increases. The data represents the induction of inflammatory reactions even after 7 hours of exposure. In addition, the analysis of the number of proliferation cells per MM bronchial duct was used to investigate the analysis of the number of proliferation cells per MM bronchial duct using BRDU DNA labeling to significantly increase the number of proliferative cells in the lungs of animals exposed to E-glass fine fibers (p <0.05) Note). controls). This also represents inflammatory response in lung reality. In conclusion, the study data indicates that the inhalation of

the E-glass fine fibers can lead to inflammation reactions in the lungs of the ripple after repeated exposure of a single exposure or 3 to 14 days. Rats were exposed to inhalation of E-Glass Microfiber (CODE 104E) fibers for 7 hours a day for actual exposure for up to 1, 3, 8 or 14 days. 3 weeks. After sacrificing the lungs, the BAL fluid investigated the total concentration of total cells, granules fractions and proteins. This analysis showed that the longer the accumulated repetition period, the longer the total cell, the granules fraction and the total protein concentration gradually increased. This result shows the induction of inflammatory reactions even after 1 day exposure of 7 hours. Further, as a result of analyzing the number of proliferation cells per MM bronchi, using the BRDU DNA label, the number of proliferation cells was significantly increased in the lungs of the animal exposed to the E-Glass fine fibers (statistically significant in $P < 0.05$ appear). This is known to exhibit inflammatory reactions in waste propeller. In conclusion, research data indicates that the suction of E-Glass fine fibers can lead to inflammatory responses in the lungs of mice after a single or 3 to 14 days after repetition exposure. As a result of exposed to 650 ppm concentrations, resulting in the brain and thymus lesions of deaths are found. In the exposed rat (male), which is exposed to 650 ppm for 14 weeks, the cause of death occurred because such degenerative lesions are not observed. However, half of the survivors of the 650 ppm group had neuronal deadlocks or malaria in the body stenomed by the brain. The lesions of the central nervous system have been accompanied by nerve behavior. It has been found that each rat exposed to 2,4-pentane dion representing the abnormality during the modified IRWIN screening test has been shown to have brain damage. Generally, the opposite of this statement was true. Exceptionally, two men are exposed to 650 ppm, showing normal reactions with brain malaria during IRWIN tests. In addition, some females exposed to 650 ppm showed acute degeneration of nuclear and displacement temperatures, but died before performing awareness testing. Since the results of electron microscopy test in sciatic nerve preparation were negative, the neurotoxic effect of 2,4-pentane dion appears to be a central rather than peripheral. Description of the difference in mortality rate of men and women (each 650 ppm exposure group, 30% for men and women) is not known. The difference between gender may be related to brain thiamine, folic acid and / or flute single concentration. The proposed mechanism of 2,4-pentane di-toxicity is because B vitamins or the non-activation of the bonding is not activated. Concentration of repetition exposure to 2,4-pentane dion - Reaction profile is very clear

- Diantimony trioxide

: Orally (sub-chronic), according to repeated twice oral administration study diantimony trioxide can be toxic that, NOAEL (liver toxicity) = 1686 mg / kg / day Sent, Rat inhalation (repeat) between the: harmful effects has not been materialized No , miniature swine

○ Aspiration hazard PRODUCT : Not classified

- No data available

12. Ecological information

1) Ecotoxicity

● Fish

- polymer with 1,3-butadiene and ethenylbenzene

: LC50 11.5 mg / ℓ 96 hr Pimephales promelas

- Glass, oxide
: LC50 > 1000 mg / ℓ 96 hr, (OECD TG 203, ring Formula test i.e. all test media were changed every 24 hours, fresh water, GLP)

- Diantimony trioxide
: LC50 14.4 mg / ℓ 14.4 mg / ℓ 96 hr *Pimephales promelas*, (exponential manner, fresh water)

• Crustaceans

- Glass, oxide
: NOEC ≥ 1000 mg / ℓ 3 day *Daphnia magna*, (OECD TG 202, ring formulas, fresh water, GLP)

- Diantimony trioxide
: LC50 1.77 mg / ℓ 1.77 mg / ℓ 96 hr, (exponential manner, fresh water)

• Aquatic algae

- Glass, oxide
: NOEC ≥ 1000 mg / ℓ 3 day, (OECD TG 201, ring formulas, GLP)

- Diantimony trioxide
: EC50 > 36.6 mg / ℓ 72 hr, (OECD TG 201, ISO 8692 (Water Quality - Fresh Water Algal Growth Inhibition Test with *Scenedesmus subspicatus* and *Selenastrum capricornutum*), exponential expression, fresh water)

2) Persistence and degradability

• Degradability

No data available

• Biodegradation

- Diantimony trioxide
: (Biological deformable)

3) Bioaccumulative potential

• n-octanol water partition coefficient

- Diantimony trioxide
: -0.306 -0.306 01 01

• Bioconcentration factor (BCF)

- Diantimony trioxide
: 16000 BCF 16000 BCF, (BCF)

4) Mobility in soil

- Diantimony trioxide
: , (Kd, 25 °C, pH: 5.73)

5) Other adverse effects

No data available

13. Disposal considerations

1) Disposal methods

- Empty containers should be taken to an approved waste handling site for recycling or disposal.

2) Precautions (including disposal of contaminated container of package)

- Dispose of in accordance with local regulations.
- Send to a licensed waste management company.

14. Transport information

- 1) UN No. : Not applicable
 - 2) Proper shipping name : Not applicable
 - 3) Hazard class : Not applicable
 - 4) Packing group : Not applicable
 - 5) Marine pollutant : No
 - 6) Special precautions for user related to transport or transportation measures :
 - Emergency measures in case of fire : Not applicable
 - Emergency measures in the effluent : Not applicable
- ADR
- Tunnel restriction code : Not applicable
- IMDG
- Marine pollutant : No
- Air transport(IATA)
- UN No. : Not applicable
 - Proper shipping name : Not applicable
 - Class or division : Not applicable
 - Packing group : Not applicable

15. Regulatory information

Australia Industrial Chemicals Act

- Not applicable

China Inventory of Existing Chemical Substances (IECSC)

- Inventory - China - Inventory of Existing Chemical Substances (IECSC)
 - polymer with 1,3-butadiene and ethenylbenzene : Present [03641]
 - Glass, oxide : Present [04789]
 - Diantimony trioxide : Present [29709]

92/32/EEC

- Not applicable

European Union Official Journal of the European Communities 15 June 1990 - Annex Based on Article 13 of Directive 67/548/EEC Amended by Directive 79/831/EEC

- Inventory - European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)

- Glass, oxide : 266-046-0

- Diantimony trioxide : 215-175-0

Japan Law Concerning the Examination and Regulations of Manufacture, etc. of Chemical Substances

- Inventory - Japan - Existing and New Chemical Substances (ENCS)

- polymer with 1,3-butadiene and ethenylbenzene : (6)-176

- Diantimony trioxide : (1)-543

New Zealand Environmental Protection Authority, Inventory of Chemicals

- Inventory - New Zealand - Inventory of Chemicals (NZIoC)

- polymer with 1,3-butadiene and ethenylbenzene : May be used as a single component chemical under an appropriate group standard

- Glass, oxide : May be used as a single component chemical under an appropriate group standard

- Diantimony trioxide : HSNO Approval: HSR002901

Turkey Regulation on Inventory and Control of Chemicals

- Not applicable

Taiwan Chemical Substance Inventory

- Inventory - Taiwan - Taiwan Chemical Substance Inventory (TCSI)

- polymer with 1,3-butadiene and ethenylbenzene : Present

- Glass, oxide : Present

- Diantimony trioxide : Present

Vietnam National Chemicals Inventory (NCI)

- Inventory - Vietnam - National Chemicals Inventory (NCI) (DRAFT)

- polymer with 1,3-butadiene and ethenylbenzene : Present 12125

- Glass, oxide : Present 21278

- Diantimony trioxide : Present 06644

16. Other information

1) Reference

NCIS, KOSHA, Montreal Protocol, ECHA, OECD SIDS, EU IUCLID, HSDB(PubChem), NITE, NTP, ACGIH, IARC, NIOSH, ChemIDplus, EPA, EPI Suite, INCHEM

2) Issue date : 26-12-2022

3) Revision date

- Revised date count : 2-1

- Last revised date : 26-12-2022