



MATERION

1. Chemical and company identification

| | |
|---|---|
| Name of chemical (Product name) | MEG-150 Epoxy |
| Supplier's company name, address and phone number | |
| Company name | Materion Advanced Materials |
| Address | 6070 Parkland Boulevard Mayfield Heights, OH 44124 United States |
| Contact person | Theodore Knudson |
| Telephone | 1.216.383.4019 No information available |
| e-mail address | ehs@materion.com |
| Emergency telephone number | See Section 16. |
| Reference number | F01 |

2. Hazards identification

GHS classification

| | | |
|-----------------------|---|--|
| Physical hazards | The product is not classified according to GHS. | |
| Health hazards | Skin corrosion/irritation | Category 2 |
| | Serious eye damage/eye irritation | Category 2A |
| | Sensitization, skin | Category 1 |
| | Germ cell mutagenicity | Category 2 |
| | Carcinogenicity | Category 2 |
| | Reproductive toxicity | Category 1B |
| | Specific target organ toxicity, single exposure | Category 2 (central nervous system, systemic toxicity, visual organs) |
| | Specific target organ toxicity, single exposure | Category 3 respiratory tract irritation |
| | Specific target organ toxicity, repeated exposure | Category 2 (central nervous system, respiratory system, visual organs) |
| Environmental hazards | The product is not classified according to GHS. | |

GHS label elements

Pictograms



Signal words

Danger

Hazard statement

Harmful in contact with skin. Causes skin irritation. May cause an allergic skin reaction. Suspected of causing genetic defects. Suspected of causing cancer. Causes damage to organs.

Precautionary statement

Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Contaminated work clothing should not be allowed out of the workplace. Observe good industrial hygiene practices.

Response

If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse. If exposed or concerned: Get medical advice/attention.

Storage

Store locked up. Store in a well-ventilated place. Keep container tightly closed.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards which do not result in classification

None known.

Supplemental information

For further information, please contact the Product Stewardship Department at +1.216.383.4019.

Main symptoms and emergency overview

| | |
|---------------------------|--|
| Main symptoms | Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. Dermatitis. Rash. Prolonged exposure may cause chronic effects. May cause respiratory irritation. Narcosis. Behavioral changes. Decrease in motor functions. |
| Emergency overview | Harmful in contact with skin. Causes skin irritation. Suspected of causing cancer. Suspected of causing genetic defects. May cause an allergic skin reaction. Causes damage to organs. |

3. Composition/information on ingredients

| | | | | |
|------------------------------------|-------------------|-----------------------------|------------------------------------|--------------------------|
| Substance or mixture | Mixture | | | |
| | | Gazette notification | | |
| Components | CAS Number | ENCS no. | ISHL no. | Concentration (%) |
| Polyamide | 63428-84-2 | | | 45 - 75 |
| Diglycidyl Resorcinol Ether | 101-90-6 | (7)-1284 | (7)-1284 | 22 |
| PROPRIETARY INGREDIENTS | N/A | | | 7 - 13 |
| Methanol | 67-56-1 | (2)-201 | (2)-201 | 0 - 2 |
| Titanium Oxide (TiO ₂) | 13463-67-7 | (1)-558, (5)-5225 | (1)-558, (5)-5225, 2-(3)-509 | 0 - 1.5 |

Chemical formula C12-H14-O4 (101-90-6), C-H4-O (67-56-1), O2-Ti (13463-67-7)

4. First aid measures

| | |
|---|--|
| If inhaled | Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist. |
| If on skin | If skin irritation occurs: Get medical advice/attention. Wash off with soap and water. Wash contaminated clothing before reuse. Get medical attention if irritation develops and persists. |
| If in eyes | Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Get medical attention if irritation develops and persists. |
| If swallowed | No adverse effects due to ingestion are expected. |
| Most important symptoms/effects, acute and delayed | May cause an allergic skin reaction. Prolonged exposure may cause chronic effects. |
| Protection of first-aid responders | If you feel unwell, seek medical advice (show the label where possible). Wash contaminated clothing before reuse. |
| Notes to physician | Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed. Treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. |

5. Fire-fighting measures

| | |
|---|---|
| Extinguishing media | Water fog. Water spray. Dry chemical powder. Carbon dioxide (CO ₂). |
| Extinguishing media to avoid | Do not use a solid water stream as it may scatter and spread fire. |
| Specific hazards | None known. |
| Special fire fighting procedures | In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk. Use water spray to cool unopened containers. |
| Protection of fire-fighters | Self-contained breathing apparatus and full protective clothing must be worn in case of fire. |
| General fire hazards | None known. |

6. Accidental release measures

| | |
|--|--|
| Personal precautions, protective equipment and emergency procedures | Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. For personal protection, see section 8 of the SDS. |
| Environmental precautions | Avoid discharge into drains, water courses or onto the ground. |
| Methods and materials for containment and cleaning up | Sweep up or vacuum up spillage and collect in suitable container for disposal. Collect and dispose of spillage as indicated in section 13 of the SDS. Flush area with water. |

7. Handling and storage

Handling

Technical measures (e.g. Local and general ventilation) Provide adequate ventilation. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Explosion-proof general and local exhaust ventilation.

Safe handling advice Avoid contact with eyes, skin, and clothing. When using, do not eat, drink or smoke. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Should be handled in closed systems, if possible. Avoid contact with eyes. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. When using do not smoke. Use personal protection recommended in Section 8 of the SDS. Pregnant or breastfeeding women must not handle this product. Avoid breathing dust/fume/gas/mist/vapors/spray. Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Contact avoidance measures For further information, please refer to section 10 of the SDS. Strong oxidizing agents.

Hygiene measures Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Observe any medical surveillance requirements. When using do not smoke. Contaminated work clothing should not be allowed out of the workplace. When using, do not eat, drink or smoke.

Storage

Safe storage conditions Store locked up. Keep container tightly closed. Store away from incompatible materials (see Section 10 of the SDS). Store in a well-ventilated place. Store in cool place. Keep away from heat, sparks and open flame. Keep in an area equipped with sprinklers. Store in a cool, dry place out of direct sunlight. Keep containers tightly closed in a dry, cool and well-ventilated place.

Safe packaging materials Store in original tightly closed container.

8. Exposure controls/personal protection

Control parameters Follow standard monitoring procedures.

Occupational exposure limits

Japan. OELs - ISHL. (Workplace Environment Assessment Standards)

| Components | Type | Value |
|------------------------|------|---------|
| Methanol (CAS 67-56-1) | TLV | 200 ppm |

Japan. OELs - JSOH (Japan Society of Occupational Health: Recommendation of Occupational Exposure Limits)

| Components | Type | Value | Form |
|---|------|---|---------------------------------|
| Methanol (CAS 67-56-1) | TWA | 260 mg/m ³ 200 ppm | |
| Titanium Oxide (TiO ₂) (CAS 13463-67-7) | TWA | 4 mg/m ³ 1 mg/m ³ 0.3 mg/m ³ | Total dust. Respirable dust. |

US. ACGIH Threshold Limit Values

| Components | Type | Value |
|---|-------------|----------------------|
| Methanol (CAS 67-56-1) | STEL TWA | 250 ppm 200 ppm |
| Titanium Oxide (TiO ₂) (CAS 13463-67-7) | TWA | 10 mg/m ³ |

Biological limit values

Japan. BELs - JSOH (Japan Society of Occupational Health: Recommendation of Occupational Exposure Limits Based on Biological Monitoring)

| Components | Value | Determinant | Specimen | Sampling Time |
|------------------------|---------|-------------|----------|---------------|
| Methanol (CAS 67-56-1) | 20 mg/l | Methanol | Urine | * |

* - For sampling details, please see the source document.

ACGIH Biological Exposure Indices

| Components | Value | Determinant | Specimen | Sampling Time |
|------------------------|---------|-------------|----------|---------------|
| Methanol (CAS 67-56-1) | 15 mg/l | Methanol | Urine | * |

* - For sampling details, please see the source document.

Exposure guidelines

Japan JSOH OELs: Skin designation

Methanol (CAS 67-56-1) Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

Methanol (CAS 67-56-1) Danger of cutaneous absorption

Engineering measures

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal protective equipment

Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment.

Hand protection Wear appropriate chemical resistant gloves.

Eye protection Wear safety glasses with side shields (or goggles).

Skin and body protection Avoid contact with the skin. Wear suitable protective clothing.

9. Physical and chemical properties

| | |
|---|---|
| Physical state | Solid. |
| Form | Film. |
| Color | White. |
| Odor | None. |
| Odor threshold | Not applicable. |
| Melting point/freezing point | -144.04 °F (-97.8 °C) estimated / Not applicable. |
| Boiling point, initial boiling point, and boiling range | Not applicable. |
| Combustibility | None known. |
| Lower and upper explosion limit / flammability limit | |
| Flammability limit - lower (%) | Not applicable. |
| Flammability limit - lower (%) temperature | Not applicable. |
| Flammability limit - upper (%) | Not applicable. |
| Flammability limit - upper (%) temperature | Not applicable. |
| Explosive limit - lower (%) | Not applicable. |
| Explosive limit - lower (%) temperature | Not applicable. |
| Explosive limit - upper (%) | Not applicable. |
| Explosive limit - upper (%) temperature | Not applicable. |
| Flash point | Not applicable. |
| Auto-ignition temperature | Not applicable. |

| | |
|---|----------------------------------|
| Decomposition temperature | Not applicable. |
| pH | Not applicable. |
| Kinematic viscosity | Not applicable. |
| Solubility(ies) | |
| Solubility (water) | Negligible. |
| Partition coefficient (n-octanol/water) (log value) | Not applicable. |
| Vapor pressure | Not applicable. |
| Density and/or relative density | |
| Density | 1.36 g/cm ³ estimated |
| Relative density | Not applicable. |
| Vapor density | Not applicable. |
| Particle characteristics | Not applicable. |
| Other information | |
| Evaporation rate | Not applicable. |
| Explosive properties | Not explosive. |
| Oxidizing properties | Not oxidizing. |
| Viscosity (Coefficient of viscosity) | Not applicable. |

10. Stability and reactivity

| | |
|------------------------------------|---|
| Reactivity | The product is stable and non-reactive under normal conditions of use, storage and transport. |
| Chemical stability | Material is stable under normal conditions. |
| Possibility of hazardous reactions | None. |
| Conditions to avoid | Contact with incompatible materials. |
| Incompatible materials | Strong oxidizing agents. |
| Hazardous decomposition products | At thermal decomposition temperatures, carbon monoxide and carbon dioxide. Ammonia. Nitrogen oxides (NO _x). |

11. Toxicological information

Acute toxicity Harmful in contact with skin.

| Components | Species | Test Results |
|------------|---------|--------------|
|------------|---------|--------------|

Diglycidyl Resorcinol Ether (CAS 101-90-6)

Acute

Oral

LD50

Rat

2.57 g/kg

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/eye irritation Causes serious eye irritation. Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitization

 Respiratory sensitization Not a respiratory sensitizer.

 Skin sensitization May cause an allergic skin reaction.

Germ cell mutagenicity Suspected of causing genetic defects.

Carcinogenicity Suspected of causing cancer.

ACGIH Carcinogens

Titanium Oxide (TiO₂) (CAS 13463-67-7) A4 Not classifiable as a human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

Diglycidyl Resorcinol Ether (CAS 101-90-6) 2B Possibly carcinogenic to humans.

Titanium Oxide (TiO₂) (CAS 13463-67-7) 2B Possibly carcinogenic to humans.

Japan Society for Occupational Health: Carcinogen

Diglycidyl Resorcinol Ether (CAS 101-90-6) 2B Possibly carcinogenic to humans.

Titanium Oxide (TiO₂) (CAS 13463-67-7) 2B Possibly carcinogenic to humans.

NTP Report on Carcinogens

Diglycidyl Resorcinol Ether (CAS 101-90-6)

Reasonably Anticipated to be a Human Carcinogen.

| | |
|---|---------------------------|
| Reproductive toxicity | Not classified. |
| Specific target organ toxicity - single exposure | Causes damage to organs. |
| Specific target organ toxicity - repeated exposure | Not classified. |
| Aspiration hazard | Not an aspiration hazard. |

12. Ecological information

Ecotoxicological data

| Product | | Species | Test Results |
|-------------------|------|----------------|-------------------------------------|
| MEG-150 Epoxy | | | |
| Aquatic | | | |
| <i>Acute</i> | | | |
| Crustacea | EC50 | Daphnia | 61866.1875 mg/l, 48 hours estimated |
| Fish | LC50 | Fish | 62590.7539 mg/l, 96 hours estimated |
| Components | | Species | Test Results |

Methanol (CAS 67-56-1)

Aquatic

Acute

| | | | |
|-----------|------|--------------------------------------|------------------------|
| Crustacea | EC50 | Water flea (Daphnia magna) | > 10000 mg/l, 48 hours |
| Fish | LC50 | Fathead minnow (Pimephales promelas) | > 100 mg/l, 96 hours |

Titanium Oxide (TiO₂) (CAS 13463-67-7)

Aquatic

Acute

| | | | |
|-----------|------|-----------------------------------|-----------------------|
| Crustacea | EC50 | Water flea (Daphnia magna) | > 1000 mg/l, 48 hours |
| Fish | LC50 | Mummichog (Fundulus heteroclitus) | > 1000 mg/l, 96 hours |

Ecotoxicity Not available.

Persistence and degradability Not available.

Bioaccumulation Not available.

Bioaccumulative potential

Octanol/water partition coefficient log Kow

Methanol -0.77

Mobility in soil Not available.

Hazardous to the ozone layer Not available.

13. Disposal considerations

Residual waste Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

Local disposal regulations Dispose of contents/container in accordance with local/regional/national/international regulations. Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Contract with a disposal operator licensed by the Law on Disposal and Cleaning. When your own wastewater treatment plant is not available, collect entire waste and then charge to a licensed industrial waste management professional with manifests for industrial waste.

14. Transport information

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not available.

National regulations Follow regulation in section 15 for domestic transportation.

15. Regulatory information

Industrial Safety and Health Act

Notifiable substances

| | | |
|--------------------------------------|---------------------------|-----------|
| 1,3-BIS((2,3-EPOXYPROPYL)OXY)BENZENE | Table 9 Ordinance No. 452 | 20 - 22 % |
| METHANOL | Table 9 Ordinance No. 560 | 0 - 2.0 % |
| TITANIUM DIOXIDE | Table 9 Ordinance No. 191 | 0 - 1.5 % |

Labeling substances

| | | |
|--------------------------------------|--|-----------|
| 1,3-BIS((2,3-EPOXYPROPYL)OXY)BENZENE | | 20 - 22 % |
| METHANOL | | 0 - 2.0 % |
| TITANIUM DIOXIDE | | 0 - 1.5 % |

Poisonous and Deleterious Substances Control Act

Specified poisonous substances

Not regulated.

Poisonous substances

Not regulated.

Deleterious substances

METHANOL

Act on the Regulation of Manufacture and Evaluation of Chemical Substances

Class I specified chemical substances

Not regulated.

Class II specified chemical substances

Not regulated.

Monitoring chemical substances

Not regulated.

Priority Assessment Chemical Substances (PACs)

METHANOL

Reporting Exempted Substances

TITANIUM DIOXIDE

Law concerning Pollutant Release and Transfer Register

Specified class 1 substances (substance name, ordinance number and content)

Not regulated.

Class 1 substances (substance name, ordinance number and content)

1,3-BIS[(2,3-EPOXYPROPYL)OXY]BENZENE Ordinance No. 324 22 % (Diglycidyl Resorcinol Ether)
E

Class 2 substances (substance name, ordinance number and content)

Not regulated.

Ship Safety Law, Dangerous Goods Marine Transport and Storage Rule Not regulated.

Air Law, Enforcement Rule Not regulated.

Explosives Control Act

Not regulated.

Act on Prevention of Marine Pollution and Maritime Disaster

METHANOL Category: Y
TITANIUMOXIDE Category: Z

Air Pollution Control Act

METHANOL

16. Other information

Bibliography

Japan Society for Occupational Health, Recommendation of Occupational Exposure Limits
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices
National Toxicology Program (NTP) Report on Carcinogens
IARC Monographs. Overall Evaluation of Carcinogenicity
HSDB® - Hazardous Substances Data Bank
JIS Z 7252:2014 Classification of chemicals based on “Globally Harmonized System of Classification and Labelling of Chemicals (GHS)”
JIS Z 7253:2012 Hazard communication of chemicals based on GHS - Labelling and Safety Data Sheet (SDS)
Japan Chemical Industry Association (JCIA) GHS Guideline, June 2012

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