Preformed Epoxy Resin Compounds

Safety Data Sheet

According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2024

SECTION 1: Identification

1.1. Product identifier

Product name : DC-202 Black, DC-203 Blue, DC-203-1 Red, DC-202LT Black, DC-203 Green, DC-204 Black, DC-202LT Red, DC-203 Red, LH-503 Red

Product form : Mixture

1.2. Other means of identification

No additional information available

1.3. Recommended use of the chemical and restrictions on use

Recommended use : Electrical/Electronic Encapsulant, Sealant

1.4. Supplier's details

MULTI-SEALS, INC.
540 North Main Street
Manchester, CT 06042
USA
Tel: 860/643-7188

1.5. Emergency phone number

Emergency number : (860) 643-7188 8:30am - 5:00pm EST

SECTION 2: Hazard Identification

2.1. Classification of the substance or mixture

GHS US classification

Serious eye damage/eye irritation, Category 2A : Causes serious eye irritation.
Skin sensitization, Category 1 : May cause an allergic skin reaction.

2.2. Label elements

GHS US labeling

Hazard pictograms (GHS US) :

Signal word (GHS US) : Warning
Hazard statements (GHS US) : May cause an allergic skin reaction
Causes serious eye irritation
Precautionary statements (GHS US) : Avoid breathing dust, fume, gas, mist, vapors, spray.
Wash hands, forearms and face thoroughly after handling.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves, protective clothing, eye protection, face protection, and hearingprotection. If on skin: Wash with plenty of water. Take off contaminated clothing and wash it before reuse. If skin irritation or rash occurs: Get medical advice or attention.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention.
Dispose of contents and/or container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulations.

2.3. Hazards associated with known or reasonably anticipated uses

No additional information available

2.4. Hazards not otherwise classified

No additional information available

2.5. Unknown acute toxicity

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%
Bisphenol A diglycidyl ether-bisphenol A copolymer	CAS-No.: 25036-25-3	60 – 100
Phenol-formaldehyde polymer	CAS-No.: 9003-35-4	7 – 30
Carbon black	CAS-No.: 1333-86-4[1]	< 1
Titanium Dioxide	CAS-No.: 13463-67-7[2]	< 1
2-Methylimidazole	CAS-No.: 693-98-1	< 1

[1] Only present in DC-202 Black, DC-202LT Black, and DC-204 Black
[2] DC-203 Blue, DC-203 Green, DC-203 Red and LH-503 Red

*Chemical name, CAS number and/or exact concentration have been withheld as a trade secret

SECTION 4: First aid measures

4.1. Description of necessary first-aid measures

First-aid measures after inhalation : If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.

First-aid measures after skin contact : IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Take off contaminated clothing and wash it before reuse. If skin irritation or rash occurs: Get medical advice/attention.

First-aid measures after eye contact : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

First-aid measures after ingestion : Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical advice/attention if you feel unwell.

4.2. Most important symptoms/effects, acute and delayed

Symptoms/effects after inhalation : May cause irritation to the respiratory tract.

Symptoms/effects after eye contact : Causes serious eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.

Symptoms/effects after ingestion : May be harmful if swallowed. May cause gastrointestinal irritation, nausea, vomiting and diarrhea.

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

Other medical advice or treatment : Symptoms may be delayed. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Water fog. Carbon dioxide (CO2), dry chemical powder, foam.

Unsuitable extinguishing media : Do not use water jet.

5.2. Specific hazards arising from the chemical

Fire hazard : Products of combustion may include, and are not limited to: oxides of carbon. Nitrogen oxides. Sulphur oxides. Hydrogen chloride. Aldehydes. Silicon dioxide.

5.3. Special protective equipment and precautions for fire-fighters

Protection during firefighting : Keep upwind of fire. Wear full fire fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA).

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

For non-emergency personnel

No additional information available

For emergency responders

Environmental precautions : Prevent entry to sewers and public waters.

6.2. Methods and materials for containment and cleaning up

For containment : Contain spill, then place in a suitable container. Minimize dust generation. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment (PPE).

Methods for cleaning up : Sweep or shovel spills into appropriate container for disposal. Provide ventilation.

For further information refer to section 8: "Exposure controls/personal protection"

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Avoid contact with skin and eyes. Avoid breathing dust/fume/gas/mist/vapors/spray. Do not swallow. Handle and open container with care. When using do not eat, drink or smoke.

Hygiene measures : Take off contaminated clothing and wash it before reuse. Contaminated work clothing should not be allowed out of the workplace. Wash hands, forearms and face thoroughly after handling.

7.2. Conditions for safe storage, including incompatibilities

Storage conditions : Keep out of the reach of children. Keep container tightly closed. Store in a dry, cool and well-ventilated place. Protect from sunlight.

Specific end uses : Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Carbon black (1333-86-4)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Carbon black
ACGIH OEL TWA	3 mg/m³ (inhalable particulate matter)
Remark (ACGIH)	TLV® Basis: Bronchitis. Notations: A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans)
ACGIH chemical category	Confirmed Animal Carcinogen with Unknown Relevance to Humans
Regulatory reference	ACGIH 2020
USA - OSHA - Occupational Exposure Limits	
Local name	Carbon black
OSHA PEL TWA	3.5 mg/m³
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - IDLH - Occupational Exposure Limits	
IDLH	1750 mg/m³
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL (TWA)	3.5 mg/m³ 0.1 mg/m³ (Carbon black in presence of Polycyclic aromatic hydrocarbons)

Titanium Dioxide (13463-67-7)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Titanium dioxide
ACGIH OEL TWA	0.2 mg/m³ (nanoscale respirable particulate matter) 2.5 mg/m³ (finescale respirable particulate matter)
Remark (ACGIH)	TLV® Basis: LRT irr; pneumoconiosis. Notations: A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans)
ACGIH chemical category	Confirmed Animal Carcinogen with Unknown Relevance to Humans
Regulatory reference	ACGIH 2024
USA - OSHA - Occupational Exposure Limits	
Local name	Titanium dioxide (Total dust)
OSHA PEL TWA	15 mg/m³ (total dust)
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1

Titanium Dioxide (13463-67-7)	
USA - IDLH - Occupational Exposure Limits	
IDLH	5000 mg/m³
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL (TWA)	2.4 mg/m³ (CIB 63-fine) 0.3 mg/m³ (CIB 63-ultrafine, including engineered nanoscale)

Exposure limit values of other components

Formaldehyde (50-00-0)	
USA - OSHA - Occupational Exposure Limits	
OSHA PEL TWA	0.75 ppm
OSHA PEL STEL	2 ppm (see 29 CFR 1910.1048)
Remark (OSHA)	Formaldehyde is subject to the standard 29 CFR 1910.1048, which may contain specific requirements for handling including protective equipment, regulated areas, monitoring and medical surveillance. The employer should review the standard and assure compliance with applicable requirements.

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station. Provide readily accessible eye wash stations and safety showers.

Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures, such as personal protective equipment

Hand protection:

Wear suitable gloves resistant to chemical penetration. Consult glove manufacturer's product information on material suitability and material thickness.

Eye protection:

Wear eye/face protection

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. SDSs cannot provide detailed and complete respiratory protection guidelines. Selection of respiratory protection must be done by a qualified person who has assessed the work environment.

Other information:

Handle in accordance with good industrial hygiene and safety procedures. Do not eat, drink or smoke when using this product.

SECTION 9: Physical and chemical properties

9.1. Basic physical and chemical properties

Physical state : Solid
Appearance : Geometric form.
Color : According to product specification
Odor : Mild phenolic
Odor threshold : No data available
pH : No data available
Melting point : 85 – 100 °C (185 °F - 212 °F)
Freezing point : No data available
Boiling point : No data available
Flash point : > 93 °C (200 °F)
Flammability (solid, gas) : Not flammable.
Vapor pressure : Nil
Relative vapor density at 20°C : No data available
Relative density : 1.1 – 1.7 g/cc @ 20 °C (68 °F)
Solubility : Negligible.

Partition coefficient n-octanol/water : No data available
Auto-ignition temperature : No data available
Decomposition temperature : No data available
Viscosity, kinematic : No data available
Explosion limits : No data available
Particle characteristics : No data available

2-Methylimidazole	
Vapor pressure	0 hPa (at 20 °C)
Particle characteristics	No data available

Phenol-formaldehyde polymer	
Boiling point	229.3 °C Atm. press.: 968 hPa Decomposition: 'no' Remarks on result: 'other:'
Flash point	96.3 °C Atm. press.: 969,6 hPa Remarks on result: 'other:'
Vapor pressure	3.18 Pa Temp.: 25 °C Remarks on result: 'other:'
Particle characteristics	No data available

Titanium Dioxide	
Boiling point	2500 – 3000 °C
Particle characteristics	No data available

9.2. Data relevant with regard to physical hazard classes (supplemental)

VOC content : 0 – 0.8 % by weight
Volatility : 0.6 – 0.8 % by weight

SECTION 10: Stability and reactivity

10.1. Reactivity

No dangerous reactions known under normal conditions of use.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Heat. Incompatible materials.

10.5. Incompatible materials

Strong oxidizers.

10.6. Hazardous decomposition products

May include, and are not limited to: oxides of carbon. Irritating vapors.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

2-Methylimidazole (693-98-1)	
LD50 dermal rabbit	> 2000 mg/kg (Source: ECHA_API)

Phenol-formaldehyde polymer (9003-35-4)	
LD50 oral rat	> 5 g/kg (Source: ECHA)
LD50 dermal rat	> 2000 mg/kg (Source: ECHA_API)
LC50 inhalation rat	> 5 mg/l air Animal: rat, Guideline: other:, Remarks on results: other:

Carbon black (1333-86-4)	
LD50 oral rat	> 15400 mg/kg (Source: NLM_CIP)
LD50 dermal rat	> 2000 mg/kg (Source: ECHA)
LD50 dermal rabbit	> 2000 mg/kg body weight Animal: rabbit, Guideline: other:, Guideline: other:, Guideline: other:, Guideline: other:

Titanium Dioxide (13463-67-7)	
LD50 oral rat	> 10000 mg/kg (Source: IUCLID)
LC50 inhalation rat	5.09 mg/l/4h

Skin corrosion/irritation : Not classified

Phenol-formaldehyde polymer (9003-35-4)	
pH	6 Temp.: 26,2 °C Concentration: 1 vol% Remarks on result: 'other:'

Titanium Dioxide (13463-67-7)	
pH	7

Serious eye damage/irritation : Causes serious eye irritation.

Phenol-formaldehyde polymer (9003-35-4)	
pH	6 Temp.: 26,2 °C Concentration: 1 vol% Remarks on result: 'other:'

Titanium Dioxide (13463-67-7)	
pH	7

Respiratory or skin sensitization : May cause an allergic skin reaction.
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

Phenol-formaldehyde polymer (9003-35-4)	
NOAEL (oral,rat,90 days)	1000 mg/kg body weight Animal: rat, Guideline: other:

Carbon black (1333-86-4)	
NOAEL (oral,rat,90 days)	> 1000 mg/kg body weight Animal: rat, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)

Aspiration hazard : Not classified

Preformed Epoxy Resin Compounds	
Viscosity, kinematic	No data available

Bisphenol A diglycidyl ether-bisphenol A copolymer (25036-25-3)	
Viscosity, kinematic	No data available

2-Methylimidazole (693-98-1)	
Viscosity, kinematic	No data available

Phenol-formaldehyde polymer (9003-35-4)	
Viscosity, kinematic	No data available

Carbon black (1333-86-4)	
Viscosity, kinematic	No data available

Titanium Dioxide (13463-67-7)	
Viscosity, kinematic	No data available

Symptoms/effects after inhalation : May cause irritation to the respiratory tract.

Symptoms/effects after eye contact : Causes serious eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.

Symptoms/effects after ingestion : May be harmful if swallowed. May cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Other information : Likely routes of exposure: ingestion, inhalation, skin and eye.

SECTION 12: Ecological information

12.1. Ecotoxicity

Ecology - general : May cause long-term adverse effects in the aquatic environment.

Hazardous to the aquatic environment, short–term (acute) : Not classified

Hazardous to the aquatic environment, long–term (chronic) : Not classified

2-Methylimidazole (693-98-1)	
LC50 - Fish [1]	267 – 307 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through] Source: EPA)
EC50 - Crustacea [1]	200 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	256.3 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
EC50 72h - Algae [2]	189 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)

Phenol-formaldehyde polymer (9003-35-4)	
EC50 - Crustacea [1]	172 mg/l Test organisms (species): Daphnia pulex

Carbon black (1333-86-4)	
EC50 - Crustacea [1]	> 1000 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	> 10000 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
EC50 72h - Algae [2]	> 10000 mg/l Test organisms (species):

Titanium Dioxide (13463-67-7)	
LC50 - Fish [1]	155 mg/l Test organisms (species): other:Japanese Medaka
EC50 - Crustacea [1]	19.3 mg/l Test organisms (species): Daphnia magna
EC50 - Other aquatic organisms [1]	> 100 mg/l Test organisms (species):
EC50 - Crustacea [2]	27.8 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	> 100 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
LOEC (chronic)	5 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC (chronic)	≥ 2.92 mg/l Test organisms (species): Daphnia magna Duration: '21 d'

12.2. Persistence and degradability

Preformed Epoxy Resin Compounds	
Persistence and degradability	Not established.

Bisphenol A diglycidyl ether-bisphenol A copolymer (25036-25-3)	
Persistence and degradability	Rapidly degradable

2-Methylimidazole (693-98-1)	
Persistence and degradability	Rapidly degradable

Phenol-formaldehyde polymer (9003-35-4)	
Persistence and degradability	Rapidly degradable

Carbon black (1333-86-4)	
Persistence and degradability	Rapidly degradable

Titanium Dioxide (13463-67-7)	
Persistence and degradability	Rapidly degradable

12.3. Bioaccumulative potential

Preformed Epoxy Resin Compounds	
Bioaccumulative potential	Not established.

2-Methylimidazole (693-98-1)	
Partition coefficient n-octanol/water	0.22 (at 25 °C)

Phenol-formaldehyde polymer (9003-35-4)	
Partition coefficient n-octanol/water	3.564 (at 25 °C (at pH 4.6)

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Ozone : Not classified
Fluorinated greenhouse gases : No

Other information : No other effects known.

SECTION 13: Disposal considerations

Product/Packaging disposal recommendations : Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

SECTION 14: Transport information

In accordance with DOT

14.1. UN number

UN-No. (DOT) : Not regulated

14.2. UN Proper Shipping Name

Proper Shipping Name (DOT) : Not regulated

14.3. Transport hazard class(es)

DOT
Transport hazard class(es) (DOT) : Not regulated

14.4. Packing group

Packing group (DOT) : Not regulated

14.5. Environmental hazards

Other information : No supplementary information available.

14.6. Transport in bulk

Not applicable

14.7. Special precautions for user

Not applicable

SECTION 15: Regulatory information

15.1. Federal regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory.

15.2. International regulations

No additional information available

15.3. State regulations

WARNING: This product can expose you to 2-Methylimidazole, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

SECTION 16: Other Information

According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2024

Prepared by: Tyler Brush 03-31-25

Revision Section/Reason
All sections:
Rev. A, Ver. 0: 03/01/96 Change to ANSI Z400.1, 16 Section Format. Incorporate M5-13, M5-82, M5-92, DC-2XX Series Epoxies.
Consolidate all epoxies to menu type format.
Rev. A, Ver. 1: 04/04/96 Minor corrections/clarifications to text of various sections following professional review.
Rev. A, Ver. 2: 04/15/96 Added M17-19 Black and M17-19 Red to MSDS.
Rev. A, Ver. 3: 06/12/96 Deleted the word “for” in section 4, Eye Contact....
Rev. A, Ver. 4: 03/04/97 Changed font from 12 to 10 cpi. Adjusted text on pages as required.
Rev. A, Ver. 5: 02/09/99 Deleted disclaimers from pages 2-7. Consolidated text, formatted to 7 pages.
Rev. A, Ver. 6: 03/07/00 Deleted DC-001 Black and DC-007 Black from MSDS. Added DC-202 Black to the MSDS. Added TSCA statement.
Rev. B: 12/06/02 Transfer all information referring to DC-007, DC-207, M5-92, AND M17-19 to separate MSDS.
Rev. C: 04/19/06 Add RoHS statement to section 15.
Rev. D: 07/28/15 Update format to Hazard Communication Standard (CFR29 1910.1200) HazCom 2012. Remove epoxies DC-001 Red, DC-002 BK, DC-003 Red, DC-003 Green, DC-003 Blue, DC-004 Black, M5-13 Red & M5-82 Red. Update RoHS from EU Directive 2002/95/EC to EU Directive 2011/65/ EU
Rev. E, 03/31/25, General regulatory updates & addition of LH-503 RD.