

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version	Revision Date:	SDS Number:	Date of last issue: 10/14/2015
2.1	11/04/2015	676287-00005	Date of first issue: 10/27/2014

SECTION 1. IDENTIFICATION

Product name : DOW CORNING(R) XR-1541-002 E-BEAM RESIST IN MIBK

Product code : 000000000004082209

Manufacturer or supplier's details

Company name of supplier : Dow Corning Corporation

Address : South Saginaw Road
Midland Michigan 48686

Telephone : (989) 496-6000

Emergency telephone : 24 Hour Emergency Telephone : (989) 496-5900
CHEMTREC : (800) 424-9300

Recommended use of the chemical and restrictions on use

Recommended use : Semiconductors

SECTION 2. HAZARDS IDENTIFICATION**GHS Classification**

Flammable liquids : Category 2

Acute toxicity (Inhalation) : Category 4

Eye irritation : Category 2A

Reproductive toxicity : Category 2

Specific target organ systemic toxicity - single exposure : Category 3

GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H225 Highly flammable liquid and vapor.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
H361 Suspected of damaging fertility or the unborn child.

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version	Revision Date:	SDS Number:	Date of last issue: 10/14/2015
2.1	11/04/2015	676287-00005	Date of first issue: 10/27/2014

Precautionary Statements : **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/sparks/open flames/hot surfaces. No smoking.
P233 Keep container tightly closed.
P234 Keep only in original container.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing mist or vapors.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
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.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P370 + P378 In case of fire: Use alcohol-resistant foam, carbon dioxide or water mist to extinguish.
Storage:
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.
Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

May generate flammable hydrogen gas. Avoid contact with water, alcohols, acidic, basic, or oxidizing materials.

Repeated exposure may cause skin dryness or cracking.

Vapors may form explosive mixture with air.

Static-accumulating flammable liquid.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Chemical nature : Silicone resin solution

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version 2.1	Revision Date: 11/04/2015	SDS Number: 676287-00005	Date of last issue: 10/14/2015 Date of first issue: 10/27/2014
----------------	------------------------------	-----------------------------	---

Hazardous ingredients

Chemical name	CAS-No.	Concentration (% w/w)
Isobutyl methyl ketone	108-10-1	>= 90 - <= 100
Toluene	108-88-3	>= 0.1 - < 1

SECTION 4. FIRST AID MEASURES

- | | |
|---|--|
| General advice | : In the case of accident or if you feel unwell, seek medical advice immediately.
When symptoms persist or in all cases of doubt seek medical advice. |
| If inhaled | : If inhaled, remove to fresh air.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
Get medical attention. |
| In case of skin contact | : In case of contact, immediately flush skin with soap and plenty of water.
Remove contaminated clothing and shoes.
Get medical attention.
Wash clothing before reuse.
Thoroughly clean shoes before reuse. |
| In case of eye contact | : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.
If easy to do, remove contact lens, if worn.
Get medical attention. |
| If swallowed | : If swallowed, DO NOT induce vomiting.
Get medical attention.
Rinse mouth thoroughly with water. |
| Most important symptoms and effects, both acute and delayed | : Prolonged or repeated contact may dry skin and cause irritation.
Causes serious eye irritation.
Harmful if inhaled.
May cause respiratory irritation.
Suspected of damaging fertility or the unborn child. |
| Protection of first-aiders | : First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists. |
| Notes to physician | : Treat symptomatically and supportively. |

SECTION 5. FIRE-FIGHTING MEASURES

- | | |
|------------------------------|---|
| Suitable extinguishing media | : Water spray
Alcohol-resistant foam
Carbon dioxide (CO2) |
|------------------------------|---|

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version 2.1	Revision Date: 11/04/2015	SDS Number: 676287-00005	Date of last issue: 10/14/2015 Date of first issue: 10/27/2014
----------------	------------------------------	-----------------------------	---

- | | |
|--|---|
| Unsuitable extinguishing media | : Dry chemical
High volume water jet |
| Specific hazards during fire fighting | : Do not use a solid water stream as it may scatter and spread fire.
Flash back possible over considerable distance.
Vapors may form explosive mixtures with air.
Exposure to combustion products may be a hazard to health.
Applying foam will release significant amounts of hydrogen gas that can be trapped under the foam blanket. |
| Hazardous combustion products | : Carbon oxides
Silicon oxides |
| Specific extinguishing methods | : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use water spray to cool unopened containers.
Do not allow extinguishing medium to contact container contents. Most fire extinguishing media will cause hydrogen evolution, and once the fire is put out, may accumulate in poorly ventilated or confined areas and result in flash fire or explosion if ignited.
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Remove undamaged containers from fire area if it is safe to do so.
Evacuate area. |
| Special protective equipment for fire-fighters | : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment. |

SECTION 6. ACCIDENTAL RELEASE MEASURES

- | | |
|---|--|
| Personal precautions, protective equipment and emergency procedures | : Remove all sources of ignition.
Ventilate the area.
Use personal protective equipment.
Follow safe handling advice and personal protective equipment recommendations. |
| Environmental precautions | : Discharge into the environment must be avoided.
Prevent further leakage or spillage if safe to do so.
Prevent spreading over a wide area (e.g. by containment or oil barriers).
Retain and dispose of contaminated wash water.
Local authorities should be advised if significant spillages cannot be contained. |
| Methods and materials for containment and cleaning up | : Non-sparking tools should be used.
Soak up with inert absorbent material. |

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version 2.1	Revision Date: 11/04/2015	SDS Number: 676287-00005	Date of last issue: 10/14/2015 Date of first issue: 10/27/2014
----------------	------------------------------	-----------------------------	---

For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container. Clean up remaining materials from spill with suitable absorbent.

Materials in contact with water, moisture, acids or bases have the potential to generate hydrogen gas. Recovered material should be stored in a vented container.

Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.

Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

SECTION 7. HANDLING AND STORAGE

- | | |
|-----------------------------|---|
| Technical measures | : Ensure all equipment is electrically grounded before beginning transfer operations.
This material can accumulate static charge due to its inherent physical properties and can therefore cause an electrical ignition source to vapors. In order to prevent a fire hazard, as bonding and grounding may be insufficient to remove static electricity, it is necessary to provide an inert gas purge before beginning transfer operations.
Restrict flow velocity in order to reduce the accumulation of static electricity. |
| Local/Total ventilation | : Use with local exhaust ventilation.
Use only in an area equipped with explosion proof exhaust ventilation. |
| Advice on safe handling | : Do not get on skin or clothing.
Do not breathe vapors or spray mist.
Do not swallow.
Do not get in eyes.
Handle in accordance with good industrial hygiene and safety practice.
Non-sparking tools should be used.
Keep container tightly closed.
Keep away from water.
Protect from moisture.
Keep away from heat and sources of ignition.
Take precautionary measures against static discharges.
Take care to prevent spills, waste and minimize release to the environment. |
| Conditions for safe storage | : Keep in properly labeled containers.
Store in a closed container.
Store locked up.
Keep tightly closed.
Keep in a cool, well-ventilated place.
Store in accordance with the particular national regulations. |

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version 2.1	Revision Date: 11/04/2015	SDS Number: 676287-00005	Date of last issue: 10/14/2015 Date of first issue: 10/27/2014
----------------	------------------------------	-----------------------------	---

Keep away from heat and sources of ignition.
Product may evolve minute quantities of flammable hydrogen gas which can accumulate. Adequately ventilate to maintain vapors well below flammability limits and exposure guidelines. Do not repackage. Clogged container vents may increase pressure build up.

Materials to avoid : Do not store with the following product types:
Strong oxidizing agents
Organic peroxides
Flammable solids
Pyrophoric liquids
Pyrophoric solids
Self-heating substances and mixtures
Substances and mixtures which in contact with water emit flammable gases
Explosives
Gases

Packaging material : Unsuitable material: Do not store in or use containers except the original product package.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION
Ingredients with workplace control parameters

Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Isobutyl methyl ketone	108-10-1	TWA	20 ppm	ACGIH
		STEL	75 ppm	ACGIH
		TWA	50 ppm 205 mg/m3	NIOSH REL
		ST	75 ppm 300 mg/m3	NIOSH REL
Toluene	108-88-3	TWA	100 ppm 410 mg/m3	OSHA Z-1
		TWA	20 ppm	ACGIH
		TWA	100 ppm 375 mg/m3	NIOSH REL
		ST	150 ppm 560 mg/m3	NIOSH REL
		TWA	200 ppm	OSHA Z-2
		CEIL	300 ppm	OSHA Z-2
		Peak	500 ppm (10 minutes)	OSHA Z-2

Biological occupational exposure limits

Ingredients	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Isobutyl methyl ketone	108-10-1	methyl	Urine	End of	1 mg/l	ACGIH

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version 2.1 Revision Date: 11/04/2015 SDS Number: 676287-00005 Date of last issue: 10/14/2015
Date of first issue: 10/27/2014

		isobutyl ketone		shift (As soon as possible after exposure ceases)		BEI
Toluene	108-88-3	Toluene	In blood	Prior to last shift of work-week	0.02 mg/l	ACGIH BEI
		Toluene	Urine	End of shift (As soon as possible after exposure ceases)	0.03 mg/l	ACGIH BEI
		o-Cresol	Urine	End of shift (As soon as possible after exposure ceases)	0.3 mg/g Creatinine	ACGIH BEI

Engineering measures : Minimize workplace exposure concentrations.
Use only in an area equipped with explosion proof exhaust ventilation.
Use with local exhaust ventilation.

Personal protective equipment

Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection

Material : Antistatic gloves
Material : Impervious gloves
Material : Flame retardant gloves

Remarks : Choose gloves to protect hands against chemicals depending

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version 2.1	Revision Date: 11/04/2015	SDS Number: 676287-00005	Date of last issue: 10/14/2015 Date of first issue: 10/27/2014
----------------	------------------------------	-----------------------------	---

on the concentration specific to place of work. Breakthrough time is not determined for the product. Change gloves often! For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.

- Eye protection : Wear the following personal protective equipment:
Safety goggles
- Skin and body protection : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.
Wear the following personal protective equipment:
Flame retardant antistatic protective clothing.
Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc).
- Hygiene measures : Ensure that eye flushing systems and safety showers are located close to the working place.
When using do not eat, drink or smoke.
Wash contaminated clothing before re-use.
These precautions are for room temperature handling. Use at elevated temperature or aerosol/spray applications may require added precautions.
For further information regarding the use of silicones / organic oils in consumer aerosol applications, please refer to the guidance document regarding the use of these type of materials in consumer aerosol applications that has been developed by the silicone industry (www.SEHSC.com) or contact the Dow Corning customer service group.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : liquid
- Color : colorless
- Odor : solvent
- Odor Threshold : No data available
- pH : No data available
- Melting point/freezing point : No data available
- Initial boiling point and boiling range : 116 °C
- Flash point : 17 °C
Method: closed cup

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version 2.1	Revision Date: 11/04/2015	SDS Number: 676287-00005	Date of last issue: 10/14/2015 Date of first issue: 10/27/2014
----------------	------------------------------	-----------------------------	---

Evaporation rate	: No data available
Flammability (solid, gas)	: Not applicable
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapor pressure	: No data available
Relative vapor density	: No data available
Relative density	: 0.809
Solubility(ies) Water solubility	: No data available
Partition coefficient: n- octanol/water	: No data available
Autoignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity Viscosity, kinematic	: 0.6 cSt
Explosive properties	: Not explosive
Oxidizing properties	: The substance or mixture is not classified as oxidizing.
Molecular weight	: No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: Contact with water liberates highly flammable gases.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: Highly flammable liquid and vapor. Vapors may form explosive mixture with air. Can react with strong oxidizing agents. Product may evolve flammable hydrogen gas on contact with water, alcohols, acidic or basic materials, many metals or metallic compounds and can form explosive mixtures in air.
Conditions to avoid	: Exposure to moisture. Handling operations that can promote accumulation of static charges. Heat, flames and sparks.

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version	Revision Date:	SDS Number:	Date of last issue: 10/14/2015
2.1	11/04/2015	676287-00005	Date of first issue: 10/27/2014

Incompatible materials : Oxidizing agents

Hazardous decomposition products : No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION**Information on likely routes of exposure**

Inhalation
Skin contact
Ingestion
Eye contact

Acute toxicity

Harmful if inhaled.

Product:

Acute oral toxicity : Acute toxicity estimate: 3,041 mg/kg
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: 11.22 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Method: Calculation method

Ingredients:**Isobutyl methyl ketone:**

Acute oral toxicity : LD50 (Rat): 2,980 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50: 8.2 - 16.4 mg/l
Exposure time: 4 h
Test atmosphere: vapor

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

Toluene:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): 28.1 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Method: OECD Test Guideline 403

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

Skin corrosion/irritation

Not classified based on available information.

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version	Revision Date:	SDS Number:	Date of last issue: 10/14/2015
2.1	11/04/2015	676287-00005	Date of first issue: 10/27/2014

Ingredients:**Isobutyl methyl ketone:**

Assessment: Repeated exposure may cause skin dryness or cracking.

Toluene:

Species: Rabbit

Method: Directive 67/548/EEC, Annex V, B.4.

Result: Skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation.

Ingredients:**Isobutyl methyl ketone:**

Result: Irritation to eyes, reversing within 21 days

Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

Toluene:

Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405

Respiratory or skin sensitization

Skin sensitization: Not classified based on available information.

Respiratory sensitization: Not classified based on available information.

Ingredients:**Isobutyl methyl ketone:**

Test Type: Maximization Test

Routes of exposure: Skin contact

Species: Guinea pig

Method: OECD Test Guideline 406

Result: negative

Toluene:

Test Type: Maximization Test

Routes of exposure: Skin contact

Species: Guinea pig

Method: OECD Test Guideline 406

Result: negative

Germ cell mutagenicity

Not classified based on available information.

Ingredients:**Isobutyl methyl ketone:**

Genotoxicity in vitro

: Test Type: Chromosome aberration test in vitro
Result: negative

: Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version 2.1	Revision Date: 11/04/2015	SDS Number: 676287-00005	Date of last issue: 10/14/2015 Date of first issue: 10/27/2014
----------------	------------------------------	-----------------------------	---

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Application Route: Intraperitoneal injection
Result: negative

Toluene:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test
Result: negative

: Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Genotoxicity in vivo : Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)
Species: Mouse
Application Route: Ingestion
Result: negative

Carcinogenicity

Not classified based on available information.

Ingredients:**Isobutyl methyl ketone:**

Species: Mouse
Application Route: inhalation (vapor)
Exposure time: 2 Years
Method: OECD Test Guideline 451
Result: positive
Remarks: The mechanism or mode of action may not be relevant in humans.

Species: Rat
Application Route: inhalation (vapor)
Exposure time: 2 Years
Method: OECD Test Guideline 451
Result: positive
Remarks: The mechanism or mode of action may not be relevant in humans.

Carcinogenicity - Assessment : Weight of evidence does not support classification as a carcinogen

Toluene:

Species: Rat
Application Route: inhalation (vapor)
Exposure time: 24 Months
Result: negative

IARC

Group 2B: Possibly carcinogenic to humans

Isobutyl methyl ketone

108-10-1

OSHA

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcino-

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version 2.1	Revision Date: 11/04/2015	SDS Number: 676287-00005	Date of last issue: 10/14/2015 Date of first issue: 10/27/2014
----------------	------------------------------	-----------------------------	---

gen by OSHA.

NTP

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Suspected of damaging fertility or the unborn child.

Ingredients:**Isobutyl methyl ketone:**

Effects on fertility : Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: inhalation (vapor)
Method: OECD Test Guideline 416
Result: negative

Effects on fetal development : Test Type: Embryo-fetal development
Species: Mouse
Application Route: inhalation (vapor)
Result: negative

Toluene:

Effects on fertility : Test Type: One-generation reproduction toxicity study
Species: Rat
Application Route: inhalation (vapor)
Result: negative

Effects on fetal development : Test Type: Embryo-fetal development
Species: Rat
Application Route: inhalation (vapor)
Result: positive

Reproductive toxicity - Assessment : Some evidence of adverse effects on development, based on animal experiments.

STOT-single exposure

May cause respiratory irritation.

Ingredients:**Isobutyl methyl ketone:**

Assessment: May cause respiratory irritation.

Toluene:

Assessment: May cause drowsiness or dizziness.

STOT-repeated exposure

Not classified based on available information.

Ingredients:**Toluene:**

Target Organs: Central nervous system

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version 2.1	Revision Date: 11/04/2015	SDS Number: 676287-00005	Date of last issue: 10/14/2015 Date of first issue: 10/27/2014
----------------	------------------------------	-----------------------------	---

Assessment: May cause damage to organs through prolonged or repeated exposure.

Repeated dose toxicity**Ingredients:****Isobutyl methyl ketone:**

Species: Mouse
NOAEL: 4,106 mg/m3
Application Route: inhalation (vapor)
Exposure time: 13 Weeks

Toluene:

Species: Rat
LOAEL: 1.875 mg/l
Application Route: inhalation (vapor)
Exposure time: 6 Months

Aspiration toxicity

Not classified based on available information.

Ingredients:**Toluene:**

The substance or mixture is known to cause human aspiration toxicity hazards or has to be re-garded as if it causes a human aspiration toxicity hazard.

Experience with human exposure**Ingredients:****Toluene:**

Inhalation : Target Organs: Central nervous system
Symptoms: Neurological disorders, Fatigue, Vertigo

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Ingredients:****Isobutyl methyl ketone:**

Toxicity to fish	: LC50 (Danio rerio (zebra fish)): > 179 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): > 200 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae	: EC50 (Lemna gibba): > 146 mg/l Exposure time: 7 d
Toxicity to daphnia and other	: NOEC (Daphnia magna (Water flea)): 30 mg/l

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version 2.1	Revision Date: 11/04/2015	SDS Number: 676287-00005	Date of last issue: 10/14/2015 Date of first issue: 10/27/2014
----------------	------------------------------	-----------------------------	---

aquatic invertebrates (Chronic toxicity)

Exposure time: 21 d
Method: OECD Test Guideline 211

Toxicity to bacteria

: EC10 (*Pseudomonas putida*): 275 mg/l
Exposure time: 16 h
Method: DIN 38 412 Part 8

Toluene:

Toxicity to fish

: LC50 (*Oncorhynchus kisutch* (coho salmon)): 5.5 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates

: EC50 (*Ceriodaphnia dubia* (water flea)): 3.78 mg/l
Exposure time: 48 h

Toxicity to algae

: NOEC (*Skeletonema costatum* (marine diatom)): 10 mg/l
Exposure time: 72 h

Toxicity to fish (Chronic toxicity)

: NOEC (*Oncorhynchus kisutch* (coho salmon)): 1.39 mg/l
Exposure time: 40 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)

: NOEC (*Daphnia magna* (Water flea)): 1 mg/l
Exposure time: 21 d

NOEC (*Ceriodaphnia dubia* (water flea)): 0.74 mg/l
Exposure time: 7 d

Toxicity to bacteria

: EC50 (*Nitrosomonas* sp.): 84 mg/l
Exposure time: 24 h

Persistence and degradability

Ingredients:

Isobutyl methyl ketone:

Biodegradability

: Result: Readily biodegradable.
Biodegradation: 83 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

Toluene:

Biodegradability

: Result: Readily biodegradable.
Biodegradation: 86 %
Exposure time: 20 d

Bioaccumulative potential

Ingredients:

Isobutyl methyl ketone:

Partition coefficient: n-octanol/water

: log Pow: 1.9

Toluene:

Bioaccumulation

: Species: *Leuciscus idus* (Golden orfe)

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version 2.1	Revision Date: 11/04/2015	SDS Number: 676287-00005	Date of last issue: 10/14/2015 Date of first issue: 10/27/2014
----------------	------------------------------	-----------------------------	---

Bioconcentration factor (BCF): 90

Partition coefficient: n-
octanol/water

: log Pow: 2.73

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**Resource Conservation and
Recovery Act (RCRA) : When a decision is made to discard this material as supplied,
it is classified as a RCRA hazardous waste.Waste Code : D001: Ignitability
D003: Reactivity

Waste from residues : Dispose of in accordance with local regulations.

Contaminated packaging : Empty containers should be taken to an approved waste han-
dling site for recycling or disposal.
Do not burn, or use a cutting torch on, the empty drum.
If not otherwise specified: Dispose of as unused product.**SECTION 14. TRANSPORT INFORMATION****International Regulation****UNRTDG**UN number : UN 1245
Proper shipping name : METHYL ISOBUTYL KETONE SOLUTION
Class : 3
Packing group : II
Labels : 3**IATA-DGR**UN/ID No. : UN 1245
Proper shipping name : Methyl isobutyl ketone solution
Class : 3
Packing group : II
Labels : Flammable Liquids
Packing instruction (cargo
aircraft) : 364
Packing instruction (passen-
ger aircraft) : 353
Remarks : VENTED PACKAGES ARE FORBIDDEN FOR AIR

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version 2.1	Revision Date: 11/04/2015	SDS Number: 676287-00005	Date of last issue: 10/14/2015 Date of first issue: 10/27/2014
----------------	------------------------------	-----------------------------	---

TRANSPORT.

IMDG-Code

UN number : UN 1245
Proper shipping name : METHYL ISOBUTYL KETONE SOLUTION

Class : 3
Packing group : II
Labels : 3
EmS Code : F-E, S-D
Marine pollutant : no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Domestic regulation**49 CFR**

UN/ID/NA number : UN 1245
Proper shipping name : METHYL ISOBUTYL KETONE SOLUTION

Class : 3
Packing group : II
Labels : FLAMMABLE LIQUID
ERG Code : 127
Marine pollutant : no

SECTION 15. REGULATORY INFORMATION**EPCRA - Emergency Planning and Community Right-to-Know****CERCLA Reportable Quantity**

Ingredients	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Isobutyl methyl ketone	108-10-1	5000	5102
Toluene	108-88-3	1000	*

*: Calculated RQ exceeds reasonably attainable upper limit.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard
Chronic Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version 2.1	Revision Date: 11/04/2015	SDS Number: 676287-00005	Date of last issue: 10/14/2015 Date of first issue: 10/27/2014
----------------	------------------------------	-----------------------------	---

Isobutyl methyl ketone	108-10-1	98 %
------------------------	----------	------

US State Regulations**Pennsylvania Right To Know**

Isobutyl methyl ketone	108-10-1	90 - 100 %
Toluene	108-88-3	0.1 - 1 %

New Jersey Right To Know

Isobutyl methyl ketone	108-10-1	90 - 100 %
Hydrogen Silsesquioxane, Hydroxy-terminated	137125-44-1	1 - 5 %
Toluene	108-88-3	0.1 - 1 %

California Prop. 65

WARNING! This product contains a chemical known in the State of California to cause cancer.

Isobutyl methyl ketone	108-10-1
------------------------	----------

WARNING: This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

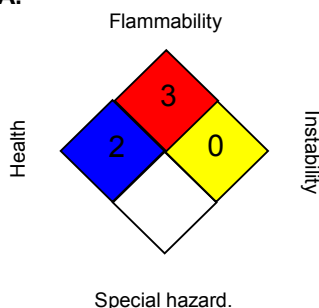
Isobutyl methyl ketone	108-10-1
Toluene	108-88-3

The ingredients of this product are reported in the following inventories:

NZIoC	: All ingredients listed or exempt.
REACH	: All ingredients (pre-)registered or exempt.
TSCA	: All chemical substances in this material are included on or exempted from listing on the TSCA Inventory of Chemical Substances.
IECSC	: All ingredients listed or exempt.
ENCS/ISHL	: All components are listed on ENCS/ISHL or exempted from inventory listing.
KECI	: All ingredients listed, exempt or notified.
DSL	: This product contains one or more substances which are not on the Canadian Domestic Substances List (DSL). Import of this product into Canada has volume limitations. For volume limits please consult Dow Corning Regulatory Compliance.
AICS	: One or more ingredients are not listed or exempt.
TCSI	: All ingredients listed or exempt.

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version	Revision Date:	SDS Number:	Date of last issue: 10/14/2015
2.1	11/04/2015	676287-00005	Date of first issue: 10/27/2014

SECTION 16. OTHER INFORMATION**Further information****NFPA:****HMIS III:**

HEALTH	2*
FLAMMABILITY	3
PHYSICAL HAZARD	1

0 = not significant, 1 = Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Full text of other abbreviations

ACGIH	: USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	: ACGIH - Biological Exposure Indices (BEI)
NIOSH REL	: USA. NIOSH Recommended Exposure Limits
OSHA Z-1	: USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
OSHA Z-2	: USA. Occupational Exposure Limits (OSHA) - Table Z-2
ACGIH / TWA	: 8-hour, time-weighted average
ACGIH / STEL	: Short-term exposure limit
NIOSH REL / TWA	: Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / ST	: STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
OSHA Z-1 / TWA	: 8-hour time weighted average
OSHA Z-2 / TWA	: 8-hour time weighted average
OSHA Z-2 / CEIL	: Acceptable ceiling concentration
OSHA Z-2 / Peak	: Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - Interna-

**DOW CORNING(R) XR-1541-002 E-BEAM
RESIST IN MIBK**

Version	Revision Date:	SDS Number:	Date of last issue:
2.1	11/04/2015	676287-00005	10/14/2015
			Date of first issue: 10/27/2014

tional Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Sources of key data used to compile the Material Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

Revision Date : 11/04/2015

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

US / Z8