



# SAFETY DATA SHEET

SDS No. 590

Revision Date: 1/8/2019 Version: 10.0

GHS Compliant

## Section 1 - Identification of the substance/mixture and of the company/undertaking

### 1.1 Product Identifier

Trade Name: **FMC® Bonding Primer**

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

General Use: Primer  
Restrictions on Use: None known

### 1.3 Details of the supplier of the safety data sheet:

Company: Smooth-On, Inc.,  
5600 Lower Macungie Rd., Macungie, PA 18062

Telephone: Phone (610) 252-5800 FAX (610) 252-6200

E-mail address: Visit our website at [www.smooth-on.com](http://www.smooth-on.com) or email  
[www.sds@smooth-on.com](mailto:www.sds@smooth-on.com)

1.4 Emergency Contact: Chem-Tel Domestic: 800-255-3924 International: 813-248-0585

## Section 2 – Hazard(s) Identification

### 2.1 Classification of the substance or mixture:

**GHS Classification in accordance with 29 CFR 1910.1200 (OSHA HCS)**

**H315** Skin Irritation – Category 2  
**H317** Skin Sensitization – Category 1  
**H320** Eye Irritation – Category 2B  
**H332** Acute Toxicity, Inhalation – Category 4  
**H334** Respiratory Sensitization – Category 1  
**H335** Specific Target Organ Toxicity - Single Exposure – Category 3  
**H373** Specific Target Organ Toxicity - Repeated Exposure (Inhalation) – Category 2

### 2.2 GHS Label elements, including precautionary statements



Pictogram(s)  
Signal word: **Danger**

#### Health Hazards

H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H320 Causes eye irritation.  
H332 Harmful if inhaled.  
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
H335 May cause respiratory irritation.

H373 May cause damage to organs (Respiratory Tract) through prolonged or repeated exposure if inhaled.

#### General Precautions

P101 If medical advice is needed, have product container or label at hand.  
 P102 Keep out of reach of children.  
 P103 Read label before use.

#### Prevention Precautions

P260 Do not breathe dust/fume/gas/mist/vapors/spray.  
 P264 Wash skin thoroughly after handling.  
 P271 Use only outdoors or in a well-ventilated area.  
 P280 Wear protective gloves.  
 P284 In case of inadequate ventilation wear respiratory protection.

#### Response Precautions

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
 P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P332 + P313 IF SKIN irritation occurs: Get medical advice/attention.  
 P337+313 If eye irritation persists get medical advice/attention.  
 P342+311 If experiencing respiratory symptoms: Call a POISON CENTER/Doctor  
 P362+364 Take off contaminated clothing and wash it before reuse

#### Storage Precautions

P405 Store locked up.  
 P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

#### Disposal Precautions

P501 Dispose of contents/ container to an approved waste disposal plant.

### 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS – none known

## Section 3 - Composition / Information on Ingredients

### 3.1 Substances/Mixtures

The following ingredients are hazardous according to Regulation 2012 OSHA Hazard Communication Standard: 29 CFR 1910.1200:

Chemical name	CAS-No.	Concentration
Diphenylmethane Diisocyanate, isomers and homologues	9016-87-9	100%
4,4'-methylenediphenyl diisocyanate	101-68-8	40% - 50%

Note: CAS 101-68-8 is an MDI isomer that is part of CAS 9016-87-9

## Section 4 - First Aid Measures

### 4.1 Description of first aid measures

#### Inhalation

Remove source(s) of contamination and move victim to fresh air. If breathing has stopped, give artificial respiration, then oxygen if needed. Contact physician immediately.

#### Eye Contact

Flush eyes with plenty of water occasionally lifting the upper and lower eyelids. Check and remove any contact lenses if safe to do so. Continue to rinse for at least 15 minutes. If irritation develops, seek medical attention.

### **Skin Contact**

In case of skin contact, wash thoroughly with soap and water. Continue to rinse for at least 15 minutes. Chemical burns must be treated promptly by a physician.

### **Ingestion**

Do not induce vomiting unless instructed by a physician. Never give anything by mouth to an unconscious person. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs.

#### **4.2 Most important symptoms and effects, both acute and delayed**

In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

#### **4.3 Indication of any immediate medical attention and specific treatment needed, if necessary.**

## **Section 5 - Fire-Fighting Measures**

### **5.1 Extinguishing Media**

Water Fog, Dry Chemical, and Carbon Dioxide Foam

### **5.2 Special hazards arising from the substance or mixture**

In a fire or if heated, a pressure increase will occur, and the container may burst.

### **5.3 Advice for firefighters**

Use water spray to cool fire-exposed surfaces and to protect personnel. Shut off "fuel" to fire. If a leak or spill has not ignited, use water spray to disperse the vapors. Either allow fire to burn under controlled conditions or extinguish with foam or dry chemical. Try to cover liquid spills with foam. Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full-face piece operated in pressure demand or positive-pressure mode.

## **Section 6 - Accidental Release Measures**

### **6.1 Personal precautions, protective equipment and emergency procedures**

Only properly protected personnel should remain in the spill area; dike and contain spill. Stop or reduce discharge if it can be done safely.

### **6.2 Environmental precautions**

Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains or unauthorized drainage systems and natural waterways by using sand, earth, or other appropriate barriers. No special environmental precautions required.

### **6.3 Methods and material for containment and cleaning up**

Put on appropriate protective gear including NIOSH/MSHA approved self-contained breathing apparatus, rubber boots and heavy rubber gloves. Dike and contain spill; absorb or scrape up excess into suitable container for disposal; wash area with dilute ammonia solution. Stop or reduce discharge if it can be done safely. Follow applicable OSHA regulations (29 CFR 1910.120) for disposal.

### **6.4 Reference to other sections**

See Section 3 for list of Hazardous Ingredients; Sections 8 for Exposure Controls; and Section 13 for Disposal.

## Section 7 - Handling and Storage

### 7.1 Precautions for safe handling

Use good general housekeeping procedures. Wash hands after use. Do not get in eyes, on skin or on clothing. Do not breathe vapors or mists. Use good personal hygiene practices.

### 7.2 Conditions for safe storage, including any incompatibilities

Keep container(s) tightly closed and properly labeled. Store in cool, dry, well ventilated place away from heat, direct sunlight, strong oxidizers and any incompatibles. Store in approved containers and protect against physical damage. Keep containers securely sealed when not in use. Indoor storage should meet local standards and appropriate fire codes. Containers that have been opened must be carefully resealed to prevent leakage. Empty containers retain residue and may be dangerous. Avoid water contamination.

### 7.3 Specific end use(s)

These precautions are for room temperature handling. Other uses including elevated temperatures or aerosol/spray applications may require added precautions.

## Section 8 - Exposure Controls / Personal Protection

### 8.1 Control parameters

None defined

#### Components with workplace control parameters

Component	CAS-No.	Value	Control Parameters	Basis
4,4' Methylene bis(phenylisocyanate) (MDI)	101-68-8	0.02 ppm 0.2 mg/m <sup>3</sup>	CLV	OSHA PEL
		0.005 ppm	TWA	ACGIH TLV

### 8.2 Exposure controls

#### Respiratory Protection

Respiratory protection is not normally required when using this product with adequate local exhaust ventilation. Where risk assessment shows air-purifying respirators are appropriate, follow OSHA respirator regulations 29 CFR 1910.134 and European Standards EN 141, 143 and 371; wear an MSHA/NIOSH or European Standards EN 141, 143 and 371 approved respirators equipped with appropriate filter cartridges as a backup to engineering controls.

#### Hand Protection

Wear any liquid-tight gloves such as butyl rubber, neoprene or PVC.

#### Eye Protection

Safety glasses with side shields per OSHA eye- and face-protection regulations 29 CFR 1910.133 and European Standard EN166. Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

**Other Protective Clothing/Equipment**

Additional protective clothing or equipment is not normally required. Provide eye bath and safety shower.

**Comments**

Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics. Wash thoroughly after handling.

<b>Section 9 - Physical and Chemical Properties</b>
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**9.1 Information on basic physical and chemical properties**

<b>Appearance:</b>	Dark Brown liquid	<b>Vapor pressure:</b>	< 0.00001 mmHg at 25°C (77 °F)
<b>Odor:</b>	musty	<b>Vapor density (Air=1):</b>	8.5
<b>pH:</b>	No data	<b>Evaporation rate:</b>	No data
<b>Flash Point:</b>	No data	<b>Solubility in water:</b>	insoluble, reacts, evolution of CO <sub>2</sub>
<b>Melting / freezing point:</b>	forms crystals below 70°C Literature	<b>Specific Gravity (H<sub>2</sub>O=1, at 4 °C):</b>	No data
<b>Low / high boiling point:</b>	decomposes prior to boiling	<b>Relative density:</b>	No data
<b>Upper flammability limits:</b>	No data	<b>Decomposition temperature:</b>	No data
<b>Lower flammability limits:</b>	No data	<b>Viscosity:</b>	160 - 240 mPa.s at 25 °C (77 °F) ASTM D4889

<b>Section 10 - Stability and Reactivity</b>
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**10.1 Reactivity**

No hazardous reactions if stored and handled as prescribed/indicated., No corrosive effect on metal. Not fire propagating.

**10.2 Chemical stability**

These products are stable at room temperature in closed containers under normal storage and handling conditions.

**10.3 Possibility of hazardous reactions**

Hazardous polymerization cannot occur

**10.4 Conditions to avoid**

None known

**10.5 Incompatible materials**

Avoid contact with: Acids. Alcohols. Amines. Water. Ammonia. Bases. Metal compounds. Moist air. Strong oxidizers. Diisocyanates react with many materials and the rate of reaction increases with temperature as well as increased contact, these reactions can become violent. Contact is increased by stirring or if the other material mixes with the diisocyanate. Diisocyanates are not soluble in water and sink to the bottom, but react slowly at the interface. The reaction forms carbon dioxide gas and a layer of solid polyurea. Reaction with water will generate carbon dioxide and heat. Avoid contact with metals such as: Aluminum. Zinc. Brass. Tin. Copper. Galvanized metals.

Avoid contact with absorbent materials such as: Moist organic absorbents. Avoid unintended contact with polyols. The reaction of polyols and isocyanates generate heat.

## 10.6 Hazardous decomposition products

Thermal oxidative decomposition can produce carbon oxides, gasses/vapors, and traces of incompletely burned carbon compounds.

# Section 11- Toxicological Information

## 11.1 Information on toxicological effects

### Acute Toxicity

#### Acute oral toxicity

Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

Typical for this family of materials  
1050, Rat, > 10,000 mg/kg

#### Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts

Typical for this family of materials  
1D50, Rabbit, > 9,400 mg/kg

#### Acute inhalation toxicity

At room temperature, vapors are minimal due to low volatility. However, certain operations may generate vapor or mist concentrations sufficient to cause respiratory irritation and other adverse effects. Such operations include those in which the material is heated, sprayed or otherwise mechanically dispersed such as drumming, venting or pumping. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. May cause pulmonary edema (fluid in the lungs.) Effects may be delayed. Decreased lung function has been associated with overexposure to isocyanates.

LC50, Rat, 4 Hour, dust/mist, 0.49 mg/l

For similar material(s): 4,4'-Methylenediphenyl diisocyanate (CAS 101-68-8)

LC50, Rat, 1 Hour, Aerosol, 2.24 mg/l

For similar material(s): 2,4'-Diphenylmethane diisocyanate (CAS 5873-54-1)

LC50, Rat, 4 Hour, Aerosol, 0.387 mg/l

#### Skin Corrosion/Irritation

Prolonged contact may cause slight skin irritation with local redness. May stain skin.

#### Serious Eye Damage/Irritation

May cause moderate eye irritation.

May cause slight temporary corneal injury.

#### Respiratory/Skin Sensitization

Skin contact may cause an allergic skin reaction.

Animal studies have shown that skin contact with isocyanates may play a role in respiratory sensitization. May cause allergic respiratory reaction

Re-exposure to extremely low isocyanate concentrations may cause allergic respiratory reactions in individuals already sensitized.

Asthma-like symptoms may include coughing, difficult breathing and a feeling of tightness in the chest. Occasionally, breathing difficulties may be life threatening. Effects may be delayed.

### **Germ Cell Mutagenicity**

Genetic toxicity data on MDI are inconclusive. MDI was weakly positive in some in vitro studies; other in vitro studies were negative. Animal mutagenicity studies were predominantly negative.

### **Carcinogenicity**

Lung tumors have been observed in laboratory animals exposed to respirable aerosol droplets of MDI/Polymeric MDI (6 mg/m<sup>3</sup>) for their lifetime. Tumors occurred concurrently with respiratory irritation and lung injury. Current exposure guidelines are expected to protect against these effects reported for MDI.

### **Reproductive Toxicity**

No data available

### **Specific Target Organ Toxicity – Single Exposure**

May cause respiratory irritation.

Route of Exposure: inhalation

Target Organs: Respiratory Tract

### **Specific Target Organ Toxicity – Repeated Exposure**

Tissue injury in the upper respiratory tract and lungs has been observed in laboratory animals after repeated excessive exposures to MDI/polymeric MDI aerosols.

### **Aspiration Hazard**

Based on physical properties, not likely to be an aspiration hazard.

### **Potential Health Effects – Miscellaneous**

No data available

## **Section 12 - Ecological Information**

### **12.1 Toxicity**

#### **Acute toxicity to fish**

The measured ecotoxicity is that of the hydrolyzed product, generally under conditions maximizing production of soluble species.

Material is practically non-toxic to aquatic organisms on an acute basis.

(LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

LC50, Danio rerio (zebra fish), static test, 96 Hour, > 1,000 mg/l, OECD Test guideline 203 Or Equivalent.

#### **Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), static test, 24 Hour, > 1,000 mg/l, OECD Test Guideline 202 or Equivalent.

#### **Acute toxicity to algae/aquatic plants**

NOEC, Desmodesmus subspicatus (green algae), static test, 72 Hour, Growth rate inhibition, 1,640 mg/l, OECD Test Guideline 201 or Equivalent

Toxicity to bacteria

EC50, activated sludge, static test, 3 Hour, Respiration rates, > 100 mg/l

Toxicity to soil-dwelling organisms

EC50, Eisenia fetida (earthworms), 14 d, > 1,000 mg/kg

Toxicity to terrestrial plants

EC50, Avena sativa (oats), Growth inhibition, 1,000 mg/l

EC50, Lactuca sativa (lettuce), Growth inhibition, 1,000 mg/l

## 12.2 Persistence and Degradability

Biodegradability: In the aquatic and terrestrial environment, material reacts with water forming predominantly insoluble polyureas which appear to be stable. In the atmospheric environment, material is expected to have a short tropospheric half-life, based on calculations and by analogy with related diisocyanates.

10-day Window: Not applicable

Biodegradation: 0 %

Exposure time: 28 d

Method: OECD Test Guideline 302C or Equivalent

## 12.3 Bioaccumulative Potential

Bioconcentration factor (BCF): 92 Cyprinus carpio (Carp) 28 d

### Diphenylmethane Diisocyanate, isomers and homologues

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3). Reacts with water. In the aquatic and terrestrial environment, movement is expected to be limited by its reaction with water forming predominantly insoluble polyureas.

Bioconcentration factor (BCF): 92 Cyprinus carpio (Carp) 28 d

4,4'-methylenediphenyl diisocyanate

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3). Reacts with water. In the aquatic and terrestrial environment, movement is expected to be limited by its reaction with water forming predominantly insoluble polyureas.

Bioconcentration factor (BCF): 92 Cyprinus carpio (Carp) 28 d

## 12.4 Mobility in Soil

In the aquatic and terrestrial environment, movement is expected to be limited by its reaction with water forming predominantly insoluble polyureas.

## 12.5 Results of PBT and vPvB assessment

No data available

## 12.6 Other Adverse Effects

No data available

# Section 13 - Disposal Considerations

## 13.1 Waste treatment methods



Under Resource Conservation and Recovery Act (RCRA) it is the responsibility of the user of the product to determine at the time of disposal whether the product meets RCRA criteria for hazardous waste as defined in 40 CFR Part 261. Waste management should be in full compliance with federal, state and local laws. Regulations may vary in various locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.

### Container disposal

Steel drums must be emptied and can be sent to a licensed drum reconditioner for reuse, a scrap metal dealer or an approved landfill. Do not attempt to refill or clean containers since residue is difficult to remove. Under no circumstances should empty drums be burned or cut open with gas or electric torch as toxic decomposition products may be liberated. Do not reuse empty containers.

## Section 14 - Transport Information

### Not regulated by IMDG or IATA for transport

	<i>Land transport (DOT)</i>	<i>Sea transport (IMDG)</i>	<i>Air transport (ICAO/IATA)</i>
<i>UN number:</i>	UN 3082	-	-
<i>UN proper shipping name:</i>	Environmentally hazardous substance, liquid, n.o.s.(MDI)	-	-
<i>Transport hazard class(s):</i>	9	-	-
<i>Packing group:</i>	III	-	-
<i>Environmental hazards:</i>	Yes	-	-
<i>Special precautions for user:</i>	-	-	-
<i>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</i>	-	Consult IMO regulations before transporting ocean bulk	-

## Section 15 - Regulatory Information

### 15.1 Safety health and environmental regulations/legislation specific for the substance or mixture:

#### REACH: Regulation (EC) No 1907/2006 of The European Parliament and of The Council of December 2006 (including amendments and corrigenda as of 17 February 2016)

This product complies with REACH or is not subject to regulation under REACH. The product does not contain an ingredient listed on either the Candidate List or Authorization List for Substances of Very High Concern (SVHC).

#### In the United States (EPA Regulations)

##### TSCA Inventory Status (40 CFR710)

All components of this formulation are listed in the TSCA Inventory. No component of this formulation has been determined to be subject to manufacturing or use restrictions under the Significant New Use Rules (SNURs).

##### CERCLA Hazardous Substance List (40 CFR 302.4)

None known.

##### SARA 302 Components

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

**Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and community Right-to-Know Act of 1986) Sections 311 and 312**

Immediate (Acute), Delayed (Chronic)

**Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313**

Chemical name	CAS-No.	Concentration (% by Wt)
4,4' Methylene bis(phenylisocyanate) (MDI)	101-68-8	100
Polymethylene polyphenyl isocyanates	9013-87-9	40 – 50

**California Proposition 65**

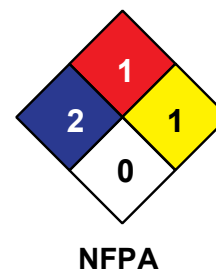
This product does not intentionally contain any chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

**15.2 Chemical safety assessment**

No chemical safety assessment has been carried out for this substance/mixture by the supplier.

**16 - Other Information**

HMIS	
H	2
F	1
R	1



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**Abbreviations and acronyms**

ACGIH-American Conference of Governmental Industrial Hygienists; ANSI-American National Standards Institute; Canadian TDG-Canadian Transportation of Dangerous Goods; CAS-Chemical Abstract Service; Chemtrec-Chemical Transportation Emergency Center (US); CHIP-Chemical Hazard Information and Packaging; DSL-Domestic Substances List; EC-Equivalent Concentration; EH40 (UK)-HSE Guidance Note EH40 Occupational Exposure Limits; EPCRA-Emergency Planning and Community Right-To-Know Act; ESL-Effects screening levels; GHS-Globally Harmonized System of Classification and Labelling of Chemicals; HMIS-Hazardous Material Information Service; IATA-International Air Transport Association; IMDG-International Maritime Dangerous Goods Code; LC-Lethal Concentration; LD-Lethal Dose; NFPA-National Fire Protection Association; OEL-Occupational Exposure Limit; OSHA-Occupational Safety and Health Administration, US Dept. of Labor; PEL-Permissible Exposure Limit; SARA (Title III)-Superfund Amendments and Reauthorization Act; SARA 313-Superfund Amendments and Reauthorization Act, Section 313; SCBA-Self-Contained Breathing Apparatus; STEL-Short Term Exposure Limit; TCEQ-Texas Commission on Environmental Quality; TLV-Threshold Limit Value; TSCA-Toxic Substances Control Act Public Law 94-469; TWA-Time Weighted Value; US DOT-US Department of Transportation; WHMIS-Workplace Hazardous Materials Information System.

**Disclaimer**

The information contained in this Safety Data Sheet (SDS) is considered accurate as of the version date. However, no warranty is expressed or implied regarding the accuracy of the data. Since the use of this product is not within the control of Smooth-On Inc., it is the user's obligation to determine the suitability of the product for its intended application and assumes all risk and liability for its safe use.

This SDS is prepared to comply with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) as prescribed by the United States (US) Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200), the Canadian Workplace Hazardous Materials Information System (WHMIS), and European Union Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 (REACH).

Classifications of the chemical in accordance with 29 CFR 1910.1200, signal word, hazard and precautionary statement(s), symbol(s) and other information are based on listed concentration of each hazardous ingredient. Unlisted ingredients are not "hazardous" per the OSHA Hazard Communication Standard (29 CFR 1910.1200), WHMIS and EC No 1907/2006 and are considered trade secrets under US Federal Law (29 CFR and 40 CFR), Canadian Law (Health Canada Legislation), and European Union Directives.