



# SAFETY DATA SHEET

## Hydroxyl-Terminated Polybutadiene (HTPB) Resin

- First-aid measures after skin contact : Wash with plenty of soap and water. If irritation persists, consult a doctor. Heated Material: For serious burns from heated material, get medical attention. In case of skin contact, immediately immerse in or flush with clean, cold water.
- First-aid measures after eye contact : Rinse cautiously with water for several minutes. Obtain medical attention if pain, blinking, tears or redness persist.
- First-aid measures after ingestion : Rinse mouth out with water. If necessary seek medical advice.

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

- Symptoms/injuries : Not expected to present a significant hazard under anticipated conditions of normal use.

### 4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

## Section 5: Firefighting measures

### 5.1. Extinguishing media

- Suitable extinguishing media : Water spray or fog. Carbon dioxide. Foam. Dry chemical. Dry powder. Sand.
- Unsuitable extinguishing media : Use of heavy stream of water may spread fire.

### 5.2. Special hazards arising from the chemical

- Fire hazard : Heat from fire can generate flammable vapor. When mixed with air and exposed to ignition source, can burn in open air or explode if confined.
- Explosion hazard : May form flammable/explosive vapor-air mixture.
- Hazardous decomposition products in case of fire : Carbon oxides (CO, CO<sub>2</sub>). Toxic fumes. 1,3-butadiene. Hydrocarbons.

### 5.3. Advice for firefighters

- Firefighting instructions : Fight fire from safe distance and protected location. Avoid direct personal contact with liquid even after fire is out to prevent potentially serious burns. Use water spray or fog for cooling exposed containers. Apply aqueous extinguishing media carefully to prevent frothing/steam explosion. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries. Prevent fire-fighting water from entering environment.
- Protection during firefighting : Do not attempt to take action without suitable protective equipment. Complete protective clothing. Self-contained breathing apparatus.
- Other information : Fires are typically very smoky.

## Section 6: Accidental release measures

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

- Emergency procedures for non-emergency personnel : Ensure adequate ventilation. Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
- Emergency procedures for emergency responders : No additional requirement.

### 6.2. Methods and material for containment and cleaning up

- For containment : Take up liquid spill into absorbent material, e.g.: sand, earth, vermiculite. Keep recovered product for subsequent disposal.
- Methods for cleaning up : Wash away residue with large amounts of water. Gather the product and place it in a spare container that has been suitably labeled.

### 6.3. Reference to other sections

See section 8. Exposure controls/personal protection.

## Section 7: Handling and Storage

### 7.1. Precautions for safe handling

- Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment. Avoid contact with elevated temperature or molten product to prevent burns. Use only non-sparking tools. Steam drum heaters are recommended. If heating is necessary for drummed product, loosen or remove bung or lid before warming/heating product to avoid overpressurization in the drum. Eliminate all ignition sources if safe to do so.
- Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

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

- Technical measures : Electrical equipment should conform to the National Electric Code. Containers which are opened should be properly resealed and kept upright to prevent leakage.
- Storage conditions : Keep container tightly closed. Store in a dry, cool area. Purge open drums with nitrogen before resealing.

# SAFETY DATA SHEET

## Hydroxyl-Terminated Polybutadiene (HTPB) Resin

Storage temperature : 10 - 32 °C

### Section 8: Exposure controls/personal protection

#### 8.1. Occupational Exposure Limits

The following constituents are the only constituents of the product which have a PEL, TLV, or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

No additional information available

#### 8.2. Exposure controls

Appropriate engineering controls : Ensure good ventilation of the work station.  
Hand protection : Protective gloves. Do not use natural rubber gloves. Product used with solvents : wear thick (> 0.5 mm) nitrile gloves. Replace gloves immediately when torn or any change in appearance (dimension, color, flexibility, etc.) is noticed.  
Eye protection : Safety glasses.  
Skin and body protection : Wear suitable protective clothing.  
Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment.

### Section 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

Physical state : Liquid  
Appearance : Viscous.  
Color : Colorless to light yellow.  
Odor : No data available  
Odor threshold : No data available  
pH : Not applicable  
Relative evaporation rate (butyl acetate=1) : No data available  
Melting point : No data available  
Freezing point : No data available  
Boiling point : > 300 °C  
Flash point : > 205 °C Cleveland open cup (COC)  
Auto-ignition temperature : No data available  
Decomposition temperature : No data available  
Flammability (solid, gas) : No data available  
Vapor pressure : No data available  
Relative vapor density at 20 °C : No data available  
Relative density : 0.9  
Solubility : Water: practically insoluble  
Log Kow : No data available  
Viscosity, kinematic : No data available  
Viscosity, dynamic : ~ 5000 mPa.s  
Explosion limits : No data available

#### 9.2. Other information

No additional information available

### Section 10: Stability and reactivity

#### 10.1. Reactivity

No dangerous reactions known under normal conditions of use.

#### 10.2. Chemical stability

Stable under use and storage conditions as recommended in section 7.

#### 10.3. Possibility of hazardous reactions

Cracks into gaseous and liquid products above 426 °C. Decomposes by polymerization above 204 °C. Once initiated, the reaction generates enough heat to continue spontaneously.

#### 10.4. Conditions to avoid

Heat. Direct sunlight. High temperature.

# SAFETY DATA SHEET

## Hydroxyl-Terminated Polybutadiene (HTPB) Resin

### 10.5. Incompatible materials

Strong oxidizing agents. Strong reducing agents. Strong acids. Free radical initiators/peroxides.

### 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## Section 11: Toxicological information

### 11.1. Information on toxicological effects

Likely routes of exposure	: Ingestion. Skin and eye contact.
Acute toxicity	: Not classified Based on available data, the classification criteria are not met
LD50 oral rat	: > 34600 mg/kg
Skin corrosion/irritation	: Not classified Based on available data, the classification criteria are not met Practically non-irritating (rabbit)
Serious eye damage/irritation	: Not classified Based on available data, the classification criteria are not met Slight eye irritant (rabbit)
Respiratory or skin sensitization	: Not classified Based on available data, the classification criteria are not met Does not cause cutaneous sensitization for guinea-pigs
Germ cell mutagenicity	: Not classified Lack of data
Carcinogenicity	: Not classified Lack of data
Reproductive toxicity	: Not classified Lack of data
Specific target organ toxicity (single exposure)	: Not classified Lack of data
Specific target organ toxicity (repeated exposure)	: Not classified Lack of data
Aspiration hazard	: Not classified Lack of data

## Section 12: Ecological information

### 12.1. Toxicity

No additional information available

### 12.2. Persistence and degradability

No additional information available

### 12.3. Bioaccumulative potential

No additional information available

### 12.4. Mobility in soil

No additional information available

### 12.5. Other adverse effects

No additional information available

# SAFETY DATA SHEET

## Hydroxyl-Terminated Polybutadiene (HTPB) Resin

### Section 13: Disposal considerations

#### 13.1. Waste treatment methods

Waste treatment methods : Transfer to a safe disposal area in accordance with federal, state, and local regulations.

### Section 14: Transport Information

#### US Transport (DOT) for Bulk Shipments (Non-Bulk Shipments May Differ)

Not regulated by US DOT

#### Transport by sea (IMDG)

Not regulated by IMDG

#### Air transport (IATA)

Not regulated by IATA

### Section 15: Regulatory Information

#### 15.1. US Federal regulations

##### EPA TSCA Status

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

##### SARA Section 313 Supplier Notification

This product contains no toxic chemicals in excess of the applicable de minimis concentration that are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

SARA Section 311/312 Hazard Classes Not applicable

Export Control Statement: This product and technical data related to this product are export controlled by the United States (US) Government. Exportation/international shipments of this product are subject to licensing by the US Government. Export, reexport or other diversion, either in the original form or after being incorporated in an intermediate process into other end-items, is STRICTLY PROHIBITED unless expressly authorized by the cognizant agency of the US Government. If you plan to export this material in some form, please contact RCS Rocket Motor Components, Inc. for more information.

Export Control Classification Number (ECCN): 1C111

#### 15.2. International regulations

##### CANADA

No additional information available

##### National inventories

##### 1,3-Butadiene, homopolymer, hydroxy-terminated (69102-90-5)

Listed on the AICS (Australian Inventory of Chemical Substances)

Listed on the Canadian DSL (Domestic Substances List)

Listed on the China Inventory of Existing Chemical Substances (IECSC)

Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory

Listed on the Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on the Philippines Inventory of Chemicals and Chemical Substances (PICCS)

#### 15.3. US State regulations

California Proposition 65 - This product contains, or may contain, trace quantities of a substance(s) known to the state of California to cause cancer and/or reproductive toxicity, not limited to any that may be listed below.

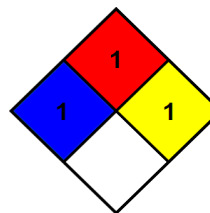
### Section 16: Other information

#### NFPA (National Fire Protection Association)

# SAFETY DATA SHEET

## Hydroxyl-Terminated Polybutadiene (HTPB) Resin

NFPA health hazard : 1  
NFPA fire hazard : 1  
NFPA reactivity : 1



### HMIS III Rating

Health : 1  
Flammability : 1  
Physical Hazard : 1  
Personal Protection : See section 8 of SDS

### US OSHA LABEL as specified under 29 CFR §1910.1200 (f)

#### Hydroxyl-Terminated Polybutadiene (HTPB) Resin

Chris' Rocket Supplies  
387 Sullivan Circle  
Pine Mountain, GA 31822  
850-554-6531  
sales@csrocketry.com

**This material has no classified hazards under 29 CFR 1910.1200.**

Precautionary statement not required.

Version : 1

Date of issue : May 8, 2020

MSDS ID: Hydroxyl-Terminated Polybutadiene (HTPB) Resin

*The information contained in this Safety Data Sheet (SDS) is believed by Chris' Rocket Supplies, LLC (Chris' Rockets) to be accurate on the date issued. However, materials may present unknown hazards and should be used with caution. Final determination of suitability and use of any material is the sole responsibility of the user. Neither Chris' Rockets nor any of its subsidiaries or affiliated companies assumes any liability whatsoever for the accuracy or completeness of the information contained herein or reliance thereto. If the material is repackaged, the user is responsible and must ensure that proper health, safety and other necessary information is included with the material and/or on the container. NO WARRANTIES OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE REGARDING THE MATERIALS OR THE INFORMATION CONTAINED IN THIS SDS. ALTERATION OF THIS DOCUMENT IS STRICTLY PROHIBITED.*