

Technical Data Sheet  
**MPP-D80F**  
Polyurethane Casting System

## MPP-D80F: A High-Performance Polyurethane Casting Resin by Northstar Polymers

MPP-D80F is a two-part polyurethane casting resin system developed by Northstar Polymers, designed for applications requiring rigid, high-load-bearing properties combined with impact resistance. It is particularly well-suited for producing climbing holds used in artificial rock-climbing/bouldering walls.

Climbing holds endure constant wear from both climbers' shoes and hands, demanding exceptional abrasion resistance. MPP-D80F offers the optimal balance of hardness and responsiveness to withstand these abrasive forces while providing a secure grip. Additionally, its slight flexibility ensures impact resistance, minimizing the risk of shattering when a hold is dropped.

Formulated with water-resistant components, MPP-D80F can endure frequent wash-downs without degradation. Its curing profile and molding conditions are optimized for use with flexible silicone molds, delivering a superior surface finish and efficient mold cycle times. These attributes make MPP-D80F an ideal choice for manufacturers of climbing holds.



### Designations

System Code:	MPP-D80F
Part-A:	MPA-016
Part-B:	PPB-014

Mixing Ratio: **100: 100 by Volume** (100: 87 by Weight)

### Physical Properties

Hardness:	80 D Durometer
Tensile Strength:	8,430 psi

Ultimate Elongation:	14 %
Die-C Tear Strength:	679 pli
Tabor Abrasion (1000 cycle)	347 mg loss
Flexural Strength:	12,107 psi
Flexion - Elastic Modulus:	376,140 psi
Heat Deflection Temp (264 psi):	119 °F (47.8 °C)
Izod Notched Impact Resistance:	6.9 J/m
Izod Unnotched Impact Resistance:	66.1 J/m

*Note: The above data is based on our lab test and reference only.*

## Processing Temperature

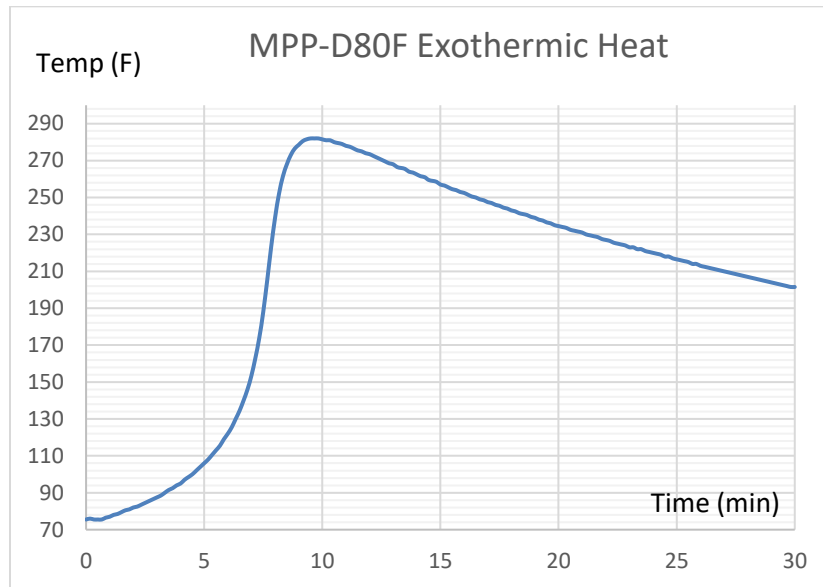
Material Temperature:	Ambient
Mold Temperature:	180 °F
Pot-life:	6 - 7 minutes
Demolding Time:	10 - 15 minutes (at ½" thick sample)
Complete Cure:	8 hours at room temperature
Peak Exothermic Temperature:	282 °F



This material creates heat from the chemical reaction (exothermic heat). This chart shows the exothermic temperature increase soon after the components are mixed. The material temperature rises to above 280 °F. Wear thick gloves and protective clothing to avoid direct contact with the material while it is very hot.



3444 Cheatham Avenue, Minneapolis, MN 55406 Tel: 612-721-2911 Fax 612-721-1009



### Component Materials

#### Part-A Component

Product Code: MPA-016  
General Name: Prepolymer  
NCO%: 26.1%  
Equivalent Weight: 161  
Specific Gravity: 1.194  
Viscosity: 370 cps at 72°F

#### Part-B Component

Product Code: PPB-014  
General Name: Curative  
Equivalent Weight: 144  
Specific Gravity: 1.066  
Viscosity: 430 cps at 72°F

Available Package Size: 5-gallon pails as well as 55-gallon drums

### Storage/Handling Information for Urethane Component Materials

Our polyurethane raw material component products are industrial-grade chemicals. For the safety of your workers and successful operation, please follow the proper handling and storage procedure. The following information is the general conditions of storage and handling for the part-A (isocyanate prepolymer) and part-B (curative) components. The supervisors and operators need to be familiar with this information for the operation's safety and successful production. Please Note that polyurethane raw material components are sensitive to the environment. You need to control the processing environment properly to make good products using polyurethane resin materials.



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### Storage of Part-A Component: (Isocyanate Prepolymer)

Part-A component (prepolymer) contains isocyanate, which is highly sensitive to moisture. If it is left in ambient air, part-A will react with atmospheric moisture and will be ruined. This reaction is non-reversible.

Soon after the container is opened to dispense the content, dry nitrogen or argon gas needs to be injected to the container to blanket the material. The pressured nitrogen gas can be injected for 15 to 30 seconds for 5-gallon pail size containers, and 60 to 120 seconds for 55-gallon size containers depending on the headspace.

For gravity-feeding from a 55-gallon drum on a drum cradle, silica gel or calcium chloride desiccant filter(s) should be installed to the vent-hole of the drum. A shut-off valve to inject dry nitrogen gas can be installed instead.

Part-A component freezes just below the room temperature range. During cold seasons, the material may freeze during transportation. The content must be inspected immediately after receiving to see if the material has been affected by the cold temperatures during transit. The frozen material must be thawed immediately by heating it to 140 °F - 160 °F range or until the entire content is clear and smooth liquid.

Store the containers in a dry indoor storage within the temperature range between 72 and 86 °F. Avoid direct sunlight.

Note: If a large amount of water mixes with a large amount of isocyanate materials, including our part-A components or isocyanate prepolymer, the exothermic heat can raise the temperature so high that it can start a fire. Keep the storage area free of water. The decomposition of this material by extremely high temperature or fire can create toxic gasses. Please read the MSDS for detailed information.

The shelf-life for it is 6 months for the materials in the unopened original container under the correct storage conditions.

### Storage of Part-B Component: (Curative/Polyol Blend)

Generally, our part-B component materials are blend of a variety of polyols and additives. Many of our part-B components are hygroscopic. It means that if the material is exposed to humid air, it absorbs moisture quickly. Part-B component contaminated by moisture can become a source for excessive bubbles in the product. Avoid exposure of the material to moisture in air.

Purging the headspace in the container with nitrogen gas or negative-40-degree-dew-point dry air is also recommended to prevent moisture contamination of part-B as well. It is specially recommended when the humidity of the storage or working space is above 60% relative humidity at room temperature.

Store it in a dry indoor storage at a room temperature between 72 and 86 °F. Avoid direct sunlight.

Some constituent of part-B may have tendency to separate within the drum. For those part-B components, it is recommended that the content of the container should be agitated before dispensing the material out of the container. For 55-gallon drums, you may use a drum mixer and agitate it for about 20 to 30 minutes. For 5-gallon pail



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size, you may use a hand-held power mixing tool, such as a paint mixer, and agitate it for 2 to 3 minutes to ensure well-blend of the constituent. Try not to enclose air bubbles while agitating. If you agitate the drum in a high humidity work area, we recommend a slow and constant flow of dry nitrogen gas to be injected from the vent hole while agitating the material to avoid moisture contamination. The content may be homogeneously blended for a days after it is agitated for some materials, or it may need agitation every few hours depending on the material. Consult Northstar Polymer for the recommendation for the frequency of the agitation. The phase separation may occur quicker when the storage temperature is low.

The shelf-life for part-B material in the unopened original containers is 6 months under the correct storage conditions.

The above information is general information on our part-B/curative products, and it can vary for the particular product you purchase from Northstar Polymers. Please contact us for your questions on the specific formulation you purchase from Northstar Polymers.

### Handling the Component Materials:

The component materials are industrial-grade chemicals. Please keep them in a secure place and prevent access from any unauthorized individual. The personnel who handle these materials need to read the Material Safety Data Sheet (MSDS) for the detail information on safety and handling of each component material.

When using this material, be sure to operate in a wide-open area with good air movement, or in a well-ventilated area. Wear rubber gloves, long sleeves, and protective eyeglasses to prevent skin/eye contact of the material. When your operation involves heating or spraying of the material, we recommend, in addition to the above, installation of a proper dynamic ventilation system and/or using a proper type of respirator to prevent inhalation of the fume.

Direct contact of polyurethane raw materials to skin/eye, as well as ingestion may lead to health problems. No eating or smoking should be permitted at the working area. The operator should wash hands well with soap and water after handling the materials and follow the procedures of the Standard Industrial Hygiene Practices. Please refer to the MSDS for each component for more information.

High humidity work site may cause humidity/water contamination of the material. If you see excessive bubbles in the cured urethane parts, this may be an indication of moisture contamination. If the humidity goes above 60% in your workspace, we recommend use of dehumidifier to bring the humidity below 60%.

When the workspace is hot and humid, the material, mold, and tools can have water condensation. If storage places for material, molds, and tools are cooler, this can happen more readily. We recommend materials, molds, and other tools to stay at the same temperature as the workplace in the humid days to avoid water problem from the condensation.

Note: Our product warranty is limited to the chemical qualities to be within our specifications as well as our workmanship to produce, package, and ship the products. We do not guarantee the fitness of our products in any end-product. The materials need to be tested for each application by the user(s), processor(s), and/or marketer(s) of the end products. It is the responsibility of the maker/seller of the final product(s) to be compliant with all health, environmental, and other regulations related to the end products and their applications.



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For any questions, please contact Northstar Polymers.

Tel: 612-721-2911 Ext 119  
Fax: 612-721-1009  
Web Site: <http://www.northstarpolymers.com>  
E-Mail: [info@northstarpolymers.com](mailto:info@northstarpolymers.com)

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