



Physical Property Data:

Hardness (Shore Durometer): 58-60 A  
Tensile: 290 psi  
Elongation: 90%  
Die-C: 79 pli  
Sprit Tear: 18 pli  
Bashore Rebound: 6%

The user can modify the hardness by changing mixing ratio. The following is the correlation between the hardness and mixing ratio.

Mixing Ratio Part-A: Part-B by weight	Shore Durometer Hardness
1.00: 1.30	58 A
1.00: 1.37	53 A
1.00: 1.42	50 A
1.00: 1.45	48 A
1.00: 1.50	46 A

\*Note: The above data is based on our lab tests, and it is reference only. The mixing-ratio-to-hardness correlation varies slightly depending on the batch-to-batch variations, and the ratio may need to be adjusted to yield the desired hardness.

Recommended Process:

Before Starting Your Operation:

Part-A material, MPC-023, is isocyanate prepolymer, which is highly moisture sensitive. Each time after the container is opened the top space in the container must be purged and blanketed with dry nitrogen gas or argon gas. The material should be stored in an air-tight container at room temperature range between 70 – 90 °F.

MPC-023 may freeze at low temperature during the transportation. Please follow the enclosing thawing instructions provided by Northstar Polymers to thaw the material before using. MPC-023 tends to create a small amount of white pasty sediment after it is stored for a long time. The sediment should not be included into your batch. When you see white sediment, do not stir the container and use only the material above the sediment. This is unavoidable side reaction of the material and Northstar Polymers is not refunding for the amount of sediment, which needs to be discarded.

Part-B component, CPC-030, contains liquid constituents that are not compatible enough to stay homogeneously blended for a long time. The constituents may separate during the shipping or storage. **Please stir the part-B content before dispensing** to ensure the homogenous mix of the constituent inside part-B.

Part-B material is not likely to freeze at a low temperature during standard shipping method. It should be stored in an air-tight container at room temperature range between 70 – 90 °F.

Recommended Process (Hand Batch at room temperature)

The components are industrial grade materials. When you operate with these materials, please be sure to wear rubber gloves, long sleeves, and protective eyewear to avoid skin/eye contact of the component materials. Please refer to the enclosed Material Safety Data Sheet for detailed information on safety and handling of the component materials.

- Use a dry, clean mixing cup and weigh part-A material.
- Calculate part-B quantity based on the actual weight of part-A and the desired mixing ratio.
- Pour part-B on top of the part-A as you weigh.
- Mix the components with dry, clean stainless steel spatula. Scrape side and bottom of the mixing cup as you mix to ensure homogeneous mix.
- Degas in vacuum chamber. At > 29" Hg vacuum, the blend should degas within 2 to 3 minutes. Be sure to finish degassing before the material turns too thick.
- Pour the mixture into the mold.
- Let it cure in the mold at room temperature until the surface is not tacky. This can take 4 to 6 hours at room temperature.
- Post cure the part in an oven within 160 – 180 °F range for 2 to 4 hours
- Cool the part naturally at room temperature

#### Elevated Temperature Process

The material can be heated to improve the production rate. Also, heating the components reduces the viscosity so that it flows in the mold better and degasses more easily. The component materials can be heated to 120 to 140 °F to reduce viscosity. Please note the pot life of the material will be reduced if you process at an elevated temperature.

The mold can be heated to 160 – 180°F for a better mold cycle. Overheating can cause material to trap some bubbles; please watch for the bubbles, and if you see bubble traps, reduce the mold temperature.

When you process at room temperature, there will be a larger shrinkage rate. When material cures at a higher temperature, the dimensions of the part are larger than those at room temperature. This is more prevalent if your processing temperature is higher. The mold dimensions may need to be adjusted to compensate the shrinkage.

When you heat the component materials, some constituents in the component may start vaporizing slowly. Please use hooded direct ventilation system and/or an appropriate grade of respirator to avoid inhalation of the vapor if you heat the component materials for process.

#### Storage/Handling Information for the Component Materials

Storage:

Part-A (Isocyanate Prepolymer) Component

Part-A component (prepolymer) contains isocyanate component, which is highly sensitive to moisture. If it is left in air, part-A will react with atmospheric moisture and will be ruined. This reaction is non-reversible. Soon after opening the container to dispense the content, dry nitrogen gas or argon gas needs to be injected to the container to purge and blanket the top space. Please consult Northstar Polymers for nitrogen gas set-up information.

For gravity feeding system from a 55-gallon, silica gel or calcium chloride desiccant filter(s) should be installed to the vent-hole of the drum. A valve to inject dry nitrogen gas can be installed instead. Store the containers in a dry indoor storage within the temperature range between 65 and 90 °F. Avoid direct sunlight.

Note: If large amount of water mixes with a large amount of any isocyanate base materials, 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 isocyanate based material by extremely high temperature or fire can produce toxic gasses and smokes. Please read the MSDS for the detailed information.

Some isocyanate prepolymer materials freeze during the transportation and storage particularly in the cold seasons. Frozen state of isocyanate prepolymer can be indicated by solid, gel, or high viscosity liquid state and cloudy color. Each material has different freezing temperature, and some freezes more readily than the others. Please consult Northstar Polymers for handling frozen isocyanate prepolymer materials.

#### Part-B (Curative) Component

Part-B component is hygroscopic. If the material is exposed to ambient air, it absorbs moisture. Part-B component contaminated by moisture can become a source excessive bubbles in the product after mixed with part-A. Avoid exposure of the material to moisture in air.

Purging the empty space in the container with dry nitrogen gas, argon gas, or negative-40-degree-dew-point dry air is also recommended to prevent moisture contamination of part-B as well. (However, simply keeping the material in an airtight container may also be sufficient depending on the moisture level of the work place.)

Store it in a dry indoor storage at a room temperature between 65 and 90 °F. Avoid direct sunlight.

Note: Moisture contamination of part-B material can be reversed by heating material to 160 - 180 °F and vacuuming it at about 29" Hg negative pressure for several hours.

Some part-B materials contain chemical constituents that can separate during the storage. Agitation of the part-B content before dispensing may be required for the system. Separation can be seen in a higher degree when the material is stored in cold temperature. You may need to heat to re-blend the separated material in some cases. Please consult Northstar Polymers when separation is suspected.

#### Safety:

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 detail information on safety and handling of the material. The MSDS for each component is sent with the shipment of the 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, and if you expect the isocyanate content level in the work place atmosphere may become above the threshold regulated by OSHA or by other appropriate working place safety standard, we recommend, in addition to the above, installation of a proper hooded dynamic ventilation system and/or using an appropriate type of respirator (such as a full-face respirator equipped with OSHA approved HEPA filters for particulate and organic vapor) 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 other procedures of the Standard Industrial Hygiene

Practices. Please refer to the MSDS for each component for the detailed health information.

For any questions, please contact Northstar Polymers.

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