



MPS-A40C

(Ester/Ether Hybrid Cast System)

Prepolymer (Part-A): MSC-045 Curative (Part-B): PBB-027

MPS-A40C is one of our room-temperature processed liquid polyurethane systems. This ether/ester hybrid polyurethane system can be used in many applications such as mold-making, prototyping, production of cast parts, potting, tool-making, and many others. MPS-A40C may be useful where soft Durometer hardness and high elongation combined with good tear strength is needed. Compared to liquid “full ether” systems, the tear resistant property at an elevated temperature is better. This material may replace expensive silicone mold-making rubber for molding low melting temperature candle wax and polyester resin with lower exothermic heat range.

- High Elongation
- Good elongation cut/tear resistance for its class
- Good performance in oily environments
- Room-temperature-curable

This material contains polyester elements which may undergo hydrolysis. It is not recommended to be used in very wet conditions. Please consult Northstar Polymers for recommendations.

Physical/Mecahnical Properties

Durometer Hardness
Tensile Strength
Ultimate Elongation
Tear Resistance: Die C
Tear Resistance: Split
Natural Color of Solid

Typical Value

A 40 – 50
540 psi
990 %
123 pli
25 pli
Light to Dark Amber Translucent

Prepolymer	MSC-045
Specific Gravity	1.188
Viscosity at 77 °F	3600 cps
% NCO	449
Amine Equivalents	226
Appearance at 77 °F	Pale Yellow Liquid

Curative	PBB-027
Specific Gravity	1.064
Viscosity at 77 °F	250 cps
Equivalent Weight	275
Appearance at 77 °F	Light to dark amber colored liquid

Processing Conditions

Prepolymer Temperature	72 - 82 °F
Curative Temperature	72 - 82 °F
Mold Temperature	72 - 180 °F
Post Cure Temperature	160 - 180 °F

Recommended Release Agent

Pure silicone mold release

Standard Cure Pattern at 77 °F
(Curing pattern can be changed)*

Pot-Life	13 minutes
De-molding Time	3 hours
Post Cure (160 – 180 °F)	3 - 4 hours
Complete Cure	3 to 4 days at Ambient

Ratio Calculation

	Prepolymer (A)	Curative (B)
Product Code	MSC-045	PBB-027
Volume Ratio	1	0.670
Weight Ratio	1	0.60
NCO/OH Index	0.98	1.00

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Other 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 a dry indoor storage within the temperature range between 72 and 82 °F. Avoid direct sunlight.

This material may freeze below room temperature, and it is likely that the material is frozen during the transportation. The material must be thawed immediately after it is received following the instructions provided by Northstar Polymers. Please contact Northstar Polymers for the detailed thawing instructions.

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. Store it in a dry indoor storage at a room temperature between 72 and 82 °F. Avoid direct sunlight.

The part-B material contains 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 if you see crystal-like sediments. 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

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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 procedures within 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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