

## MPS-A80C

Ester/Ether Hybrid "Oil Repellent"  
80 Hardness Elastomer Casting Resin System

### Technical Data Sheet

MPS-A80C is an ester/ether hybrid polyurethane elastomer casting resin system. The component materials are low viscosity liquids for easier process at room temperature. This formula consists of both polyether and polyester based polyols, which enhances the oil resistant property of the molded parts.

Comparing to other polyether-based room-temp-cure polyurethane materials, MPS-A80C has better oil resistance, tensile strength, as well as cut-and-tear resistance properties. It does not have the strength of high-performance (elevated temperature cure) polyester based systems; MPS-A80C provides a molding compound with oil resistant property without having to use elevated temperature process. It has a relatively long pot life for ease of process.

MPS-A80C is recommended for dry and oily applications, and not recommended for wet/aqueous applications. For wet/aqueous applications, we recommend MGB-A80AQ. For optimum oil resistance and high performance applications, we recommend MSS-A80AQ.

### Typical Properties of Cured Material

Hardness	80 A Durometer
Tensile Strength	2305 psi
Elongation	567%
Die-C Tear Resistance	774 pli
Split Tear Resistance	507 pli

### Designations

System Code:	MPS-A80C
Part-A (Isocyanate) Component:	MSA-018
Part-B (Curative) Component:	PPE-019

### Ratio Information

Mixing Ratio: 1: 1 = Part-A: Part-B by Weight  
85: 100 = Part-A: Part-B by Volume

NCO Index: 1.020



Processing Temperature

Part-A:	Ambient 72 - 86 °F
Part-B:	Ambient 72 - 86 °F
Mold Temperature:	Ambient 72 - 86 °F

Curing Pattern

Pot-Life:	10 - 11 minutes
Demolding Time:	90 to 120 minutes (plastic mold, 3/8" thickness sample)
Post-Cure:	3 to 5 hours at 160 – 180 °F
Complete Cycle:	3 days at room temperature

Component Materials (Typical Properties)**Part-A: MSA-018 (Isocyanate)**

General Description: Isocyanate Terminated Prepolymer  
NCO: 23%  
Equivalent Weight: 183  
Specific Gravity (Theoretical at 77 °F): 1.205 grams/cm<sup>3</sup>  
Viscosity: 300 - 700 cps at 77 °F

Storage/Handling: Store indoor at room temperature between 72 °F and 100 °F. The ideal storage temperature is 90 °F. The container head space must be purged to blanket the material with dry nitrogen gas or argon gas. In cold season, the material may freeze during the transportation. The frozen material must be thawed immediately after receiving by heating it to approximately 140 °F until the material has a homogeneously smooth liquid consistency, and then stored within the 72 °F to 100 °F temperature range.

**Part-B: PPE-019 (Curative)**

General Description: Curing Agent (Curative)  
Equivalent Weight: 186  
Specific Gravity (Theoretical at 77 °F): 1.028 grams/cm<sup>3</sup>  
Viscosity: 800 - 1000 cps at 77 °F

Storage/Handling: Store indoor at room temperature between 72 and 86 °F. Avoid moisture entering the product. The constituents tend to separate in container. Be sure to agitate the content before dispensing out of the container each time.



The post cure is recommended to yield the optimum material strength. The material continues to harden gradually for another 3 to 5 days before the material has the stable physical properties. The evaluation of the molded parts should take place at least 3 days after the part is made.

#### Standard Packages:

5-gallon pails (40 pounds per pail)  
55-gallon drums (450 pounds per drum)

#### 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.

During transportation, there is a chance of freezing. The frozen material must be immediately thawed to avoid permanent damage from freezing. If the material color is opaque with the consistency of thick liquid, gel, waxy, or solid, the material requires immediate thawing. The container should be put into an industrial oven at 180 °F until the material temperature is 140 °F or the color of the material is clear with smooth liquid consistency. Storing frozen material at above 35 °F for more than a few days will cause a permanent damage to the material, and it will not be returnable or refundable.

Store the containers a dry indoor storage within the temperature range between 72 and 100 °F. Avoid direct sunlight.

If a large amount of water mixes with a large amount of isocyanate base materials, the chemical reaction may produce a large amount of CO<sub>2</sub> gas and heat to create a hazardous condition. Keep the storage area free of water.

Under a certain combination of heat, catalyst (basic chemicals), amounts of reactive materials, and some other favorable conditions for the reaction, the water (or alcohol/glycol/amine) to isocyanate reaction can reach a dangerous state of accelerated reaction. The accelerated reaction may create a very high temperature condition. The thermal decomposition of isocyanate based material by extremely high temperature or fire can produce toxic gasses and smokes. Please be sure that the containers are stored in dry indoor storage, away from source of large amount of water.



If a leak is found in a drum, please place the drum in such a position that the leaking part is at the highest part of drum so that the content no longer leaks out. Cover the leaking area with dry towel to prevent air from entering. If possible, transfer the material into new container(s) with nitrogen purge. If moisture enters into an isocyanate container from a small leakage, CO<sub>2</sub> gas may be produced to gradually pressurize the container. If pressure built up is suspected, open the bung (or cap) very slowly to release the pressure before you change the drum position.

#### 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 72 and 86 °F. Avoid direct sunlight.

Note: Moisture contamination of part-B material can be reversed by heating material to 180 °F and vacuuming it at about 29" Hg or above negative pressure for 20 to 40 minutes.

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 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 Safety Data Sheet (SDS) for detail information on safety and handling of the material. The SDS 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.





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