

Technical Data Sheet

MPP-A15C

High-Elongation Soft Elastomer, Low Surface Tack, Long Pot Life

MPP-A15C is 15 A Durometer hardness room-temperature-curable polyurethane casting resin system for a variety of applications.

MPP-A15C provides a long pot life for easy manual processing at room temperature, which enables users to make larger parts without using an inline dispensing machine.

This formulation is made of mostly hydrophobic constituents and the molded parts are expected to withstand well in wet and high humidity conditions. The elongation value is above 1000% (stretches over 10 times of original shape). The natural color of cured piece is hazy amber color. MPP-A15C does not contain plasticizer.



Possible applications for MPP-A15C include soft roller cover lining, mold-making material for precast concrete products and other low-temperature curing materials, gaskets, prototyping as well as short-runs of various soft elastomeric parts, and many other custom applications.

Designations:

| | |
|--------------|----------|
| System Code: | MPP-A15C |
| Part-A: | MPC-022 |
| Part-B: | PPC-090 |

Processing Temperature:

| | |
|---------------------------|--------------------------|
| Part-A/Part-B Components: | Ambient (72 °F – 86 °F) |
| Mold: | Ambient (72 °F – 86 °F)* |



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Note*: For faster demolding time, we recommend the mold to be heated to 120 °F – 180 °F range. If a mold/core/substrate is made of metal (or other mold material absorbs heat) is used, the mold/core/substrate may need to be heated to ensure proper cure.

Curing Pattern:

| | |
|-----------------|------------------------------|
| Pot-Life: | 20 – 25 minutes |
| Demolding Time: | 6 hours at room temperature |
| Complete Cycle: | 7 days at room temperature** |

Note**: A molded part can be handled as a solid piece at and after the demolding time. However, the molded part continues change gradually/slowly for about 7 days at room temperature to reach the equilibrium state. If a heated mold is used, the cured material quality stabilizes in about 3 to 4 days at room temperature. The curing pattern can be modified for a faster mold cycle. Please consult Northstar Polymers for formula modifications.

Mixing Ratio:

1: 4 by Weight
100: 446 by Volume (22: 98 Gear Ratio for Gear Type Metering Pumps)

Other Information on Processing

The curing patterns can be modified by addition of catalysts and/or use of heat.

Be sure to evaluate the molded parts after it reaches to the equilibrium state at least 7 days after the part is molded if processed with a mold at room temperature. The material properties of molded parts change over about 7 days after it is molded. In case a part is molded in a heated mold, the material property stabilizes in 3 to 4 days.

Physical Properties***

| | |
|----------------------|-------------------------|
| Hardness: | 15 A Durometer (+, - 5) |
| Tensile Strength: | 283 psi |
| Elongation: | >1000% |
| Die-C Tear Strength: | 68 pli |
| Split Tear Strength: | 26 pli |

*** The above data values are typical data based on our in-house test methods and are reference only.





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Increasing the part-B mixing ratio will make softer parts. The material may increase surface stickiness if it is made softer by off-ratio. Softer products will have slower rebounding property. In theory, the material becomes more hygroscopic if it is made with higher part-B ratio.

| Ratio (by Weight) | | Hardness |
|-------------------|--------|----------------|
| Part-A: | Part-B | Durometer A*** |
| 1.00: | 4.000 | 15 |
| 1.00: | 4.050 | 12 |
| 1.00: | 4.100 | 10 |
| 1.00: | 4.200 | 8 |
| 1.00: | 4.300 | 7 |

Note***: Shore A Durometer is used to measure the sample hardness. The values are recorded 5 seconds after the probe is pressed against the samples.

Typical Property Values of the Component Materials:

Typical Properties of Part-A Component

| | |
|-------------------------------|---|
| Product Code: | MPC-022 |
| Description: | Isocyanate terminated prepolymer extended with polyether polyol |
| %NCO: | 19.0% (+/- 0.5%) |
| Amine Equivalent | 221 |
| Specific Gravity: | 1.141 |
| Appearance at 25 °C (77 °F): | Clear with amber colored tint, liquid |
| Viscosity at 25 °C (77 °F): | 600 – 1000 cps |
| Storage: | Store in an airtight container in a dry indoor storage room at the temperature between 72 °F and 86 °F. The material is highly sensitive to moisture. After using the content, immediately inject dry nitrogen gas or argon gas into the container to blanket the material then store. Avoid high temperature above 120 °F and direct sun light while stored. |

Typical Properties of Part-B Component

| | |
|-----------------------------------|--|
| Product Code: | PPC-090 |
| Description: | Curing agent based on a blend of polyols and additives |
| Equivalent Weight: | 900 |
| Specific Gravity: | 1.023 |
| Physical State at 25 °C (77 °F): | Clear with amber color tint; Liquid |



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| | |
|---------------------|---|
| Viscosity at 77 °F: | 300 – 900 cps |
| Storage: | Store in a dry indoor storage at room temperature in an airtight container. The material is hygroscopic. For long term storage, inject dry nitrogen gas, argon gas, or -40° dew-point dry air into the container to blanket the material. |

Standard Packaging Sizes:

- 5-gallon plastic pails (40 pounds net each)
- 55-gallon steel drums (450 pounds net each)

Note**:** In cold seasons, the component materials may be affected by exposure to cold temperature during shipping. These materials contain chemicals with different freezing points, and some constituents may freeze-out to separate from the blend. If freezing is suspected, the material must be inspected immediately after receiving. If you see partially gelled or solid material within or segments of different consistencies, the material needs to be heated to 130 °F to 140 °F to thaw. The material in the container must be agitated before dispensing.

Standard Packaging Sizes:

- 5-gallon plastic pails (40 pounds net each)
- 55-gallon steel drums (450 pounds net each)

Other Handling Information

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.

The material has been tested for the stability at 32 °F for a few days. However, when the outdoor temperature is below 32 °F during transportation, there is a chance of freezing. The frozen material must be immediately thawed to avoid permanent damage from freezing. 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



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liquid consistency. Storing frozen material 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 86 °F. Avoid direct sunlight.

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, CO₂ 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-due-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.

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 Sheets (SDS) for detail information on safety and handling of the materials. 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 applicable working place safety standard, we recommend,





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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 SDS for each component for the detailed health information.

For any questions, please contact Northstar Polymers.

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