Northstar Polymers (Div. of Tandem Products, Inc.)
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MPP-A70B

Technical Data Sheet

MPP-A70B is a room-temperature curable polyurethane casting resin system formulated to meet typical requirements for concrete-mold making and many other general applications. The mixing ratio is set to be 1:1 by volume for simple metering. Low viscosity values of the component materials help to recreate the fine mold surface resolution. The long pot-life and gradual curing pattern provide more working-time/ open-time for a manual mixing/casting operation. The stiff, but flexible consistency allows holding a heavy load of concrete and other casting material in molds without deforming too much. Its good tensile strength and tear strength helps the longevity of the molds made of this material.

Designations

System Name:	MPP-A70B
Part-A Component:	MPC-022 (Prepolymer)
Part-B Component:	PPB-020 (Curative)

Mixing Ratio

100: 100 = Part-A: Part-B by Volume
(100: 90 by weight)

Processing Temperature

Part-A:	72 – 86 ˚F
Part-B:	Ambient (72 – 82 ˚F)
Mold:	Ambient (72 – 82 ˚F)

Curing Pattern:

Pot-Life:	13 - 14 minutes at room temperature
Demolding Time:	4 to 6 hours at Ambient Temp (72 – 82 ˚F)

(Tested with 200 grams batch at ½" thickness.)

Note: The material continues to cure at room temperature for the next 3 to 5 days to reach the final physical properties.

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The component materials are moisture sensitive. The headspace in the containers must be purged with dry nitrogen gas (or argon gas) and stored in an air tight container to store. The component materials should be stored in the temperature range 72 – 86 ˚F all time. The shelf life of these component materials are 6 months under the good storage conditions.

Physical Properties (Typical Values)

Hardness (Shore Durometer)	70A (+,-5)
Tensile Strength	1415 psi
Elongation	398 %
Die-C Tear	277 pli
Split Tear	60.0 pli

Component Properties (Typical Values)

	Prepolymer (Part-A)	Curing Agent (Part-B)
Code Number:	MPC-022	PPB-020
Specific Gravity:	1.141	1.028
Equivalent Weight:	221	203
%NCO	19.0 %	n/a
Viscosity (@72F)	600 - 800 cps	1000 - 1200 cps

When you are handling these component materials, please operate in a wide area with good air circulation or well-ventilated area. Please wear rubber gloves, long sleeves, and protective eyewear (paint goggle etc.) to avoid skin/eye contact of the materials. Please read the enclosed documents for the details on safety, handling, storage, and processing information.

The material temperature increases as the mixed component cures in the mold. At a certain point, the curing material will become too hot to touch with a bear hand. Please use a thick glove to prevent accidental skin burn with a hot material. Please see the above temperature curve chart for the temperature increase pattern. A larger batch size increases the heat. A higher heat also causes the cured resin to shrink with a larger shrinkage rate.

Packaging Sizes:

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

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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.

Store the containers a dry indoor storage within the temperature range between 72 and 86 °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 CO2 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 materials 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.

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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 65 and 90 °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 for a long period of time. Agitation of the part-B content before dispensing may be required if stored for a long time. Separation can be seen in a higher degree when the material is stored in cold temperature.

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 the component materials, 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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