



Northstar Polymers (Div. of Tandem Products, Inc.)
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MPP-A60A

Technical Data Sheet

MPP-A60A is room temperature curable polyurethane casting resin system formulated to meet typical requirements for electronic component potting applications. Low viscosity values of the component materials help encapsulating intricate and fine patterns of the circuit board to protect the component parts. The long pot-life and gradual curing pattern gives more working-time/ open-time for a manual mixing/casting operation. Relatively low exothermic heat prevents damaging heat-sensitive parts. The cured piece has very low electroconductivity, which works well as an insulator.

Designations

System Name: MPP-A60A
Part-A Component: MPN-023 (Prepolymer)
Part-B Component: PBA-055 (Curative)

Mixing Ratio

100: 238 = Part-A: Part-B by Weight
100: 267 = Part-A: Part-B by Volume

Processing Temperature

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

Curing Pattern:

Pot-Life: 13 – 15 minutes at room temperature
Demolding Time: 6 to 8 hours at Ambient Temp (72 – 82 °F)

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





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Physical Properties (Typical Values)

| <u>Physical/Mechanical Properties</u> | <u>Typical Value</u> |
|---------------------------------------|------------------------------------|
| Durometer Hardness | A 60 |
| Tensile Strength | 366 psi |
| Ultimate Elongation | 157 % |
| Tear Resistance: Die C | 118 pli |
| Tear Resistance: Split | 14 pli |
| Bashore Rebound | 40 % |
| Natural Color of Solid | Opaque, Off white with yellow tint |

Component Properties (Typical Values)

| | <u>Prepolymer (Part-A)</u> | <u>Curing Agent (Part-B)</u> |
|--------------------|----------------------------|------------------------------|
| Code Number: | MPN-023 | PBA-055 |
| Specific Gravity: | 1.173 | 1.047 |
| Equivalent Weight: | 226 | 546 |
| %NCO | 18.6 % | n/a |
| Viscosity (@77F) | 500 - 950 cps | 1000 cps |

Part-A component (MPN-023) is an isocyanate component. The headspace in the container must be purged with dry nitrogen gas (or argon gas) and stored in an airtight container to store.

MPN-023 must be stored indoor with the temperature range 72 – 86 °F. We recommend wrapping the containers with blankets or other insulation materials.

Part-A component (MPN-023) is cold-temperature sensitive. If it is kept in a cold storage for a long time, irreversible crystal is formed and ruin the material. Especially, if the material is frozen, the crystal formation rate is very fast. If it is exposed to lower temperature during transportation in cold seasons, MPN-023 can freeze. If it is frozen, it must be thawed immediately after receipt by heating the material to 140 – 160 °F. Otherwise, the material may be ruined permanently.

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.





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The shelf life of these component materials are 6 months stored in the original unopened containers under the good storage conditions.

Packaging Sizes:

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

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 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 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.

The prepolymer used for this formulation contains different isocyanate isomers with different freezing points. When the product is shipped in cold season, the isocyanate isomers and extended prepolymer may separate into layers in the container. During the cold season, the container must be heated to about 150 °F and agitated to ensure homogeneous blend before use. The material should stay as viscous liquid at room temperature. To avoid separation during the storage, store it in between 77 °F and 90 °F storage temperature range.

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.





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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.

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. 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





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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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