



Northstar Polymers (Div. of Tandem Products, Inc.)
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MPP-D65A

Durometer 65D “Easy Process” Room-Temperature-Curable System

MPP-D65A is a polyether base 2-component polyurethane resin casting system for molding and potting applications. It has a long pot-life and gradual curing pattern to provide easier handling for molding 65D hardness urethane material which is stiff but has some flexibility to resist cracking. Typical applications may be molding prototype parts, short run of specialty parts, and other custom parts as well as potting electric components. Because of its relatively long pot life and slow/gradual curing pattern, it allows an easier process to make larger parts comparing to more commonly available faster curing room-temperature casting systems by manual mixing/casting process.

Mixing ratio

Components	Part-A	Part-B
	MNB-013	PPA-017
Mixing ratio by volume	1.00	: 1.50
Mixing ratio by weight	1.00	: 1.25

Processing Temperature

Component materials: Ambient (72 - 77 °F)

Mold Temperature: Ambient (72 – 120 °F)*

*If the mold is made of steel, aluminum, natural stone, or other heat absorbing material, it may need to be heated to about 100 – 120 °F.

Post Cure:

When molding parts thicker than ¼”, elevated temperature post-curing may not be required. For thinner parts, post-curing at 180 °F for 2 to 4 hours may be required. The parts should be post cured the material is in the mold for one hour. The material may be demolded at that time.

Note: Part-B component PPA-017 has white solid powder material, which may settle at the bottom of the container. Please gently stir the content of part-B to re-blend the while powder before dispensing the material out of the container to ensure homogenous blend of the component.





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Processing Conditions

Pot-Life: 10 - 13 minutes
 Demolding time: 1 hour (for parts ¼” or thicker)
 * Demolding time is shorter for thicker parts and higher mold temperature up to 180 °F.

NOTE: Typically the molded part continues to harden for 3 to 5 days at room temperature. We believe this is because the polymer molecules take some time to settle in to the equilibrium state. Evaluation tests should be conducted at least 3 days after the date parts are made.

Typical Physical Properties of Cured Material

Shore Durometer Hardness: 70 – 60D (10 second measurement point 60 – 65D)
 Tensile Strength: 1250 psi
 Ultimate Elongation: 34%
 Die-C Tear Resistance: 388 pli
 Bashore Rebound: 25%

Component Properties

Prepolymer	MNB-013
General Name	Isocyanate Prepolymer
Specific Gravity	1.235
Viscosity at 77 °F	100 - 400 cps
% NCO	31.4
Amine Equivalents	134
Appearance at 77 °F	Dark Amber Liquid

Curative	PPA-017
General Name	Curative (Polyols)
Specific Gravity	1.029
Viscosity at 77 °F	300 – 900 cps
Equivalent Weight	171
Appearance at 77 °F	Cloudy White Liquid

Package Information

The components of this polyurethane system are sold in 5-gallon plastic pails or 55-gallon steel drums. Typical 5-gallon pail contains 40 pounds of either component material. 500 pounds of part-A is packaged in a 55-gallon drum. 450 pounds of part-B is packaged in a 55-gallon 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



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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 °F 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) 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 a higher 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-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 65 and 90 °F. Avoid direct sunlight.

Note: Moisture contamination of part-B material can be reversed by heating material to 160 - 180 °F and vacuuming it at about 29" Hg negative pressure for several hours.

Some part-B materials contain chemical constituents that can separate during the storage. Agitation of the part-B content before dispensing is required each time you take material out of the container. Separation can be seen in a higher degree when the material is stored in cold temperature. If you see crystal particles floating in the material, please heat the material to about 80 °F; it should dissolve the crystal into the material.





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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 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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5/15//2019

