Northstar Polymers (Div. of Tandem Products, Inc.)
3444 Dight Avenue South, Minneapolis, MN 55406 USA
Tel: (612)721-2911, Email: info@northstarpolymers.com

MGB-A90A

Prepolymer (Part-A): MGA-048 Curative (Part-B): BNA-005

MGB-A90A is a high-performance full polyether polyurethane casting resin system. MGB-A90A is formulated for demanding environments including many industrial applications. Urethane elastomer parts molded with this exhibit an excellent slide-abrasion resistance, high rebound, and excellent water resistance. This combination of features makes elastomers molded from MGA-A90A perfect for many applications including bulk-handling parts for grain, sand, gravel, and many other custom applications.

Physical/Mechanical Properties	ASTM#	Typical Value
Durometer Hardness	D 2240	A 90
Tensile Strength	D 412	3610 psi
Ultimate Elongation	D 412	840 %
Tear Resistance: Die C	D 624	560 pli
Tear Resistance: Split	D 624	134 pli
Taber Abrasion	D 4060	35 mg loss
Bashore Rebound	D 4060	62%

Prepolymer	MGA-048
Specific Gravity	1.088
Viscosity at 180 ºF	900 cps
% NCO	8.7
Amine Equivalents	480
Appearance at 77 ºF	Pale Yellow Liquid to waxy solid

Curative	BNA-005
Specific Gravity	1.017
Viscosity at 77 ºF	< 150 cps
Equivalent Weight	45
OH Value	1247
Appearance at 77 ºF	White waxy solid

Processing Conditions

Prepolymer Temperature	180-200 ºF
Curative Temperature	72 ºF
Mold Temperature	180 - 200 ºF
Post Cure Temperature	180 – 200 °F

Cure Pattern at the Above Conditions

Pot-Life (part-A @160 °F)	2-1/2 to 3 minutes
Gel Time	4 – 9 minutes
De-molding Time	35 – 45 minutes
Post Cure @180 °F	16 – 20 hours

Recommended Release Agent

100% solid silicone mold release (non water base)

Ratio Calculation

	Prepolymer (A)	Curative (B)
Product Code	MGA-048	BNA-005
Stoichiometry	NCO =100	OH = 95
Weight Ratio	**1.000**	**0.089**
Volume Ratio	**1.000**	**0.094**
Gear Ratio	**96**	**9**

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Standard Packages:

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

During the cold seasons, there is a chance of this material 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 150 °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.

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 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

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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. 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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