



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

## MSN-V40A

Polyester Base Polyurethane Gel  
 For Oil Resistant Soft Parts

MSN-V40A is made of “polar” materials, which have excellent oil resistant property. Parts made of MSN-V40A exhibits good oil resistant property at a Shore Durometer OO hardness range. As many of polyurethane gel materials are made of polyether raw materials, which are more “non-polar” materials, the material tends to degrade quickly from contacts with oily substance. This combination of material property can be utilized to make gaskets, seals, and other soft parts used in oily environments.

At this hardness, parts made of MSN-V40A also exhibit better vibration dampening property comparing to the polyether based urethane materials of the similar hardness range. Addition of powder filler also would increase the load-bearing property without reducing vibration/impact dampening property.

Processing this material requires elevated temperature process and constant agitation of part-B component. This material contains plasticizer. This material is expected to undergo hydrolysis in wet/aqueous environment to degrade quickly. We recommend polyether based materials of similar properties for making parts used in aqueous environments. Comparing to polyether based materials MSN-V40A turns stiffer in low temperature conditions.

### Processing Information:

#### Components:

Part-A:	MSA-018
Part-B:	SBX-146

#### Typical Processing Parameters:

##### Temperatures

Part-A:	Ambient
Part-B:	160 – 170 °F
Mold:	180 °F

Pot-life:	7 - 9 minutes
Demolding Time:	1-1/2 hours at 180 °F mold temperature
Complete Cure:	8 – 16 hours at 160 -180 °F post cure

\*Shore OO 40 hardness in 24 hours after cooled

Mixing Ratio: 1: 8.363 by weight (1: 8.852 by volume)

This material can be made slightly softer if you increase part-B ratio (within 2 – 3% range). The mixing ratio (or stoichiometry ratio) affects the hardness of the product. Regular calibration of mixing ratio is recommended when it is used in meter-mixing/dispensing equipment.





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

Part-B contains a solid material (molecular sieves or moisture scavenger) to prevent bubbles during the gel-time. This material may settle at the bottom of the container during the storage. Agitate part-B before dispensing to keep this material suspended. The material must be thoroughly degassed before processed in a meter dispensing machine.

### The Components Data

#### Part-A

Product Code:	MSA-018
Description:	Isocyanate terminated prepolymer extended with polyester polyol
%NCO:	23% (+/- 0.6%)
Amine Equivalent	183 (+, - 0.5% measurement deviation )
Specific Gravity:	1.204
Physical State at 25 °C ( 77 °F):	Liquid
Viscosity at 25 °C (77 °F):	400 – 1000 cps
Storage:	Store in a dry indoor storage at room temperature. The material is highly sensitive to moisture. The head space must be purged with dry nitrogen or argon gas all time. MSA-018 is also sensitive to cold temperature. Store indoor storage within the temperature range between 72 °F and 100 °F. The ideal storage temperature is 100 °F. During the cold seasons, MSA-018 may freeze during transportation. The material must be thawed immediately after receipt by heating in an oven temperature 180 – 200 °F range until the content is smooth liquid, and then stored at 72 °F – 100 °F range.

#### Part-B

Product Code:	SBX-146
Description:	Curing agent based on a blend of polyols and additives
OH number:	36.5 – 40.0
Equivalent Weight:	1455 (+, - 7% measurement deviation)
Specific Gravity:	1.1378
Physical State at 25 °C ( 77 °F):	Amber to brown color waxy solid or Paste
Viscosity at 71 °C (160 °F):	800 – 1400 cps
Agitation Requirement	The white solid material separates and settles to the bottom. Agitation is recommended if stored in a retaining tank for dispensing equipment.
Storage:	Store in a dry indoor storage at room temperature. The material is hygroscopic. For long term storage, inject dry nitrogen gas or -40° dew-point dry air into the container to blanket the material.

Standard Package: 5 gallon plastic pails, 55-gallon steel drums



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

Other Safty/Storage/Handling Information:

Part-A component (prepolymer) contains isocyanate component, which is very much 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 a can and dispensing the content, nitrogen gas or negative-40-degree-due-point dry air needs to be injected to the can to blanket the material. Silica gel or calcium chloride desiccant filter should be installed to 55 gallon drum-vent for your drum feeding system. The storage temperature should be at a room temperature between 72 and 87 °F.

Part-A component freezes just below room temperature. The material may be frozen when you receive in colder seasons, and it must be thawed immediately. If the material is left frozen for an extended period of time, a side reaction undergoes and the material will be ruined. The material temperature needs to reach 140 °F to be thawed. Please consult the instructions provided by Northstar Polymers for details. Materials damaged from cold temperature will not be subject to a refund, credit, or no-charge replacement.

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 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 component is hygroscopic. If the material is exposed to ambient air, it may absorb moisture. Moisture contaminated part-B material may become source of degradation or excessive bubbles in the product. Avoid exposure of the material to air. Purging the empty space in the container with nitrogen gas or negative-40-degree-due-point dry air is also recommended to prevent moisture contamination of part-B as well; however most of the cases, keeping in an airtight container will be sufficient. Store it in a dry indoor storage at a room temperature between 65 and 85 °F. The moisture contamination of part-B material is reversible. By heating material to 160 - 180 °F and vacuuming it at about 29" Hg negative pressure for several hours will reduce the moisture level. The material also has gas infusion, and it should be thoroughly degassed before processing.





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

Safety/Handling:

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, we recommend, in addition to the above, installation of a proper ventilation system and/or using an appropriate type of respirator 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.

Tel: 612-721-2911.  
Fax: 612-721-1009  
Web Site: <http://www.northstarpolymers.com>  
E-Mail: [info@northstarpolymers.com](mailto:info@northstarpolymers.com)

**Notice:** All of the statements, recommendations, suggestions, and data concerning the subject material are based on our laboratory results, and although we believe the same to be reliable, we expressly do not represent, warrant, or guarantee the accuracy, completeness, or reliability of same, or the material or the results to be obtained from the use thereof, neither do we warrant that any such use, either alone or in combination with other materials, shall be free of the rightful claim of any third party by way of INFRINGEMENT or the like, and NORTHSTAR POLYMERS DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE.

