MPC-W44B

Lower Viscosity OOO Scale Gel

MPC-W44B is one of our polyurethane gel formulations specifically designed for padding and cushioning application that requires Shore Durometer OOO scale hardness. With this material, the user can obtain materials with good rebound characteristics and gradual compression deflection rates at the Shore OOO hardness range.

This material contains bio-based renewable raw material. The concentration of the renewable material can be above 40% by weight depending on the mixing ratio. This may be classified as bio-based material in some applications. The material does not contain any plasticizer, which is known to leach out to have adverse effects on the plastic film encapsulation materials used in conjunction with the polyurethane gel materials.

Like other polyurethane gel formulations, this material is made in such a way that the user can change the hardness and other physical properties of cured part simply by changing the mixing ratio of the given components. This allows users to make various products with just one combination of part-A and part-B components. The applications for this material include cushioning and padding parts for cushioning/padding application, fiber optic cable encapsulation, novelty products, and many more.

System Code:	MPC-W44B
Part-A:	MPC-026 (Isocyanate Prepolymer)
Part-B:	CPB-053 (Curative/ Polyol Blend)

Processing Conditions

Processing Temperature:

Part-A:	Room Temperature
Part-B:	Room Temperature
Mold:	Room Temperature

Curing Pattern (For Room Temperature Process)

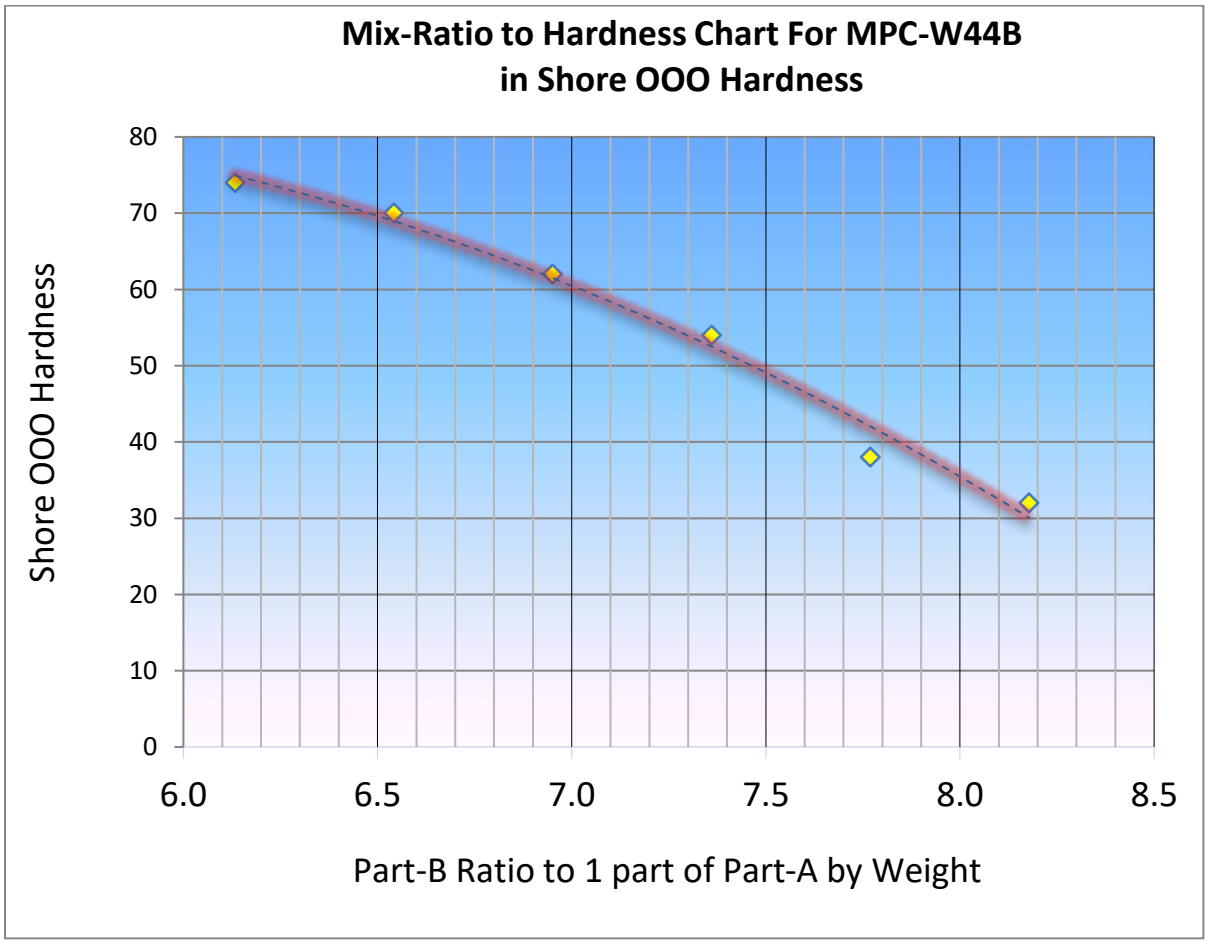
Pot life:	10 - 15 minutes at ambient temperature
Demolding:	3 - 6 hours at ambient temperature
Complete Cure:	3 - 5 days at ambient temperature

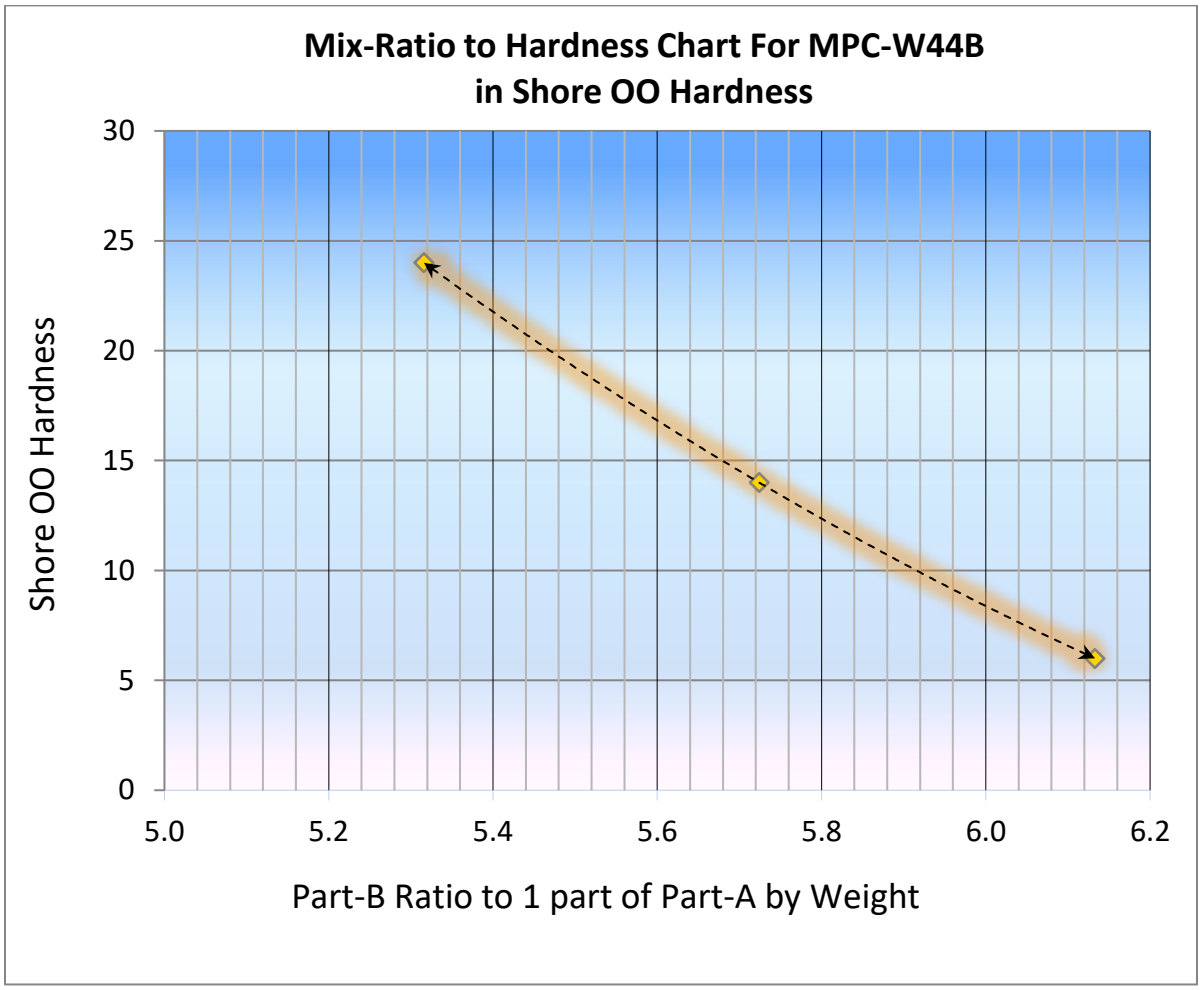
Note: This curing data is the processing parameters of 1:5.316 mixing ratio at room temperature. The curing rate may vary depending on the mixing ratio chosen for the process. The curing pattern can be modified by addition of a catalyst.

Mixing Ratios

This formulation is made in such way that the user can change the softness of the product by simply changing the mixing ratio of the components. The following is a guidance to determine the mixing ratio for the softness.

Stoichiometry NCO: OH	Weight Ratio Part-A: Part-B	Volume Ratio Part-A: Part-B	Hardness
1.00: 2.60	1.000: 5.316	1.000: 6.082	OO 24
1.00: 2.80	1.000: 5.724	1.000: 6.550	OO 14
1.00: 3.00	1.000: 6.133	1.000: 7.018	OO 6
1.00: 3.00	1.000: 6.133	1.000: 7.017	OOO 74-74
1.00: 3.20	1.000: 6.542	1.000: 7.485	OOO 70-70
1.00: 3.40	1.000: 6.951	1.000: 7.953	OOO 62 - 62
1.00: 3.60	1.000: 7.360	1.000: 8.421	OOO 54-54
1.00: 3.80	1.000: 7.769	1.000: 8.889	OOO 38-36
1.00: 4.00	1.000: 8.178	1.000: 9.357	OOO 34-31





Note: The above data is based on our lab tests, and it is reference only. The user must test the mixing ratio and yielding hardness for each application. The product hardness can be controlled more accurately by the stoichiometric ratios. However, in practice, you may use weight ratio or volume ratio for the parameter value to determine the target hardness unless you have a very narrow tolerance range for hardness. You may need to adjust your mixing ratio according to the actual hardness produced from different lots of components in order to obtain more accurately consistent results.

Recommendations

Mixing ratio setting for your dispensing equipment is critical to the hardness determination. We recommend the mixing ratio is calibrated by dispensing the two components from the line to two cups, and use weight ratio to check for accurate metering.

This material is often encapsulated in coated cloth materials, polyurethane films, or other resilient materials. The surface of gel product is very sticky, and the gel can be cut or torn easily in many applications. The encapsulation is essential for protection of the gel in some applications. Please contact us for more information on encapsulation method. For temporary handling, you may use talc powder to prevent it from sticking to the handlers or equipment.

Use of elevated temperature during the pouring process may cause shrinkage of this material. Shrinkage will be a critical issue if you are pouring this material directly on a flexible film. The shrinkage could cause significant wrinkling of the film or warping. If excessive wrinkle or warping occurs, the processing temperature may need to be lowered and/or processing rate to be slowed.

Typical Properties of Components:

Part-A

Product Code:	MPC-026
Description:	Isocyanate terminated prepolymer extended with polyether polyol
%NCO:	16.0 % +, - 0.5%
Equivalent Weight	263
Specific Gravity:	1.137
Physical State at 25 °C (77 °F):	Liquid (dark amber to brown color)
Viscosity at 21 °C (70 °F):	5,200 cps
Storage:	Store in an airtight container in a dry indoor storage area at room temperature. The material is highly sensitive to moisture. After using the content, immediately inject dry nitrogen gas or argon gas into the container to purge and blanket the top space before storing. Avoid high humidity areas. The recommended storage temperature is 72 – 86 °F.

Part-A component has some amount of sediment at the bottom of the container. Agitate the content of part-A container before dispensing to blend this sediment. Otherwise, the cured material will make a much softer product. The color of part-A after agitation will be opaque dark amber to gold color.

Blending the sediment will increase the viscosity of MPC-026. Alternatively, you can let it settle at the bottom and use what is above the sediment. You can determine the mixing ratio based on the part-A component without using the sediment part. To ensure consistent products, you can either agitate the part-A constantly or not agitate at all.

Part-B

Product Code:	CPB-053
Description:	Curing agent based on a blend of polyether polyols. castor oil, and additives
Equivalent Weight:	531
Specific Gravity:	1.0046
Physical State at 25 °C (77 °F):	Liquid (clear with yellow tint)
Viscosity at 22 °C (72 °F)	930 cps
Storage:	Store in an airtight container in a dry indoor storage area between 72 F and 86 F degrees range. The material is hygroscopic, and absorption of excess moisture can cause issues when processed. Avoid high humidity areas. Purging the headspace in the container with dry nitrogen gas or argon gas is highly recommended.

Constituents of Part-B component may be separate into layers during storage. It is recommended that the content of part-B container should be agitated to ensure the homogeneous blend of all constituents before dispensing.

Handling Information:

Safety:

The component materials are industrial-grade chemicals. Please keep them in a secure storage 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 the safety and handling of the materials. The SDS for each component is sent with the material shipment.

When you are using this material, please 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 dynamic ventilation system and/or using a proper respirator to prevent inhalation of the fume.

Direct contact of polyurethane raw materials to skin/eye, as well as ingestion may lead to various 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. Please refer to the Material Safety Data Sheet for each component for the detailed health information.

Storage:

Part-A component (prepolymer) contains isocyanate component, which is very much sensitive to moisture. If it is left in air, part-A component 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 argon gas needs to be injected to the container to blanket the material. Silica gel or calcium chloride desiccant filter should be installed to 55 gallon drum-vent for your drum dispensing system. The storage temperature should be at a room temperature between 72 and 100 °F.

Part-B component may be 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 top 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. The storage temperature should be at a room temperature between 65 and 95 °F. Store the containers in a dry indoor space. The constituents in part-B may separate into layers during a long storage period or if exposed to cold temperature. Agitation of content before dispensing is recommended after a long storage period or receiving the product in a cold season.

For any questions, please contact Northstar Polymers.

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