Tecnate TMN 2529

Tecnate TMN 2529 prepolymer for molding components in the 85 Shore A hardness range when cured with 1,4-butane diol. Elastomers made from Technate TMN 2529 have excellent low temperature properties, high abrasion resistance, outstanding hydrolytic stability and high resilience. Technate TMN 2529 is a MDI-terminated prepolymer based on a polyether polyol. The material can be cured with a variety of materials to yield various hardnesses.

*Values given are not intended to be used in specific preparation

Component Properties	
Color - ISO	clear
Viscosity - ASTM-D-2196 - 180°F, ISO	2400
Viscosity - ASTM-D-2196 - 200°F, ISO	800 cps
% NCO - ISO	6.3
Reactivity Profile	
Pot Life - 100g	2 Minutes
Typical Physical Properties	
Hardness - ASTM D2240 - A-cured with 1,4 BDO	85 Shore A
Tear Strength - ASTM D624, Die C - Cured with 1,4 BDO	424 pli
Tensile Modulus - ASTM D412 - 100%, Cured with 1,4 BDO	754 psi
Tensile Modulus - ASTM D412 - 200%, Cured with 1,4 BDO	1258 psi
Tensile Modulus - ASTM D412 - 300%, Cured with 1,4 BDO	1990 psi
Tensile Strength - ASTM D412 - Cured with 1,4 BDO	2000 psi
Elongation - ASTM D412 - Cured with 1,4 BDO	305 %

RECOMMENDED HANDLING INSTRUCTIONS

Isotec® International's Recommended Application and Handling Instructions
-Use only in well-ventilated areas.
-Wear chemically resistant rubber gloves, safety glasses, and an apron.
-Avoid prolonged or repeated contact with skin.
-In case of skin contact, wipe affected area with isopropyl alcohol, followed by soap and water.
-In case of eye contact, flush eyes with water for 15 minutes and consult a physician.
-If swallowed or comes into contact with eyes, seek medical attention immediately.

Devices such as melting ovens, thermostatically controlled warming blankets, or drum heaters can be used for melting Isotec ®'s TecNate hot cast prepolymers. Approximate meltdown times at 70°C (158°F) are:

5 gallon pail ..... 16 Hours
55 gallon drum ..... 24-36 Hours

All hot cast elastomers require special attention to the ratio that the prepolymer and curative are mixed at. Hardness and physical properties will be affected by working with a ratio outside the suggested ratio on the technical datasheet of any Isotec ® hot cast elastomer.

The temperature at which the curing reaction takes place has an important effect on the final hardness and physical properties of hot cast products. The curing reaction begins the moment the curative is mixed with the prepolymer, and

continues throughout the fluid stage and beyond the point of solidification until the urethane is completely cured. The reaction between prepolymers and curatives are exothermic. The temperature of the prepolymer-curative blended material in a mass quantity rises about 30°C when the reaction is carried out at recommended processing temperatures and in an insulated container. This represents the maximum temperature rise for the largest castings, since very little heat can escape. The actual temperature reached is influenced by several factors:

1. Temperature of prepolymer and curing agent.
2. The mold material and configuration.
3. The mold temperature and oven temperature.

The size of the casting also has an effect since small castings can lose heat to their surroundings more easily than large ones. The effect of mold and curing temperature on the hardness can be significant. When hardness of the elastomer is critical, we recommend that close attention be paid to mold and curing temperature recommendations and the actual mold and curing temperatures that you are processing the hot cast elastomer under.

Isotec ® International's Recommended Hand and Machine Casting Instructions
Wear proper personal protective equipment for handling material.
Ensure that the mold has been mold released; we recommend IsoKote 1000 for use on aluminum or any other metal mold. Preheat mold, prepolymer, and curative to recommended temperatures. Calculate the amount of curative needed to react with the prepolymer by using the following equation:

Mass of curative equals

[(actual %NCO)(EW of curative)(actual mass of prepolymer)(stochiometry/100)] ÷ 4200

Weigh out the correct amount of curative needed. Ensure that the prepolymer and curative are homogenous by pre-blending each side. The prepolymer and curative should be de-gassed in a vacuum at 27+ in. Hg to remove any entrapped air that might still be present. Mixing tools should be clean and dry. Tools made from wood are not considered a good mixing tool as wood absorbs water and could cause casted materials to be foamy. When hand mixing, mix in a way that would cause minimum air entrapment, such as zig-zag or figure-eight patterns. Scrape the side of the mixing vessel and remix to ensure a homogenous mixture. When mixing is complete, swirl lines will not be visible (swirl lines indicate a bad mix).

When mixing using a power tool (such as a jiffy mixer) for large scale batches, keep the tool completely immersed in the material. Adjust the speed of mix to minimize entrapping air into the material. The sides of the mixing vessel should still be scraped when using a power tool to mix the material.
Time permitting, hand casted materials should be de-gassed in a vacuum at 27+ in. Hg after mixing to remove air bubbles created. Material that has not been de-gassed will cause air bubbles to appear within the casted elastomer. De-gassing the mixed material will help to achieve optimal casting results.

Machine Casting
The prepolymer and curative material should be heated up to the recommended temperatures and pre-mixed to ensure homogeneity. The prepolymer and curative should also still be de-grassed in a vacuum at 27+ in. Hg prior to casting. As machine casting operates by blending two materials together based on a volume ratio, it is recommended that the machine be checked and monitored to ensure the material is dispensing at the correct ratio. This can be done by filling transparent, plastic beakers and monitoring the amount that fills the beaker to a pre-marked volume at an allotted time. For example, if the volume ratio is 10 parts of prepolymer to 1 part of curative: the prepolymer would fill a plastic beaker to the 100mL pre-marked line and the curative would fill a plastic beaker to the 10mL pre-marked line in the same amount of time.

Pouring Casted Material into the Mold
Pour the mixed material in one continuous stream in one spot of the mold. It is recommended that the mold be angled so the material can fill the mold similar to the flow of lava. Any exposed air bubbles can be popped by using a gas flame.

The gas flame should be constantly moved across the cast to prevent damage to the material. When the material has reached its gel point the mold can be moved. The mold should be place in an oven heated to the recommended initial curing temperature.

Demolding
The reaction continues when the hot cast elastomer has been poured into the mold. When the material has acquired enough strength, the elastomer can be demolded. Refer to the recommended initial cure and demold times. Once the hot cast elastomer has been demolded after its initial cure, place the hot cast elastomer in an oven that has been heated to the temperature recommended for post curing.

Post Curing
Post curing hot cast elastomers is a vital step in achieving optimal physical properties. Refer to the temperature and time period that is suggested form post curing. Post curing at temperatures below and above the recommended temperatures will affect the final hardness and physical properties of the casted hot cast elastomer.

Full physical properties develop overtime typically between 7-14 days of curing at 70-74°F and 50% humidity conditions. The hot casted elastomer will slowly react with the moisture in the air during this 7-14 day period to complete the formation of strong bonds within the hot casted elastomer. Hot cast elastomers that are placed in colder conditions will take longer to reach their full physical properties.

STORAGE

Protect from moisture. If the Prepolymer material is exposed to moisture, including moisture from the air, it will release CO^2 gas. If placed in a sealed container, this gas can cause a dangerous buildup of pressure potentially resulting in injury or death.

When the prepolymer is not in use, it is recommended that the material not be stored at high temperatures as this causes increases in viscosity and decreases in the NCO percentage. The prepolymer should not be stored in temperatures greater than 100°F. During use the prepolymer should not be kept at temperatures higher than 150°F for more than a couple days, if the prepolymer will not be used in its entirety.

SAFETY

-Refer to the product SDS for all relevant safety information.

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