

Applications for Polyurethane Gel Elastomers

Northstar Polymers is specialized in formulating polyurethane casting resin systems. We are also one of the most innovative producers of the raw materials for polyurethane gel elastomer class formulations.

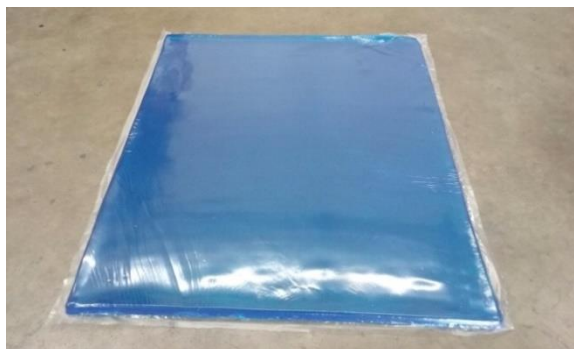
Our polyurethane gel class products are formulated for specific types of applications. We carry different formulations to meet physical requirements, processing requirements, appearance, and other requirements for various applications.

Polyurethane gel elastomers are used in such applications herein:



Cushioning Pads:

Flexible film (such as TPU film) is fabricated into bags or pouches, and then polyurethane gel resin is injected and cured in a frame at room temperature to make cushioning pads. Also the film can be formed to make cavities by the vacuum forming method to make various shapes other than flat pad shape. For this application, the material must cure very slowly to avoid any shrinkage from curing. [MPP-V37A](#) is



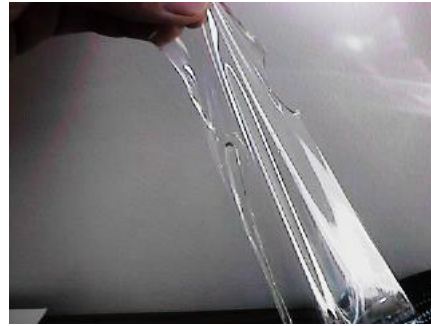
recommended for Shore OO range hardness. [MPC-W44A](#) is recommended for Shore OOO range hardness. If the gel cushion parts are covered after the gel is molded, [SAI-1](#) will be recommended. These gel cushions are used for surgical bed pads, automotive/motorcycle seating pads, shoe insoles and other foot-care products, bathtub pillows, computer/keyboard wrist rests, and other custom cushioning applications. Our plasticized gel series: includes [MGP-V20A](#), [MGP-V05A](#), and [MGP-W50A](#) can make cushioning pads without film encapsulation.

Sticky Films and Pads (Pressure Sensitive Adhesives or PSA):

Polyurethane gel elastomer is used in sticky pads in various consumer products such as cell phone holders, lint removers, non-invasive wall tacks, muting pads for musical instruments, and multi-purpose temporary adhesive tape products. The surfaces of many



polyurethane gel elastomer products are intrinsically sticky. Even after the surface is contaminated with dust, oil, and debris, washing the surface with soap and water makes the stickiness back to the original stickiness. [GK-7](#) is made to yield the necessary strength to make thin sticky film products and easier processing parameters to service these applications.



Specialty Gaskets:

The softness and stickiness of polyurethane gel elastomer products are ideal for some specialty gasket parts. The viscoelastic character of certain formulations is also advantage for sealing properties. [GK-7](#) provides the strength and surface sealing property for this type application. For oil-resistant gasket parts, we recommend polyester-based formulations such as [MSN-V40A](#). For very soft air filter gaskets and coax cable sealer, [MGP-W35A](#), [MGP-W50A](#), [MGP-V20A](#), or [MGP-V05A](#) may be used. We custom-formulate for specific applications. Sealing applications that may utilize polyurethane gel elastomers include specialty air-filter gaskets, coax cable splice protector, spill run-off prevention dikes, as well as specialty gaskets for antennas, sensors, and lights.

Medical Modeling

The very soft range polyurethane gel elastomers are also used in medical modeling products. Many of our polyurethane gel formulations are made in such a way that the processor can change the softness by simply changing the mixing ratio between the given part-A/B components for the formula. This allows makers of medical models to dial-in the consistency of the molded part easily to create intricate feels in the medical models. The materials may be used in medical modeling includes [MGP-V05A](#), [MGP-W50A](#), [MGP-W35A](#), [MPC-W44A](#), [MSN-V40A](#), and [MCG-1](#).



TPE Alternative for Prototyping and Short Runs

TPE (or Thermoplastic Elastomer) is a class of soft/flexible polymeric materials used in injection molding process for many consumer goods. It is a very strong elastomeric material that can be used to produce molded parts in large quantities. However, the tooling for making TPE parts is expensive, and the minimum order quantities are often large. Sometimes, using TPE is not feasible to make small-quantity of specialty products. Prototyping such a product may also be done easier with liquid ambient processed materials such as polyurethane casting resins.



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[MGP-V05A](#), [MGP-W50A](#), [MPC-W44A](#), [MSN-V40A](#), and **NTG-9** may be used for these applications.

Re-enterable Potting Compound

Polyurethane casting resins are used to encapsulate electric circuits for the protection from physical damages on the circuits. In most of the cases, the cured potting resin covering circuit board does not have to be removed. However, in some special cases the circuit board needs to be accessed after the potting resin is cured. Polyurethane gel elastomer can be made very friable so that it is easy to remove when re-entering is required. [SAI-1](#) and [TFG-5](#) may be used in such an application.

Puncture Mitigating Tire Coating For Automotive Tires:

Inside surfaces of automotive tires can be lined with a layer of very soft polyurethane gel to make puncture-free tires. When a sharp object penetrates from the outside, the air pressure inside tire pushes the gel layer into the space between the sharp object and damaged tire preventing the air from escaping to avoid having a flat-tire for some period of time until the formal repair takes place. [SAI-1](#) has been used in this application.

Tire Filler to Make Puncture-Free Tires For Slow Moving Vehicles:

For slow moving tires such as those for wheel barrows, bicycles, and lawnmowers, the entire space inside the tires can be filled with polyurethane gel to make a solid, puncture-free tire. [TFG-5](#) is specially formulated for these applications. (Note: Northstar Polymers does not provide tire filling equipment.)

Gel-Incorporated Bed Mattress and Pillows:

Small pieces of polyurethane gel are incorporated into viscoelastic foam to make beddings. This provides "cool" feeling. [SAI-1](#) may be used for these type products.

Please feel free to contact Northstar Polymers for more information.

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