

Medical Ideas



Custom Two-Color Silicone Overmolding Of Surgical Instruments Provide Easy Product Differentiation



Two-Color Silicone overmolded instruments differentiate handles.

Medical instrument designers have a new option available to them with Minnesota Rubber and Plastics two-color overmolding service.

Designed to make the medical instrument stand out, two-color silicone overmolded instruments are more easily identified in the medical use setting. This is especially true when different instruments are grouped together during a procedure and when placed in a sterilization tray.

Color combinations can be custom designed to follow a customer's corporate identification colors or coordinated with families of instruments, sterilization trays, storage and other handling devices.

Depending on colors selected, the two-color overmolded part may be further identified with laser marking

and pad printing. The color designs and added markings are governed to some extent by the parameters of the overmolded instrument design. Nevertheless, the new two-color process gives the medical designer important new options.

Enhanced Bonding

Minnesota Rubber and Plastics' quality systems ensure the two-color silicone overmolding process has been tested successfully.

Utilizing the company's proprietary processes, the silicone bond itself has been improved for both single and two-color applications. This has been verified through extensive autoclave sterilization cycle testing by Minnesota Rubber and Plastics and customers participating in the testing process.

Customer Proven

Minnesota Rubber and Plastics silicone overmolded medical products have been established in the medical industry for over 10 years. The company's capabilities include micro to macro molding of miniature to very large components. A full range of silicone material durometers, custom colorization, conductive and/or insulated silicone materials are available.

In addition to silicone overmolding, Minnesota Rubber and Plastics provides a full range of rubber and plastic molding services. We provide comprehensive design including: preliminary engineering assistance, design and materials engineering review, and research and development into a full range of high performance elastomers and plastics. We also provide rapid mold design and development, prototype services, process engineering, injection, compression, transfer and metal-to-plastics conversions.

Quality Systems

Minnesota Rubber and Plastics' corporate wide quality systems include: ISO 13485, ISO-TS 16949 and ISO 9000 in all facilities. We also operate under a corporate wide Environmental Management System registered to ISO 14001.

Contents

Custom Two-Color Silicone Overmolding Of Surgical Instruments Provide Easy Product Differentiation

Unique Seal Design Provides Bi-Directional Sealing And 360° Low Friction Swivel In IV Device

Liquid Silicone Rubber Instrument Trays Organize And Protect Medical Tools

Minnesota Rubber and Plastics Hosts The LifeScience Alley Chat Event

Unique Seal Design Provides Bi-Directional Sealing And 360° Low Friction Swivel In IV Device

Fluid delivery through IV devices for medicating animals can be a difficult procedure for veterinarians. A patented product called the Flex-coil® Swivel System makes the process easy, safe for the animal and less labor intensive for the veterinarian.

Key to the success of the Flex-coil Swivel System is a unique seal designed by Minnesota Rubber and Plastics. It provides bi-directional sealing to contain and control fluid passing through a center pin that turns freely within the seal. The assembly provides 360° swiveling motion of the hollow center pin for free movement of the animal during treatment.

“Coming up with the right seal was a real challenge,” reports William Donawick, DVM and president of International WIN, Ltd., inventor of the Flex-coil system. “We had to find a seal to solve leak conditions and one that also provided free 360° swiveling motion. It was that or discontinue the product.”

Double-Lip Seal Design

Using Solid Works 3D modeling software, the Minnesota Rubber and Plastics’ team created a seal design concept with double lips that had extreme side-loading resistance. International WIN in turn designed a protocol for testing these CAD designed parts, allowing Minnesota Rubber and Plastics to verify its theoretical seal designs. The design team used finite element analysis (FEA) throughout the development stages.

Material selection was critical. Drawing on its more than 50 years experience developing custom elastomers for difficult medical applications, the Minnesota Rubber and Plastics’ team settled on a specially formulated EPDM (Ethylene Propylene Diene Monomer) compound. This material is compatible with the wide range of fluids that can be selected for administration through the IV system.

Smaller Is Better

Size of the seal also was important.

Through various size iterations and testing, final dimensions arrived at were .346 OD, .140 ID and .145 (inch) thickness. Maintaining tolerances also was critical to product success. Minnesota Rubber and Plastics ensured repeatable quality with state-of-the-art molding, resulting in tolerances on the

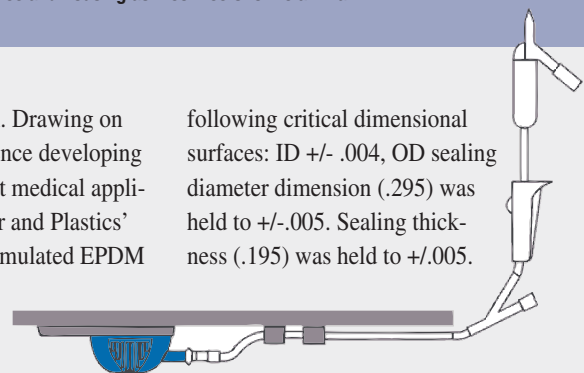
following critical dimensional surfaces: ID +/- .004, OD sealing diameter dimension (.295) was held to +/- .005. Sealing thickness (.195) was held to +/- .005.

Keeping the seal design as small as possible was cost saving and had functional benefits as well. The small seal allowed just the right capacity for correct fluid flow with no leakage. It also created less friction than a comparable larger design.

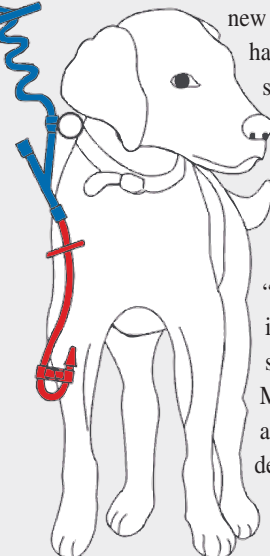
“The Flex-coil Swivel IV system with the new sealing assembly has been used successfully by veterinarians all over the world for nearly two years,” reports Dr. Donawick. “We really owe its success to the seal device the Minnesota Rubber and Plastics’ team designed for us.”



Patented swiveling seal device and housing as it connects to the animal.



Components that make up the Flex-coil® system molded by Minnesota Rubber and Plastics.



Liquid Silicone Rubber Instrument Trays Organize And Protect Medical Tools

Organizing and protecting medical instruments are major challenges in healthcare. Custom molded Liquid Silicone Rubber (LSR) instrument trays from Minnesota Rubber and Plastics organize and protect high value tools.

These LSR trays make storage and autoclaving simple with easy-to-recognize molded compartments. Tools fit tray contours, cushioning and protecting the devices from damage that may occur in ordinary trays and drawers.

Compact and Stackable

Seamless and glove friendly, these stackable LSR trays can be designed to hold families of different size tools. Individual tool compartments can be designed with risers and drainage holes for drying while also providing extra separation and protection for individual tools that are heavy or have sharp edges. The trays can also be molded in a variety of colors for product differentiation as they fit inside standardized or customized metal sterilization trays.

LSR Tool Tray Attributes

Molded of medical grade silicone, these trays are rated for 10,000 hours continuous exposure to steam autoclave processing. They promote safe, effective sterilization, and are durable yet highly versatile. The LSR material is non-reactive, stable and resistant to extreme environments and temperatures from -55°C to +225°C while maintaining its useful properties.

Precision Molded

Additional advantages of custom



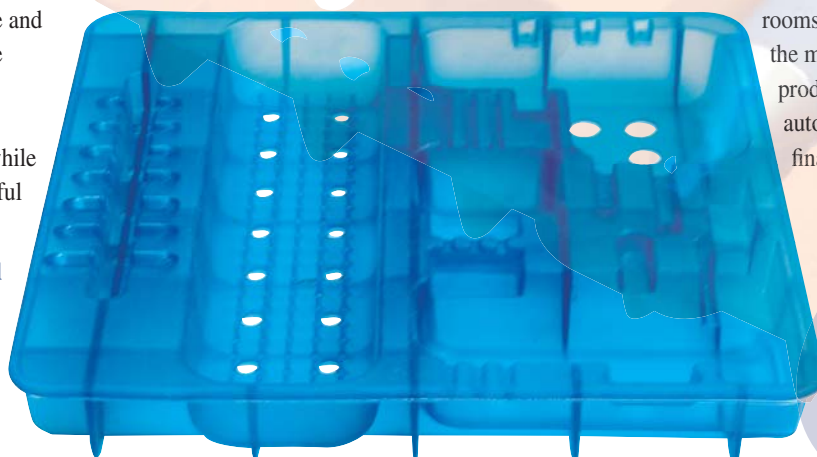
Autoclaving, tool protection and storage are simplified with LSR trays.

LSR trays from Minnesota Rubber and Plastics include a very clean molding process with no material pre-processing. Depending on tray complexity, components can be molded with minimal flash. LSR material has repeatable, short cycle times eliminating most secondary operations. Compared to other materials and processes, this means lower labor content due to reduced manufacturing steps.

Important Services Offered

Minnesota Rubber and Plastics provides assistance with design and materials engineering from a broad range of medical grade material options. In addition to LSR, other compounds are compliant with ISO 10993, USP Class VI, and FDA requirements.

Minnesota Rubber and Plastics manufactures a broad range of medical sealing devices, medical assemblies and products in Class 10,000 and Class 100,000 clean rooms. These capabilities include the manufacture of complete products involving complex automated assembly through final packaging.



Minnesota Rubber and Plastics Hosts The LifeScience Alley Chat Event

January 26th, 2012 – 4:30 to 8:00 PM
1100 Xenium Lane North, Mpls, MN

Here's a chance to network with your industry peers and get an inside perspective of Minnesota Rubber and Plastics' unique services to the medical industry. Tour our lab and see a variety of medical applications. View our CAD design capabilities and see how rubber is compounded and molded.

Alley Chats engage the life science community by sharing resources, discussing topics of mutual interest and improving the status of the industry. Minnesota Rubber and Plastics has sponsored these events previously at Medtronic and Greatbatch Medical.

Extremely popular, these Alley Chat events are well-attended. Register now at: www.lifesciencealley.org/alleychats



LifeScience Alley®

Minnesota Rubber and Plastics Trade Shows

Minneapolis, MN.....	Medical Design & Mfg.....	November 2-3	Stuttgart, Germany.....	MEDTEC Europe.....	March 13-14
Düsseldorf, Germany..	Compamed	November 16-17	Beijing, China	China MED.....	March 23-25
Minneapolis, MN.....	Life Science Alley	December 7	Lyon, France	MEDTEC France.....	April 4-5
San Jose, CA.....	BIOMEDevice.....	December 6-7	Philadelphia, PA	Medical Design & Mfg.....	May 22-24
Anaheim, CA.....	Medical Design & Mfg.....	February 14-16	Chicago, IL.....	Design & Medical Design.....	June 19-21

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See Us At The Medical Design & Manufacturing Show

Booth 1060 November 2-3

Join Minnesota Rubber and Plastics at the medical industry's most comprehensive resource for every aspect of medical device development. Meet Minnesota Rubber and Plastic experts. Discuss your product development needs. Hear how we can help with your future product expectations.

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