

Biomaterials  
Product Guide

# Implant line



# Medical implants

## COMMITMENT TO CARE AND INNOVATION

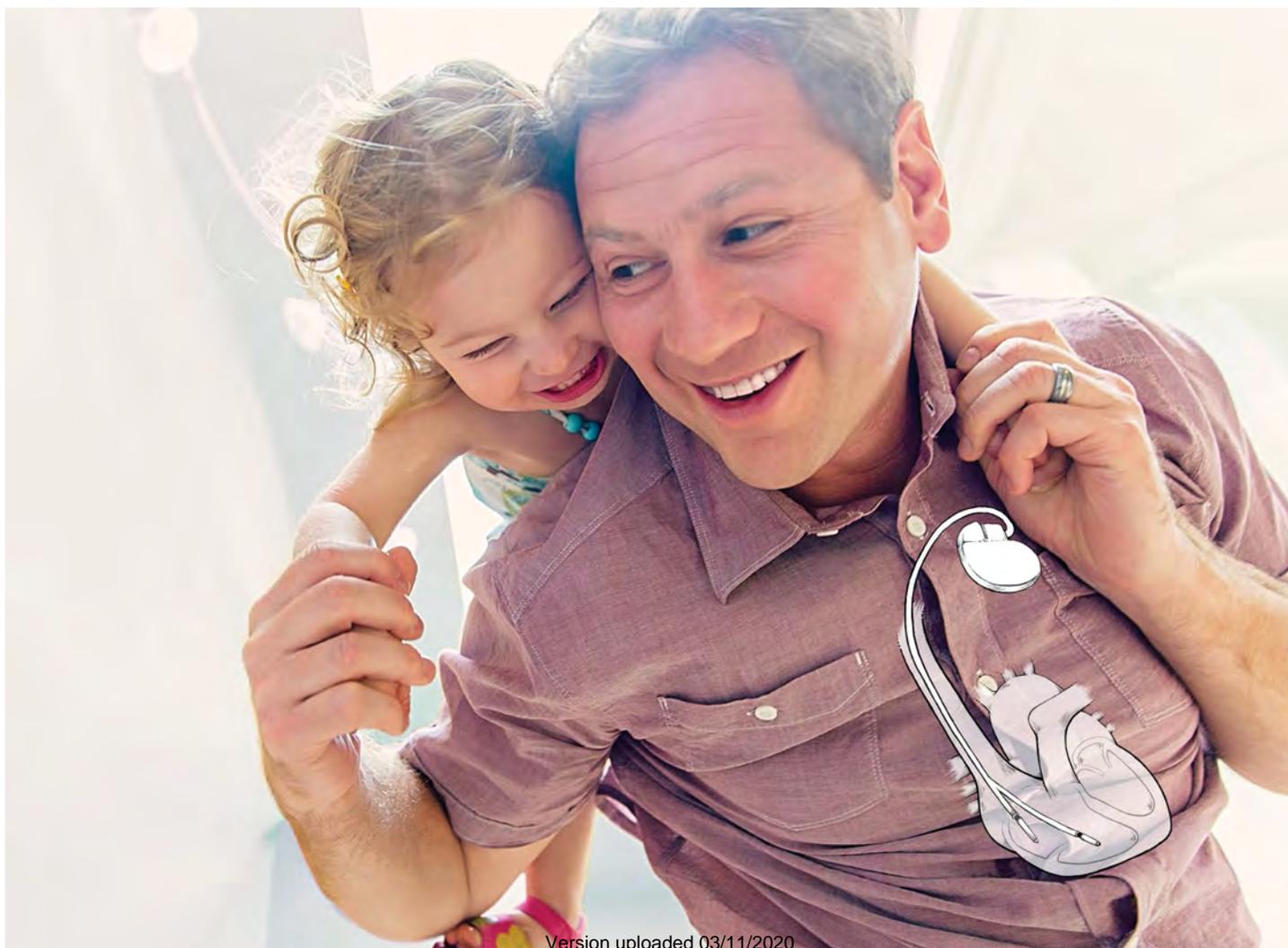
For more than 30 years, the NuSil™ brand has been continuously supplying medical device manufacturers with silicones of the highest purity and long-term stability for medical implant applications. Our market-leading, medical-grade silicones for use in the body are trusted to help save and improve the quality of life worldwide.

Industry leaders depend on the quality, purity and reliability of our implantable silicones for a wide range of life-saving and life-enhancing medical devices, from pacemakers, hydrocephalic shunts and intraocular lenses to aesthetic implants.

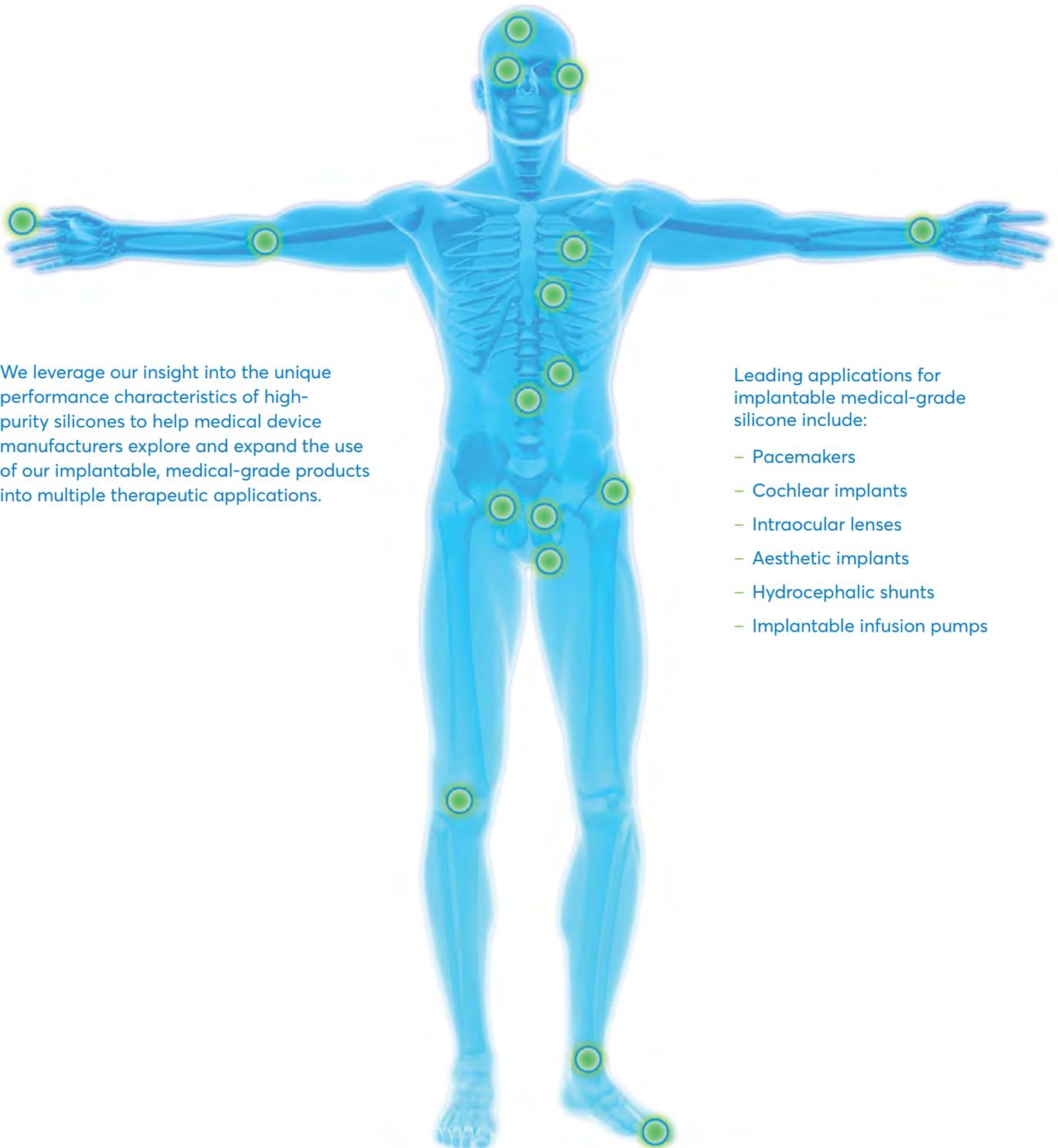
Our commitment to innovation is long-standing: As a market leader, we have been providing valuable insights to companies ranging from major medical device manufacturers to innovative startups for decades.

## MEDICAL-GRADE SILICONES

All of our medical-grade silicones are specifically designed, manufactured and purified to meet the strictest requirements of the healthcare industry. These products are made under applicable cGMP standards in facilities indirectly or directly regulated by the U.S. Food and Drug Administration and are typically supported with Master Files.



# Applications



We leverage our insight into the unique performance characteristics of high-purity silicones to help medical device manufacturers explore and expand the use of our implantable, medical-grade products into multiple therapeutic applications.

Leading applications for implantable medical-grade silicone include:

- Pacemakers
- Cochlear implants
- Intraocular lenses
- Aesthetic implants
- Hydrocephalic shunts
- Implantable infusion pumps

# Implant line products

NuSil's signature Implant Line offers a complete range of silicones that are the preferred choice for long-term implant devices (>29 days). Our goal is to serve device manufacturers' unique needs. We can supply both off-the-shelf and custom formulations tailored to meet your process and device performance requirements.



## LIQUID SILICONE RUBBERS

Liquid silicone rubbers (LSRs) are designed for liquid injection molding and are an excellent material for precision molded components, O-rings, gaskets, valves and seals.



## LOW VISCOSITY ELASTOMERS AND DISPERSIONS

Low viscosity elastomers provide a flowable silicone that can be used to encapsulate a device or be low-pressure molded into a part. Dispersions are ideal for processes where the silicone is applied as a thin film coating or for dip molded parts.



## HIGH CONSISTENCY RUBBERS

High consistency rubbers (HCRs) are strong silicone materials that are well-suited for fabrication processes, such as extruding, calendaring and compression or transfer molding into a wide range of parts. NuSil's HCR portfolio features both one-part (peroxide cure) or two-part (platinum cure) systems.



## ADHESIVES AND PRIMERS

Silicone adhesives are designed to bond to a variety of substrates, from silicones to metals to plastics. Primers can be applied to improve adhesion.



## LUBRICANTS AND FLUIDS

Fluids are non-curing silicones typically used as lubricants to reduce friction between components in medical devices.



## GELS AND SPECIALTY MATERIALS

Silicone gels can range in hardness from very soft to firm, making them suitable for implant applications such as soft tissue implants. NuSil's specialty materials portfolio includes radio opaque masterbatches as well as silicone marking inks and foams.

## REGULATORY SUPPORT

For over three decades, we have been helping medical device companies obtain regulatory clearance for their products. That commitment extends well beyond the sale of our silicones. We provide the technical and regulatory expertise needed for approval and are willing to communicate directly with international regulatory authorities on behalf of our customers.

NuSil maintains over 700 Master Files (MAFs) with the United States Food and Drug Administration (FDA) in support of our medical-grade silicones. A critical element of the MAF is the biological testing performed on the majority of products in our portfolio.



BIOLOGICAL ENDPOINT	STUDY	STANDARD
Cytotoxicity	Cytotoxicity study using the ISO elution method	ISO 10993-5
Hemolysis	Hemolysis (extract)	ISO 10993-4
Acute systemic toxicity	Acute systemic toxicity (extract)	ISO 10993-11
Intracutaneous irritation	Intracutaneous study (extract)	ISO 10993-10
Implantation (one week)	One-week muscle implantation study	ISO 10993-6
Implantation (twelve weeks)	Twelve-week muscle implantation study	ISO 10993-6
Genotoxicity	Bacterial Reverse mutation method (extract)	ISO 10993-3
Pyrogenicity	Pyrogenicity – material mediated (extract)	ISO 10993-11
Skin sensitization	Maximization sensitization (extract)	ISO 10993-10

## CUSTOMIZATION MASTERED

We know that standard solutions don't always fit. That's why we create customized products based on our customers' unique applications. After three decades of serving the most demanding industries, we've honed our processes and proprietary equipment to take customization to a mass scale.

NuSil has the ability to customize products and packaging according to individual requirements for an array of convenient options that meet customer needs. We have over 3,000 standard products that can be customized to very unique specifications.



# Liquid silicone rubbers (LSRs)

## Description

Liquid silicone rubbers (LSRs) have a consistency similar to petroleum jelly and are designed for high throughput manufacturing processes such as liquid injection molding and overmolding.

## Applications

NuSil LSRs provide an excellent material for precision molded components, such as O-rings, gaskets, valves and seals used in implantable medical devices.

## Key properties and considerations

- No post-cure required
- Ability to cure rapidly with increased temperatures
- Can be supplied in small handheld cartridges
- Solvent resistance and high clarity options available
- Easily pigmented using NuSil color masterbatches



## LIQUID SILICONE RUBBERS

PRODUCT NUMBERS	DUROMETER TYPE A	TENSILE psi (MPa)	ELONGATION %	TEAR ppi (kN/m)	STRESS @ STRAIN psi (MPa) @ %	CURE RATE T90 m @ 138°C	CURE RATE SCORCH m @ 138°C	SPECIFIC GRAVITY
MED-4801	40 (00)	330 (2.3)	1070	55 (9.7)	25 (0.1) @ 300	1.47	0.75	1.09
MED-4805	60 (00)	560 (3.8)	1070	75 (13.1)	35 (0.2) @ 200	2.08	0.85	1.08
MED-4810	65 (00)	700 (4.8)	1075	65 (11.5)	50 (0.3) @ 200	1.98	0.99	1.10
MED-5820	20	985 (6.8)	805	80 (14.0)	90 (0.6) @ 200	0.70	0.30	1.08
MED-5830	30	1,215 (8.4)	765	140 (24.5)	1670 (1.2) @ 200	0.70	0.30	1.11
MED-5840	40	1,195 (8.2)	640	175 (30.6)	300 (2.1) @ 200	0.80	0.50	1.12
MED-5850	50	1,380 (9.5)	585	190 (33.5)	400 (2.8) @ 200	0.70	0.20	1.14
MED-5860	60	1,325 (9.1)	405	190 (33.2)	700 (4.8) @ 200	0.60	0.20	1.14
MED-5870	70	1,260 (8.7)	360	160 (28.0)	900 (6.2) @ 200	0.45	0.10	1.15
MED-4880	80	1,100 (7.6)	290	110 (19.2)	860 (5.9) @ 200	0.81	0.10	1.16

\*MED-48X0 products not found in the above table can still be found on our website (including Product Data Sheets and SDSs)

## SPECIALTY LIQUID SILICONE RUBBERS

PRODUCT NUMBERS	DUROMETER TYPE A	TENSILE psi (MPa)	ELONGATION %	TEAR ppi (kN/m)	STRESS @ STRAIN psi (MPa) @ %	CURE RATE T90 m @ 138°C	CURE RATE SCORCH m @ 138°C	SPECIFIC GRAVITY	COMMENTS
MED50-5338	30	710 (4.9)	355	50 (8.8)	295 (2.0) @ 200	2.82	1.23	1.26	50M% fluorosilicone for solvent resistance
MED-5440	30	1,070 (7.3)	365	50 (8.7)	260 (1.8) @ 200	2.38	1.87	1.39	100M% Fluorosilicone for solvent resistance
MED-4842	40	930 (6.4)	400	220 (38.5)	490 (3.4) @ 200	1.98	1.18	1.16	Resists blocking
MED1-4855	55	1,100 (7.6)	475	240 (42.3)	545 (3.8) @ 200	2.23	1.09	1.15	Self-lubricating

All materials are Platinum cure

## Processing tips

The two parts of this system should be mixed in equal portions prior to use. Mixing in anything other than the specified ratio may yield properties outside of the specification range. Airless mixing, metering and dispensing equipment are recommended for production operations.

# Low viscosity elastomers

## Description

Low viscosity elastomers provide a flowable silicone that can be used to encapsulate a device or be low-pressure molded into a part. NuSil low viscosity elastomers offer an alternative to HCRs and LSRs with other unique properties.

## Applications

Low viscosity elastomers are particularly useful for applications and manufacturing processes that are most efficient using a pourable, self-leveling silicone. Applications include encapsulating a device, backfilling a void and potting an electronic component.

## Key properties and considerations

- Flowable and self-leveling
- Easy to process
- Adjustable cure schedule: low- and high-temperature cure
- Many optically clear options

## LOW VISCOSITY ELASTOMERS

PRODUCT NUMBERS	VISCOSITY cP (mPa·s)	WORK TIME @ 25°C	DUROMETER TYPE A	TENSILE psi (MPa)	ELONGATION %	TEAR ppi (kN/m)	STRESS @ STRAIN psi (MPa) @ %	MIX RATIO	COMMENTS
MED-6215	3800	5 h	50	1,250 (8.6)	100	-	-	10:1	Clear, 1.41 R.I.
MED-4286	6350	17.5 h	55 (000)	-	-	-	-	1:1	Ultra-soft
MED-6210	16000	4 h	50	930 (6.4)	140	35 (6.1)	-	1:1	Clear, 1.43 R.I.
MED2-4420	19500	3 m	20	585 (4.4)	500	-	95 (0.7) @ 200	1:1	Rapid RTV cure
MED4-4420	23250	35 m	17	700 (4.8)	600	35 (6.2)	80 (0.6) @ 200	1:1	RTV
MED-6219	25500	2.5 h	75	1,300 (9.0)	65	-	-	1:1	Clear, 1.41 R.I.
MED-6820	66000	4.5 h	40	670 (4.6)	210	40 (7.6)	-	1:1	Clear, 1.43 R.I.
MED-6233	73500	52 h	50	740 (5.1)	380	80 (14.1)	650 (4.5) @ 200	1:1	Clear, 1.41 R.I.
MED-4244	73400	4 h	40	865 (6.0)	350	150 (26.5)	480 (3.3) @ 200	10:1	-
MED3-4420	82700	15 m	23	1,000 (6.9)	600	75 (13.2)	-	1:1	-
MED-4211	97400	2 h	25	685 (4.7)	530	-	135 (0.9) @ 200	10:1	-



## Processing tips

Blend both components of the material into a homogenous mixture and de-air if necessary to remove bubbles. Note: heat can easily be generated during the mixing process which can cause an adverse effect on the pot life.

# High consistency rubbers (HCRs)—Platinum cure

## Description

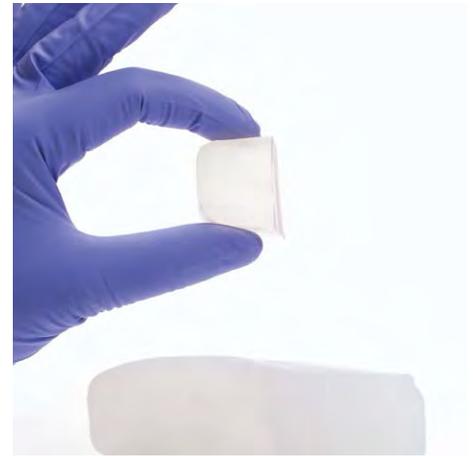
Platinum cure high consistency rubbers (HCRs) have the consistency of clay and well-suited for fabrication processes such as extruding, calendering and compression or transfer molding into a wide range of parts.

## Applications

NuSil HCRs can be used to extrude rod and ribbon profiles and tubing for medical applications. They can also be calendered into sheets for die-cutting or molded into parts, such as balloons, gaskets and O-rings.

## Key properties and considerations

- Green strength: ideal for extrusion processes
- Very high mechanical properties and low modulus compared to other elastomer systems
- Two-part curing system
- No byproducts generated from the curing process
- Post-cure is optional



## HIGH CONSISTENCY RUBBERS (PLATINUM CURE)

PRODUCT NUMBERS	DUROMETER TYPE A	TENSILE psi (MPa)	ELONGATION %	TEAR ppi (kN/m)	STRESS @ STRAIN psi (MPa) @ %	WORK TIME @ 25°C	CURE RATE T90 m @ 116°C	CURE RATE SCORCH m @ 116°C	SPECIFIC GRAVITY	COMMENTS
MED-4714	15	715 (4.9)	1385	155 (27.3)	40 (0.3) @ 200	26 h	2.04	1.13	1.08	Low modulus
MED-4719	55	1,320 (9.1)	665	220 (38.8)	280 (1.9) @ 200	8 h	2.99	1.35	1.23	-
MED-4720	25	1,390 (9.6)	1240	190 (33.5)	75 (0.5) @ 200	10 h	2.27	1.07	1.10	Low modulus with high tear
MED-4725	30	1,395 (9.6)	890	135 (23.8)	110 (0.8) @ 200	2 h	2.82	0.8	1.11	Low tension set
MED-4735	35	1,535 (10.6)	1055	195 (34.4)	180 (1.2) @ 200	2h	2.38	1.04	1.11	-
MED-4750	50	1,545 (10.7)	1050	270 (47.6)	300 (2.1) @ 200	2.5 h	2.49	1.09	1.16	-
MED-4765	65	1,240 (8.6)	1005	265 (46.7)	355 (2.4) @ 200	6 h	2.48	0.91	1.20	-
MED-4780	80	1,155 (8.0)	740	225 (39.7)	450 (3.1) @ 200	8.5 h	2.8	0.82	1.20	-
<b>ULTRA-HIGH PERFORMANCE</b>										
MED-4727	30	2,300 (15.9)	1,050	235 (41.2)	100 (0.7) @ 200	2.5 h	1.22	0.39	1.11	Ultra-high tensile
MED-4755	55	1,640 (11.3)	875	310 (54.6)	490 (3.4) @ 200	2.5 h	1.37	0.97	1.14	Ultra-high tear
MED-4770	70	1,415 (9.8)	760	300 (52.9)	595 (4.1) @ 200	2.5 h	2.80	0.96	1.19	Abrasion/fatigue resistant



## Processing tips

To blend NuSil HCRs, separately soften Part A and B on a clean and cooled two-roll mill, then combine both components in equal portions. Avoid adjusting the mix ratio of the two components to accelerate the cure. Temperature can be adjusted to vary the rate of cure.

Be sure to free the area of materials that can potentially inhibit the curing process. Most inhibitors typically have a sulfur-containing material (e.g., natural rubber, latex and neoprene), a nitrogen-containing material (e.g., amines) or an organotin-containing material (e.g., condensation-cured silicones).

# High consistency rubbers (HCRs)—Peroxide cure

## Description

Peroxide cure high consistency rubbers (HCRs) have a long history in implant applications and are similar in consistency to platinum cure HCRs. NuSil offers peroxide cure HCRs in both uncatalyzed and pre-catalyzed forms.

## Uncatalyzed

NuSil uncatalyzed peroxide HCR systems offer the flexibility of using your preferred peroxide catalyst. They do not contain vinyl- or non-vinyl-specific peroxide catalysts as supplied.

## Pre-catalyzed

Our pre-catalyzed peroxide curing HCRs are one-part systems that contain a dichlorobenzoyl peroxide catalyst and are ready for use.

## Key properties and considerations

- Green strength: ideal for extrusion processes
- Indefinite work time
- Low modulus compared to other elastomer systems
- One- or two-part systems available
- Heat required to cure

## HIGH CONSISTENCY RUBBERS (PEROXIDE CURE)

PRODUCT NUMBERS	DUROMETER TYPE A	TENSILE psi (MPa)	ELONGATION %	TEAR ppi (kN/m)	STRESS @ STRAIN psi (MPa) @ %	CURE RATE T90 m @ 116°C	CURE RATE SCORCH m @ 116°C	SPECIFIC GRAVITY	COMMENTS
MED-4520	28	1,320 (9.1)	950	135 (23.8)	105 (0.7) @ 200	1.74	0.68	1.10	Uncatalyzed
MED-4535	35	1,300 (9.0)	800	125 (22.0)	185 (1.3) @ 200	2.01	0.59	1.10	Uncatalyzed
MED-2174	50	1,300 (8.9)	750	225 (39.7)	325 (2.2) @ 200	1.58	0.58	1.15	Uncatalyzed
MED-4550	50	1,400 (9.7)	750	195 (34.4)	250 (1.7) @ 200	1.87	0.57	1.16	Uncatalyzed
MED4-4515	50	1,650 (11.4)	500	100 (17.6)	400 (2.8) @ 200	2.00	0.54	1.15	Pre-catalyzed with dichlorobenzoyl peroxide
MED-4565	65	1,250 (8.6)	700	200 (35.3)	375 (2.6) @ 200	1.53	0.52	1.21	Uncatalyzed
MED4-4516	70	1,300 (9.0)	450	130 (22.9)	500 (3.4) @ 200	2.05	0.52	1.21	Pre-catalyzed with dichlorobenzoyl peroxide



## Processing tips

Typical processing is to soften the HCR on a clean two-roll mill prior to use. If a two-part cure is used, add the peroxide catalyst after softening the base. Slight adjustment to the levels of peroxide catalyst may influence cure rate and cured properties. Some peroxide catalysts require a post cure to remove acidic byproducts, which may result in additional shrinkage of the molded component.

# Adhesives and primers

## Description

NuSil silicone adhesives offer excellent bonding to a variety of substrates, including silicones, metals, polyurethanes and a variety of plastics. The right NuSil silicone adhesive can help you achieve increased throughput, improved adhesion and greater reliability and durability.

Our primers can be used to improve the bond between the silicone adhesive and the substrate.

## Applications

Silicone adhesives offer efficient, biocompatible and long-lasting ways to bond substrates together when assembling devices such as catheters, pacemakers, cochlear implants and aesthetic implants.

## Key properties and considerations

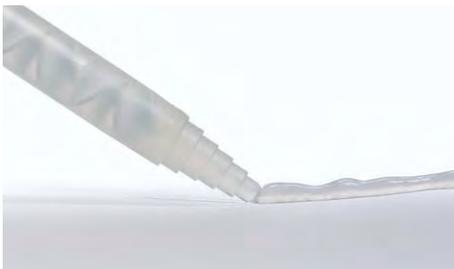
- A full range of adhesive/primer systems for a variety of substrates
- From thixotropic and non-slump to flowable and self-leveling
- Quick-curing systems
- Can be supplied in small hand-held cartridges

## ADHESIVES

PRODUCT NUMBERS	WORK TIME @ 25°C	DUROMETER TYPE A	TENSILE psi (MPa)	ELONGATION %	TEAR ppi (kN/m)	STRESS @ STRAIN psi (MPa) @ %	COMMENTS
<b>ONE-PART</b>							
MED-1137	< 9 m	30	660 (4.5)	500	-	170 (1.2) @ 200	Non-slump
MED-1511	< 12 m	25	1,400 (9.7)	645	100 (17.6)	115 (0.8) @ 200	Self-leveling
MED-2000	< 13 m	25	1,345 (9.3)	745	90 (15.8)	110 (0.8) @ 200	Self-leveling
<b>TWO-PART</b>							
MED1-4213	20 m	20	1,000 (6.9)	760	120 (21.0)	105 (0.7) @ 200	RTV or cures rapidly with heat
MED3-4213	2 h	20	935 (6.4)	740	115 (20.2)	115 (0.8) @ 200	RTV or cures rapidly with heat
MED2-4213	72 h	14	845 (5.8)	800	130 (22.9)	85 (0.6) @ 200	HTV and cures rapidly with heat

## DISPERSED ADHESIVES

PRODUCT NUMBERS	SOLVENT	DUROMETER TYPE A	TENSILE psi (MPa)	ELONGATION %	TEAR ppi (kN/m)	STRESS @ STRAIN psi (MPa) @ %	SOLIDS CONTENT %	COMMENTS
MED6-6606	Heptane	20	1,230 (8.5)	800	120 (21.0)	90 (0.6) @ 200	30	RTV adhesive
MED-6615	Heptane	70 (00)	1,100 (7.6)	700	120 (21.1)	60 (0.4) @ 100	35	HTV adhesive



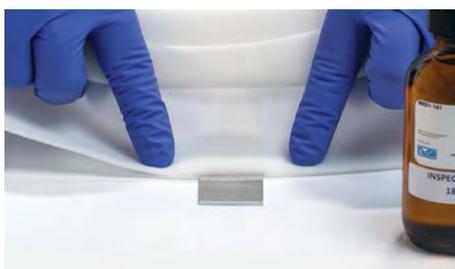
## Processing tips

Cleaning, activating and/or priming the surface can improve adhesion by maximizing the surface's available bond sites and wettability. When working with silicone adhesives, it is important to consider the solvents, chemicals or substrates they may contact in their uncured state. Certain chemical elements and compounds can retard or inhibit the adhesive's curing process during the device handling, storing or assembly processes.



## PRIMERS

PRODUCT NUMBERS	SOLIDS CONTENT %	SOLVENT	COMMENTS
MED-160	4.0	Naphtha	General all-purpose primer; use with platinum or moisture cure silicones
MED1-161	4.0	Naphtha	Increased adhesion to aluminum; use with platinum cure silicones.
MED2-161	4.5	Naphtha	Increased adhesion to most metals; use with platinum cure systems
MED6-161	9.0	Naphtha	Increased adhesion to titanium, polysulfone (PSU), polycarbonate (PC), polyurethane (PU); recommended where platinum inhibition is of concern
MED-162	15.0	Naphtha	Increased adhesion to polycarbonate (PC), polyurethane (PU), and polyetheretherketone PEEK)
MED-163	15.0	Naphtha	Improved adhesion to polyimide (PI); recommended where platinum inhibition is of concern
MED-164	10.0	Naphtha	Increased adhesion to various substrates; designed for use with moisture cure systems
MED-165	4.5	Naphtha	Increased adhesion to various metals
MED-166	6.5	IPA	Dispersed in IPA, compatible with acrylics



### Processing tips

For some applications, primers may be too concentrated to apply the appropriate amount, so further dilution is required. If too much primer is applied, it can negatively affect the adhesive bond.

# Dispersions

## Description

NuSil silicone dispersions are silicone elastomer systems that are dispersed in a solvent carrier. Dispersions are ideal for dipping and spraying processes.

## Applications

Our dispersions can be used for applications requiring a low viscosity silicone that will cure into a strong elastomer. They can be used to provide a coating on devices and create thin elastomeric films or forms.

## Key properties and considerations

- Supplied as one-part RTV or two-part heat cure systems
- Ability to decrease viscosity through further dilution
- Product chemistry may influence permeability



## DISPERSIONS

PRODUCT NUMBERS	DUROMETER TYPE A	TENSILE psi (MPa)	ELONGATION %	TEAR ppi (kN/m)	STRESS @ STRAIN psi (MPa) @ %	VISCOSITY cP (mPa-s)	SOLIDS CONTENT %	SOLVENT	COMMENTS
<b>ONE-PART</b>									
MED6-6606	20	1,230 (8.5)	800	120 (21.2)	90 (0.6) @ 200	105	30	Heptane	RTV adhesive
MED-6605	25	1,500 (10.3)	980	120 (21.2)	110 (0.7) @ 300	700	29	Xylene	RTV
MED-2214	35	1,700 (11.7)	850	170 (30)	130 (0.9) @ 200	3700	35	Xylene	Requires heat to cure
MED-6655	35	775 (5.3)	425	45 (7.9)	310 (2.1) @ 200	700	60	Tert Butyl Acetate	RTV, 100M% fluorosilicone
<b>TWO-PART</b>									
MED-6600	25	1,200 (8.3)	800	160 (28.2)	300 (2.0) @ 300	350	35	Xylene	Diphenyl, 1.46 R.I.
MED-6400	30	1,600 (11.3)	850	160 (28.2)	210 (1.4) @ 200	860	35	Xylene	Diphenyl, 1.43 R.I.
MED-6640	40	1,700 (11.7)	1000	300 (52.9)	150 (1.0) @ 100	3000	20	Xylene	Ultra-high tear

## SPECIALTY DISPERSIONS

PRODUCT NUMBERS	VISCOSITY cP (mPa-s)	SOLIDS CONTENT %	SOLVENT	COMMENTS
MED-6670	23	25	Xylene	Low CoF coating
MED1-4161	140	33	Xylene and mineral spirits	25 '00' durometer lubricious coating



## Processing tips

Individually pre-mixing part A and B prior to combining the components is recommended. De-airing may be required to assure a bubble-free product. During the curing process, bubbles may also be caused by the presence of solvent if exposed to elevated temperatures. It is recommended to increase the cure temperature slowly or utilize a multi-step curing process. This allows the solvent to evaporate prior to the silicone curing.

# Lubricants and fluids

## Description

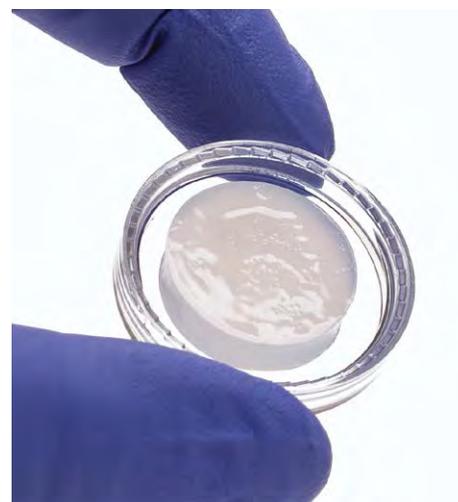
NuSil biocompatible lubricious silicones are used to reduce friction between components in medical devices.

## Applications

Silicone fluids can be used to lubricate catheters, valves, or moving parts within a device. In addition, NuSil high-purity silicone fluids have been used for ophthalmic applications such as retinal tamponades.

## Key properties and considerations

- Multiple product options for lubrication: fluids/oils, low CoF coatings, self-lubricating elastomers
- Fluids available in a range of viscosities and can be diluted with solvent for application in thin layers
- Chemistry options allow versatility for a variety of substrates



## FLUIDS

PRODUCT NUMBERS	VISCOSITY cP (mPa·s)	VOLATILE CONTENT %	COMMENTS
<b>DIMETHYL</b>			
MED-360	100 - 12,500	0.1	-
MED-366	1,090	0.1	Highly purified
MED-367	5,250	0.1	Highly purified
<b>FLUROSILICONE</b>			
MED-420	100 - 12,500	≤ 0.1	Methyl fluoro copolymer (low fluoro)
MED-460	350 - 12,500	≤ 0.1	Methyl fluoro copolymer (high fluoro)
MED-400	350 - 12,500	< 0.5	Fluorosilicone polymer

Custom viscosities available upon request

## SPECIALTY COATINGS

PRODUCT NUMBERS	VISCOSITY cP (mPa·s)	SOLIDS CONTENT %	SOLVENT	COMMENTS
MED-6670	23	25	Xylene	Low CoF coating
MED1-4161	140	33	Xylene and mineral spirits	25 '00' durometer lubricious coating

## SELF-LUBRICATING LIQUID SILICONE RUBBER (LSR)

PRODUCT NUMBERS	DUROMETER TYPE A	TENSILE psi (MPa)	ELONGATION %	TEAR ppi (kN/m)	STRESS @ STRAIN psi (MPa) @ %	CURE RATE T90 m @ 138°C	CURE RATE SCORCH m @ 138°C	SPECIFIC GRAVITY
MED1-4855	55	1,100 (7.6)	475	240 (42.3)	545 (3.8) @ 200	2.23	1.09	1.15

## Processing tips

Depending on the viscosity, silicone lubricants can be applied by spraying, dipping, wiping or brushing. If a very thin film is desired, silicone fluids may be further diluted in a compatible solvent.

# Gels

## Description

NuSil high-purity silicone gels tend to be low in viscosity when uncured and can range in hardness from very soft to firm, making them suitable for multiple implant applications.

## Applications

The versatility of NuSil silicone gels make them ideal for a wide range of applications, including soft tissue implants and encapsulating sensors and electronic devices.

## Key properties and considerations

- Solvent-free
- Modifiable penetration
- Adjustable cure profiles



## GELS

PRODUCT NUMBERS	PENETRATION mm (shaft weight/foot diameter/time)	VISCOSITY cP (mPa·s)	MIX RATIO	SPECIFIC GRAVITY	COMMENTS
MED-6311	2.7 (12g / 1in / 5s)	500	1:1	0.98	Low penetration, high strength gel
MED1-6300	5 (12g / 1in / 5s)	1000	1:1	0.98	Medium penetration, soft responsive gel
MED2-6300	10 (19.5g / 0.25in / 15s)	1000	1:1	0.98	Low penetration, firm cohesive gel
MED3-6300	15 (12g / 1in / 15s)	1000	3:1	0.98	High penetration, soft responsive gel

All materials are Platinum cure

## Processing tips

Due to their low viscosity, gels may need to be mixed longer and more aggressively compared to other silicone systems. Entrapped air can be removed after mixing through common vacuum deaeration procedures.



# Specialty materials

## Radiopaque masterbatches

NuSil masterbatches provide an easy, more precise way to add barium sulfate to silicone elastomers, reducing production time and eliminating the need for powders that may contaminate cleanroom environments. They consist of barium sulfate dispersed in a vinyl-functional silicone polymer that covalently bonds to the matrix of platinum-cured silicone systems.

## Inks

Our inks are designed for marking silicone surfaces. They are made for pad printing or silk screening medical devices and are available in a variety of colors.

## Foams

Our low density, lightweight and flexible silicone foam can be used to make foam sheeting, tubing or ribbon. It is ideal for applications that require shock absorption or vibration dampening.



## RADIOPAQUE MASTERBATCHES

PRODUCT NUMBERS	EXTRUSION RATE g/min PLASTICITY mils	SPECIFIC GRAVITY	COMMENTS
MED2-4800	800 g/min	1.55	LSR masterbatch, 50% BaSO <sub>4</sub>
MED2-4502	218 mils	2.31	HCR masterbatch, 75% BaSO <sub>4</sub>

## INKS

PRODUCT NUMBERS	VISCOSITY cP (mPa·s)	SOLIDS CONTENT %	SOLVENT	COMMENTS
MED-6613-X	6,150	65	Xylene	Heat curable ink in various colors
MED-6608-X	1,150	70	Xylene	RTV Ink available in white and black
MED8-6608-2	800	70	Xylene	RTV black ink, increased hiding power

## FOAMS

PRODUCT NUMBERS	FOAM DENSITY g/mL	VISCOSITY cP (mPa·s)	APPLICATION LIFE (minutes)	COMMENTS
MED-2310	0.2	40,000.0	2	Platinum catalyzed



# **Polymer Systems** Technology Limited

## Silicone Sales & Services UK - Ireland - Benelux

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