

Product Information

**VESTAMID® Care ML67**

**LOW VISCOSITY, HEAT AND LIGHT STABILIZED POLYAMIDE 12 FOR MEDICAL APPLICATION**



VESTAMID® Care ML67 is resistant to body fluids and toxicologically safe.

Typical application areas for filled VESTAMID Care ML grades include catheters, housing parts, monitoring and imaging devices and durable medical equipment.

**The advantages at a glance:**

- High flexibility & elasticity
- Good rebound properties
- High impact resistance
- Excellent dimensional stability
- High chemical resistance
- Easy processability & colorability
- Plasticizer-free
- Gamma and EtO sterilization resistant
- Tough and resilient

**Biocompatibility of VESTAMID® Care ML**

Biocompatibility was tested following ISO10993-1 recommendations for a surface medical device with up to 30 days body contact.

The material fulfills the requirements of USP<88> class VI.

Tests were performed by independent, certified laboratories.

**Biocompatibility tests for VESTAMID® Care:**

Standard	Description
ASTM F756-08	Hemocompatibility
ISO 10993-5	Cytotoxicity
ISO 10993-10	Sensitization: Maximization test according to Magnusson and Kligman
ISO 10993-10	Irritation: Intracutaneous Reactivity
ISO 10993-11	Acute Systemic Toxicity
USP Class VI	Acute Systemic Toxicity Intracutaneous Reactivity Muscle Implantation

**Key Features**

**Industrial Sector**

Sustainable, Medical Devices

**Sustainability**

Sustainable electricity

**Processing**

Injection molding

**Delivery form**

Pellets, Granules

**Optics**

Translucent

**Resistance to**

Heat (thermal stability), UV / light / weathering

**Conformity**

Biocompatibility, Medical application

**Additives**

Unfilled

**LCA-values**

	dry	Unit	Test Standard
LCA name of certificate	<a href="#">VESTAMID® L Compound low</a>	-	ISO 14040, 14044
LCA certifier	<a href="#">TÜV Rheinland</a>	-	ISO 14040, 14044
Blue water consumption	<b>25.7</b>	kg	ISO 14040, 14044
Global Warming Potential incl. bio. C incl. LUC	<b>6.1</b>	kg CO <sub>2</sub> eq./kg	ISO 14040, 14044
Global Warming Potential excl. bio. C incl. LUC	<b>6.1</b>	kg CO <sub>2</sub> eq./kg	ISO 14040, 14044
Land use (ReCiPe 2016)	<b>0.1</b>	Annual crop eq. y	ISO 14040, 14044
GWP savings as compared to 2023 reference	<b>-2.5</b>	kg CO <sub>2</sub> eq./kg	ISO 14040, 14044

**Mechanical properties ISO**

	dry / cond	Unit	Test Standard
Tensile modulus	<b>210000 / 157000</b>	psi	ISO 527
Tensile strength	<b>6530 / 5950</b>	psi	ISO 527
Yield stress	<b>6530 / 5950</b>	psi	ISO 527
Yield strain	<b>5 / 13</b>	%	ISO 527
Stress at 50% strain	<b>4640 / 4350</b>	psi	ISO 527
Stress at break	<b>8270 / 7980</b>	psi	ISO 527
Nominal strain at break, tB	<b>337 / 330</b>	%	ISO 527
Charpy impact strength, +23°C	<b>N / N</b>	ftlb/in <sup>2</sup>	ISO 179/1eU
Charpy impact strength, -30°C	<b>N / N</b>	ftlb/in <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, +23°C	<b>1.9 / 1.9</b>	ftlb/in <sup>2</sup>	ISO 179/1eA

Type of failure	C / C	-	-
Charpy notched impact strength, -30°C	2.38 / 1.9	ftlb/in <sup>2</sup>	ISO 179/1eA
Type of failure	C / C	-	-
Flexural modulus, 23°C	201000 / 152000	psi	ISO 178
Flexural stress at conv. deflection, 23°C	7110 / 5220	psi	ISO 178
Flexural strength, 23°C	8560 / 6670	psi	ISO 178
Flexural strain at flexural strength, 23°C	6 / 8	%	ISO 178

Thermal properties	dry / cond	Unit	Test Standard
Melting temperature	352 / *	°F	ISO 11357-1/-3
Glass transition temperature, DSC	113 / *	°F	ISO 11357-1/-2
Temp. of deflection under load A, 1.80 MPa	122 / *	°F	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	248 / *	°F	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	338 / *	°F	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	284 / *	°F	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	7.78E-5 / *	in/in/°F	ISO 11359-1/-2
Coeff. of linear therm. expansion, 23°C to 55 °C, normal	7.89E-5 / *	in/in/°F	ISO 11359-1/-2
Melting Temperature	352	°F	ASTM D 3418

Physical properties	dry / cond	Unit	Test Standard
Density	1.01 / -	g/cm <sup>3</sup>	ISO 1183
Water absorption	1.4 / *	%	Sim. to ISO 62
Humidity absorption	0.7 / *	%	Sim. to ISO 62
Shore D hardness	75 <sup>[b]</sup> / -	-	ISO 7619-1
Density	1.01	g/cm <sup>3</sup>	ASTM D 792

b: 3 seconds

Burning Behav.	dry / cond	Unit	Test Standard
Burning behav. at 1.5 mm nom. thickn.	HB / *	class	IEC 60695-11-10

Thickness tested	<b>0.0630 / *</b>	in	-
Burnin behav. at thickness h	<b>HB / *</b>	class	IEC 60695-11-10
Thickness tested	<b>0.1260 / *</b>	in	-

<b>Electrical properties</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
Volume resistivity, V	<b>&gt;1E13 / 2.8E12</b>	Ohm*m	IEC 62631-3-1
Surface resistivity, C, circular electrodes	<b>8.5E12 / &gt;1E15</b>	Ohm/sq	IEC 62631-3-2
Relative permittivity, 50Hz	<b>3.8 / -</b>	-	IEC 62631-2-1
Relative permittivity, 100Hz	<b>3.7 / -</b>	-	IEC 62631-2-1
Relative permittivity, 1MHz	<b>3 / -</b>	-	IEC 62631-2-1
Dissipation factor, 1MHz	<b>243 / -</b>	E-4	IEC 62631-2-1
Dielectric strength, AC, S20/P50	<b>686 / -</b>	V/mil	Sim. to IEC 60243-1
CTI, test solution A, 50 drops value	<b>600 / -</b>	-	IEC 60112
Assessment of the insulation group	<b>I</b>	-	DIN EN 60664-1

<b>Rheological properties</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
Melt volume-flow rate, MVR	<b>84 / *</b>	cm <sup>3</sup> /10min	ISO 1133
Temperature	<b>230 / *</b>	°C	-
Load	<b>2.16 / *</b>	kg	-
Molding shrinkage, parallel	<b>0.9 / *</b>	%	ISO 294-4, 2577
Molding shrinkage, normal	<b>1.1 / *</b>	%	ISO 294-4, 2577
Mold temperature	<b>140 / *</b>	°F	-
Melt temperature	<b>392 / *</b>	°F	-

<b>Test specimen production</b>	<b>dry</b>	<b>Unit</b>	<b>Test Standard</b>
Injection Molding, melt temperature	<b>392</b>	°F	ISO 294
Injection Molding, mold temperature	<b>140</b>	°F	ISO 294
Injection Molding, injection velocity	<b>7.87</b>	in/s	ISO 294

## VESTAMID® Care

### Characteristics

#### Special Characteristics

Light-stabilized, High heat resistant, Low viscosity

#### Features

Low coefficient of friction

#### Regulatory

US Pharmacopeia Class VI conformity

#### Color

Natural color

#### Additives

Light stabilizer

#### Chemical Resistance

General chemical resistance