Product Information

# VESTAMID® Care ML18

## MEDIUM VISCOSITY POLYAMIDE 12 FOR MEDICAL APPLICATION

**VESTAMID® Care ML18** 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

Biocompatiblity 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 |

# VESTAMID® Care

## Key Features

**Industrial Sector**
Sustainable, Medical Devices

**Optics**
Translucent

**Sustainability**
Sustainable electricity

**Conformity**
Biocompatibility, Medical application

**Processing**
Injection molding

**Additives**
Unfilled

**Delivery form**
Pellets, Granules

| LCA-values | dry | Unit | Test Standard |
|---|---|---|---|
| LCA name of certificate | VESTAMID® L | - | ISO 14040, 14044 |
| LCA certifier | TÜV Rheinland | - | ISO 14040, 14044 |
| Blue water consumption | **14.4** | kg | ISO 14040, 14044 |
| Global Warming Potential incl. bio. C incl. LUC | **5.8** | kg $CO_2$ eq./kg | ISO 14040, 14044 |
| Global Warming Potential excl. bio. C incl. LUC | **5.8** | kg $CO_2$ eq./kg | ISO 14040, 14044 |
| Land use (ReCiPe 2016) | **0** | Annual crop eq. y | ISO 14040, 14044 |
| GWP savings as compared to 2023 reference | **-1.3** | kg $CO_2$ eq./kg | ISO 14040, 14044 |

| Mechanical properties ISO | dry / cond | Unit | Test Standard |
|---|---|---|---|
| Tensile modulus | **203000 / -** | psi | ISO 527 |
| Tensile strength | **6240 / -** | psi | ISO 527 |
| Yield stress | **6240 / -** | psi | ISO 527 |
| Yield strain | **5 / -** | % | ISO 527 |
| Stress at 50% strain | **4500 / -** | psi | ISO 527 |
| Stress at break | **7980 / -** | psi | ISO 527 |
| Nominal strain at break, tB | **320 / -** | % | ISO 527 |
| Charpy impact strength, +23°C | **N / -** | $ftlb/in^2$ | ISO 179/1eU |
| Charpy impact strength, -30°C | **N / -** | $ftlb/in^2$ | ISO 179/1eU |
| Charpy notched impact strength, +23°C | **2.38 / -** | $ftlb/in^2$ | ISO 179/1eA |

| | | | |
|---|---|---|---|
| Type of failure | **C / -** | - | - |
| Charpy notched impact strength, -30°C | **2.85 / -** | ftlb/in² | ISO 179/1eA |
| Type of failure | **C / -** | - | - |
| Flexural modulus, 23°C | **181000 / -** | psi | ISO 178 |
| Flexural stress at conv. deflection, 23°C | **6380 / -** | psi | ISO 178 |
| Flexural strength, 23°C | **7980 / -** | psi | ISO 178 |
| Flexural strain at flexural strength, 23°C | **6.5 / -** | % | ISO 178 |
| Flexural stress at break, 23°C | **N / -** | psi | ISO 178 |
| Flexural strain at break, 23°C | **N / -** | % | 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 | **230 / *** | °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 | **8.33E-5 / *** | in/in/°F | ISO 11359-1/-2 |
| Melting Temperature | **352** | °F | ASTM D 3418 |

| Physical properties | dry / cond | Unit | Test Standard |
|---|---|---|---|
| Density | **1.02 / -** | g/cm³ | ISO 1183 |
| Water absorption | **1.5 / *** | % | Sim. to ISO 62 |
| Humidity absorption | **0.7 / *** | % | Sim. to ISO 62 |
| Shore D hardness | **75[b] / -** | - | ISO 7619-1 |
| Density | **1.02** | g/cm³ | 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 | **0.0630 / *** | in | - |

| Rheological properties | dry / cond | Unit | Test Standard |
|---|---|---|---|
| Melt volume-flow rate, MVR | **11 / *** | $cm^3$/10min | ISO 1133 |
| Temperature | **210 / *** | °C | - |
| Load | **2.16 / *** | kg | - |
| Molding shrinkage, parallel | **0.8 / *** | % | ISO 294-4, 2577 |
| Molding shrinkage, normal | **1.0 / *** | % | ISO 294-4, 2577 |

| Test specimen production | dry | Unit | Test Standard |
|---|---|---|---|
| Injection Molding, melt temperature | **428** | °F | ISO 294 |
| Injection Molding, mold temperature | **140** | °F | ISO 294 |
| Injection Molding, injection velocity | **7.87** | in/s | ISO 294 |

## Characteristics

**Applications**
Encapsulation, Tube and hose

**Special Characteristics**
Medium viscosity

**Features**
Low coefficient of friction

**Regulatory**
US Pharmacopeia Class VI conformity

**Color**
Natural color

**Chemical Resistance**
General chemical resistance