VESTAMID®

Technical Information

VESTAMID® *Care* ML

VESTAMID *Care* ML grades cover a range of polyamide 12 resins of different viscosity for processing via extrusion or injection molding. The VESTAMID *Care* ML product range consists of un-stabilized base resins as well as stabilized or reinforced compounds.

Flexible and reliable

VESTAMID® *Care* ML resins are characterized by several outstanding properties, such as high impact & notched impact resistance, dimensional stability, good sliding properties, high abrasion resistance and resistance against chemicals.

Unfilled VESTAMID® *Care* ML grades are for example the materials of choice for catheters and tubings, where VESTAMID® *Care* ML materials meet even highest challenges in applications such as angioplasty balloon catheters.

Typical areas of application for reinforced VESTAMID® *Care* ML grades include housing-parts, monitoring and imaging devices and durable medical equipment. Due to their low water uptake, filled VESTAMID® *Care* ML grades even resist steam autoclaving for more than 500 cycles.

The advantages at a glance

- High impact resistance
- High dimensional stability
- High chemical resistance
- Low sliding friction
- High toughness
- High abrasion resistance
- Easy processability & colorability

Approvals

VESTAMID® *Care* ML grades were tested on biocompatibility for applications within the body of up to 30 days contact time and comply with USP <88> class VI and ISO 10993 standards.

VESTAMID® *Care* ML – base resins

Properties	Test method int.	Unit	VESTAMID® *Care* ML16	VESTAMID® *Care* ML17	VESTAMID® *Care* ML18	VESTAMID® *Care* ML19	VESTAMID® *Care* ML21
Density 23°C	ISO 1183	g/cm³	1.02	1.02	1.02	1.02	1.01
Tensile test 23° 50 mm/min	ISO 527-1/-2						
Stress at yield		MPa	45	45	45	45	45
Strain at yield		%	5	5	5	5	5
Nominal strain at break		%	>50	>50	>50	>50	>50
Tensile modulus	ISO 527-1/-2	MPa	1400	1400	1400	1400	1400
CHARPY impact strength	ISO 179/1eU						
23°C		kJ/m²	N	N	N	N	N
-30°C		kJ/m²	N	N	N	N	N
CHARPY notched impact strength	ISO 179/1eA						
23°C		kJ/m²	5 C	6 C	6 C	7 C	32 C
-30°C		kJ/m²	5 C	6 C	6 C	7 C	9 C
Melting range DSC, 2nd heating	ISO 11357	°C	178	178	178	178	178
Temperature of deflection under load	ISO 75-1/-2						
Method A 1.8 MPa		°C	50	50	50	50	50
Method B 0.45 MPa		°C	110	110	110	110	110
Vicat softening temperature	ISO 306						
Method A 10 N		°C	170	170	170	170	170
Method B 50 N		°C	140	140	140	140	140
Linear thermal expansion 23 -55 °C	ISO 11359	10^{-4} K^{-1}	1.5	1.5	1.5	1.5	1.5
Flammability acc. UL94	IEC 60695						
3.2 mm			HB	HB	HB	HB	HB
1.6 mm			HB	HB	HB	HB	HB
Mold shrinkage	determined on 2mm sheets with film gate at rim, mold temp. 80°C ISO 294-4						
in flow direction		%	0.95	0.68	0.85	0.78	0.70
in transverse direction		%	1.09	1.22	1.03	1.10	1.25
Water absorption	ISO 62	%					
23°C, saturation		%	1.5	1.5	1.5	1.5	1.6
23°C, 50% relative humidity			0.7	0.7	0.7	0.7	0.8
Viscosity number	ISO 307	ml/g	120	140	160	180	230

N = No break, P = Partial break, C = Complete break, incl. hinge break, HB = Horizontal burning

VESTAMID® *Care* ML- compounds

Properties	Test method int.	Unit	VESTAMID® *Care* ML67	VESTAMID® *Care* ML94	VESTAMID® *Care* ML24	VESTAMID® *Care* ML-GB30
Density 23°C	ISO 1183	g/cm³	1.01	1.01	1.01	1.25
Tensile test	ISO 527-1					
Stress at yield	ISO 527-2	MPa	46	45	47	47
Strain at yield		%	6	5	5	5
Nominal strain at break		%	>50	>50	>50	>50
Tensile modulus	ISO 527-1/-2	MPa	1400	1350	1400	2000
CHARPY impact strength	ISO 179/1eU					
23°C		kJ/m²	N	N	N	160 C
-30°C		kJ/m²	N	N	N	160 C
CHARPY notched impact strength	ISO 179/1eA					
23°C		kJ/m²	4 C	6 C	16 C	6 C
-30°C		kJ/m²	5 C	6 C	9 C	6 C
Melting range DSC, 2nd heating	ISO 11357	°C	178	178	178	178
Temperature of deflection under load	ISO 75-1/-2					
Method A 1.8 MPa		°C	50	50	50	55
Method B 0.45 MPa		°C	120	120	110	150
Vicat softening temperature	ISO 306					
Method A 10 N		°C	170	170	170	150
Method B 50 N		°C	140	140	140	155
Linear thermal expansion 23 -55 °C	ISO 11359	10^{-4} K^{-1}	1.5	1.5	1.4	1.3
Flammability acc. UL94	IEC 60695					
3.2 mm			HB	HB	HB	HB
1.6 mm			HB	HB	HB	HB
Mold shrinkage	determined on 2mm sheets with film gate at rim, mold temp. 80°C ISO 294-4					
in flow direction		%	0.9	0.85	0.65	1.2
in transverse direction		%	1.1	1.15	1.25	1.2
Water absorption	ISO 62	%	1.4	1.5	1.6	1.1
23°C,saturation		%	0.7	0.8	0.7	0.5
23°C/50% relative humidity						

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