

Product Information

VESTAMID® D16

MEDIUM-VISCOSITY PA612 RESIN

VESTAMID® D16 is a medium-viscosity Polyamide 612 compound for extrusion and injection moulding of e.g. monofilaments (toothbrush bristles).

The material based on PA612 absorbs only small amounts of water. Components made of this material therefore show excellent dimensional stability under changing ambient humidity.

VESTAMID® D16 is supplied as cylindrical granules in moisture-proof polyethylene containers ready for processing.

Pigmentation may affect values.

Key Features

Industrial Sector

Industry and Engineering, Sports and Lifestyle

Optics

Translucent

Processing

Injection molding, Extrusion

Conformity

Food contact

Delivery form

Pellets, Granules

Additives

Unfilled

LCA-values

	dry	Unit	Test Standard
LCA name of certificate	VESTAMID® D	-	ISO 14040, 14044
LCA certifier	TÜV Rheinland	-	ISO 14040, 14044
Blue water consumption	9.9	kg	ISO 14040, 14044
Global Warming Potential incl. bio. C incl. LUC	7.2	kg CO ₂ eq./kg	ISO 14040, 14044
Global Warming Potential excl. bio. C incl. LUC	7.2	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	-0.8	kg CO ₂ eq./kg	ISO 14040, 14044

Mechanical properties ISO	dry / cond	Unit	Test Standard
Tensile modulus	2200 / 1700	MPa	ISO 527
Tensile strength	58 / -	MPa	ISO 527
Yield stress	58 / 53	MPa	ISO 527
Yield strain	4 / 16	%	ISO 527
Stress at 50% strain	41 / *	MPa	ISO 527
Stress at break	42 / *	MPa	ISO 527
Nominal strain at break, tB	115 / >50	%	ISO 527
Typical for the mat. nom. strain at br., tB	92	%	ISO 527
Charpy impact strength, +23°C	N / N	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	N / N	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, +23°C	5 / 6	kJ/m ²	ISO 179/1eA
Type of failure	C / C	-	-
Charpy notched impact strength, -30°C	6 / 6	kJ/m ²	ISO 179/1eA
Type of failure	C / C	-	-
Flexural modulus, 23°C	1980 / 1300	MPa	ISO 178
Flexural stress at conv. deflection, 23°C	66 / 40	MPa	ISO 178
Flexural strength, 23°C	78 / 55	MPa	ISO 178
Flexural strain at flexural strength, 23°C	7 / 9	%	ISO 178
Flexural stress at break, 23°C	N / N	MPa	ISO 178
Flexural strain at break, 23°C	N / N	%	ISO 178
Puncture - maximum force, +23°C	4380 / -	N	ISO 6603-2
Puncture - maximum force, -30°C	5690 / -	N	ISO 6603-2
Puncture energy, +23°C	53 / -	J	ISO 6603-2
Puncture energy, -30°C	60 / -	J	ISO 6603-2

Thermal properties	dry / cond	Unit	Test Standard
Melting temperature	215 / *	°C	ISO 11357-1/-3
Glass transition temperature, DSC	45 / *	°C	ISO 11357-1/-2
Temp. of deflection under load A, 1.80 MPa	65 / *	°C	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	150 / *	°C	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	215 / *	°C	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	180 / *	°C	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	130 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, 23°C to 55 °C, normal	120 / *	E-6/K	ISO 11359-1/-2
Melting Temperature	215	°C	ASTM D 3418

Physical properties	dry / cond	Unit	Test Standard
Density	1060 / -	kg/m ³	ISO 1183
Water absorption	2.7 / *	%	Sim. to ISO 62
Humidity absorption	1 / *	%	Sim. to ISO 62
Shore D hardness	76 / -	-	ISO 7619-1
Density	1060	kg/m ³	ASTM D 792

Burning Behav.	dry / cond	Unit	Test Standard
Burning behav. at 1.5 mm nom. thickn.	HB / *	class	IEC 60695-11-10
Thickness tested	1.6 / *	mm	-
Burnin behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	3.2 / *	mm	-

Electrical properties	dry / cond	Unit	Test Standard
Volume resistivity, V	>1E13 / 1E12	Ohm*m	IEC 62631-3-1
Relative permittivity, 100Hz	3.8 / 4.5	-	IEC 62631-2-1
Relative permittivity, 1MHz	3.2 / 4.1	-	IEC 62631-2-1
Dissipation factor, 100Hz	240 / 590	E-4	IEC 62631-2-1

Dissipation factor, 1MHz	290 / 510	E-4	IEC 62631-2-1
Dielectric strength, AC, S20/S20, t. 1 mm	28 / 27	kV/mm	IEC 60243-1
Dielectric strength, AC, S20/P50	28 / -	kV/mm	Sim. to IEC 60243-1

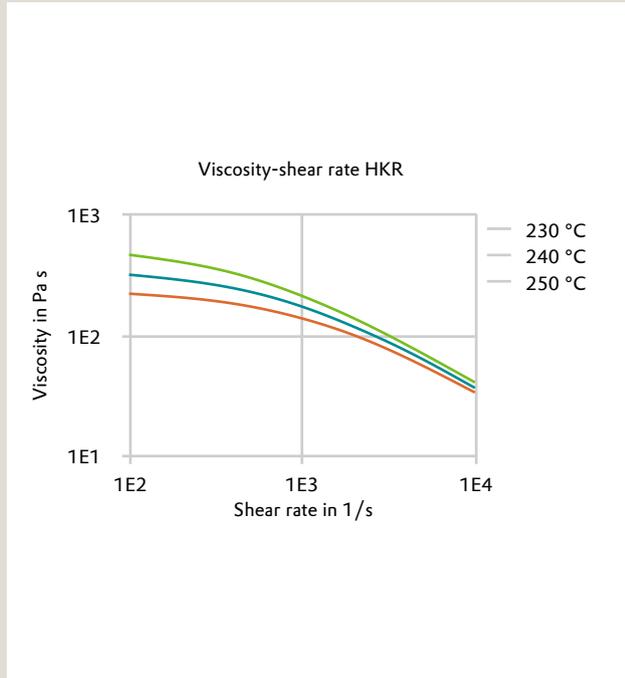
Rheological properties	dry / cond	Unit	Test Standard
Melt volume-flow rate, MVR	75 / *	cm ³ /10min	ISO 1133
Temperature	240 / *	°C	-
Load	5 / *	kg	-
Molding shrinkage, parallel	1.3 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	1.4 / *	%	ISO 294-4, 2577
Mold temperature	80 / *	°C	-
Melt temperature	250 / *	°C	-

Polymer analytics	dry / cond	Unit	Test Standard
Viscosity number	160 / *	cm ³ /g	ISO 307, 1157, 1628
Amino end group	<5	mmol/kg	Evonik standard
Carboxyl end group	110	mmol/kg	Evonik standard

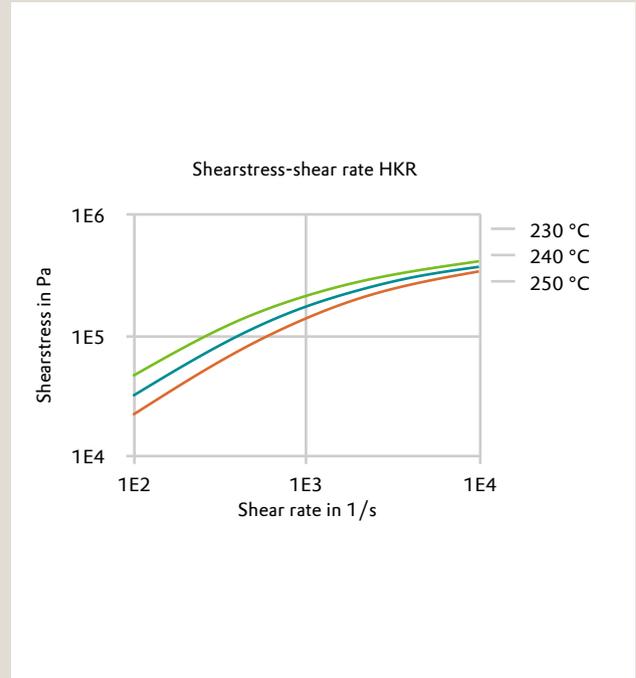
Test specimen production	dry	Unit	Test Standard
Injection Molding, melt temperature	250	°C	ISO 294
Injection Molding, mold temperature	80	°C	ISO 294
Injection Molding, injection velocity	200	mm/s	ISO 294
Injection Molding, pressure at hold	70	MPa	ISO 294

Diagrams

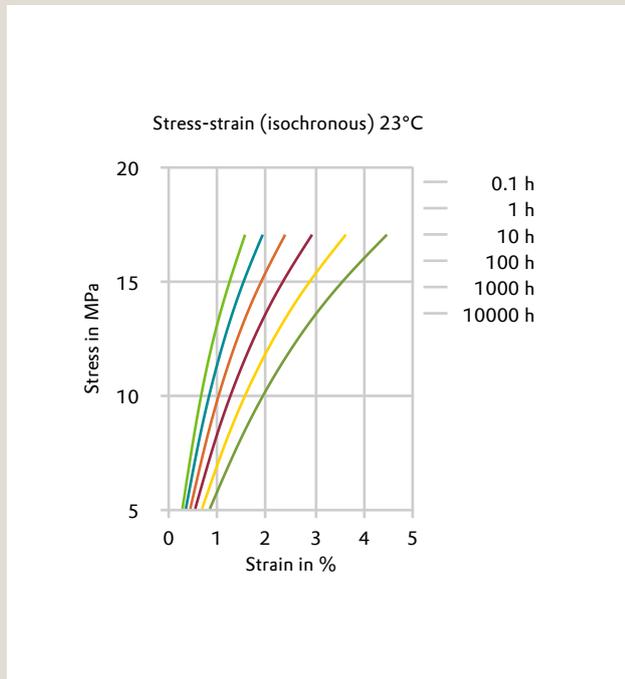
Viscosity-shear rate HKR



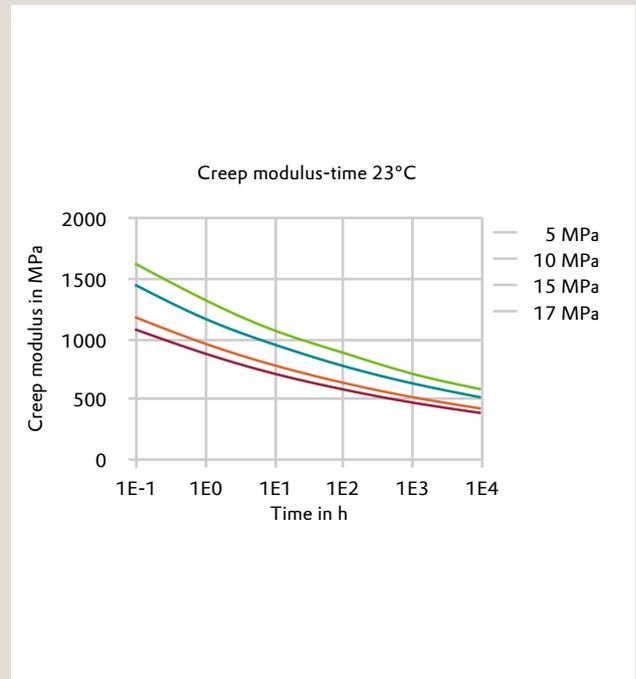
Shearstress-shear rate HKR



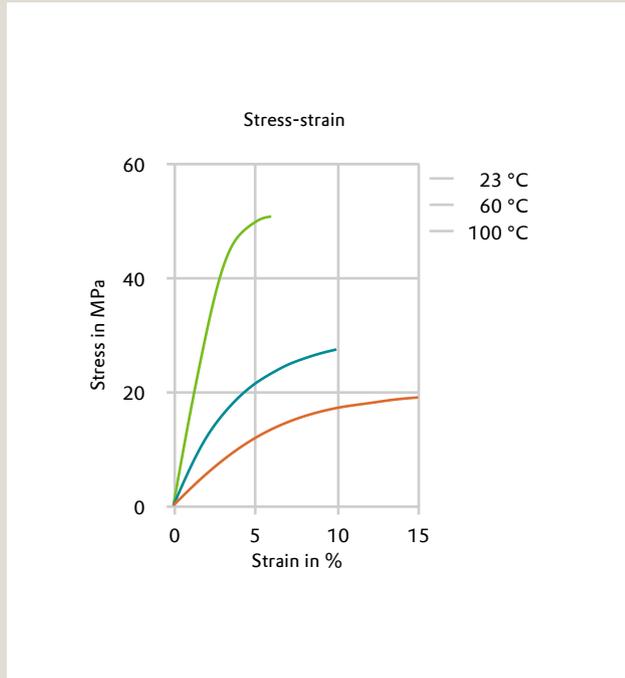
Stress-strain (isochronous) 23°C



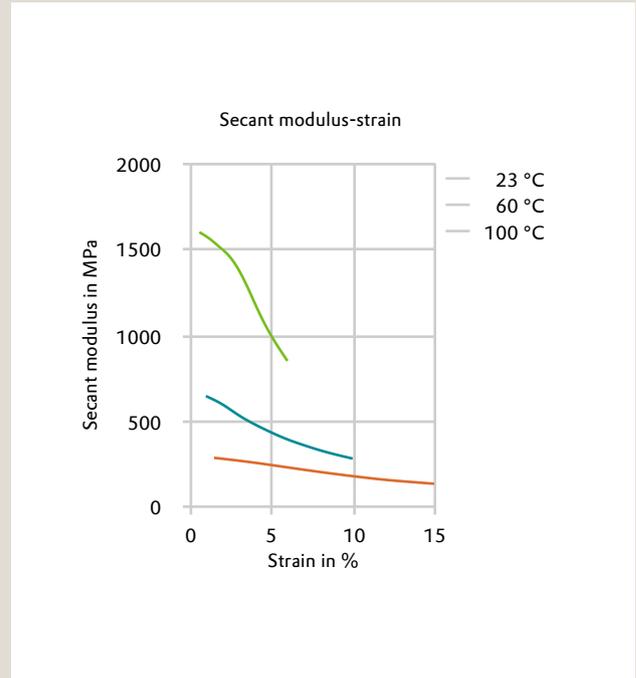
Creep modulus-time 23°C



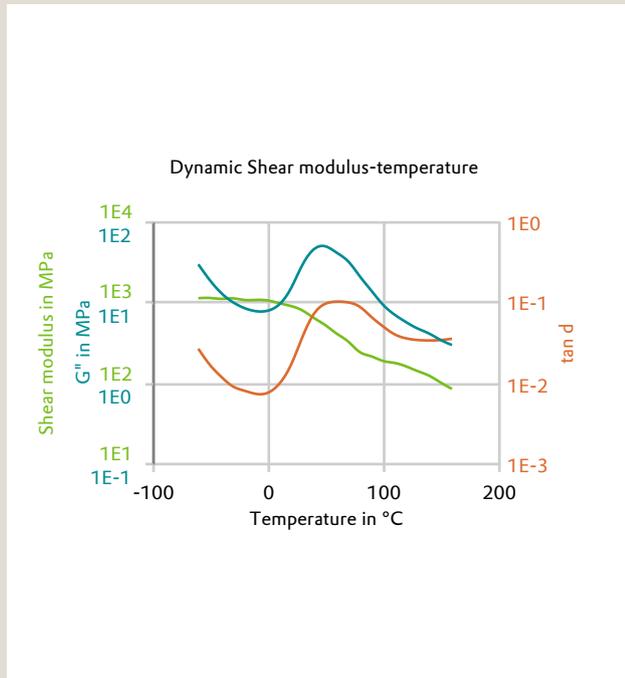
Stress-strain



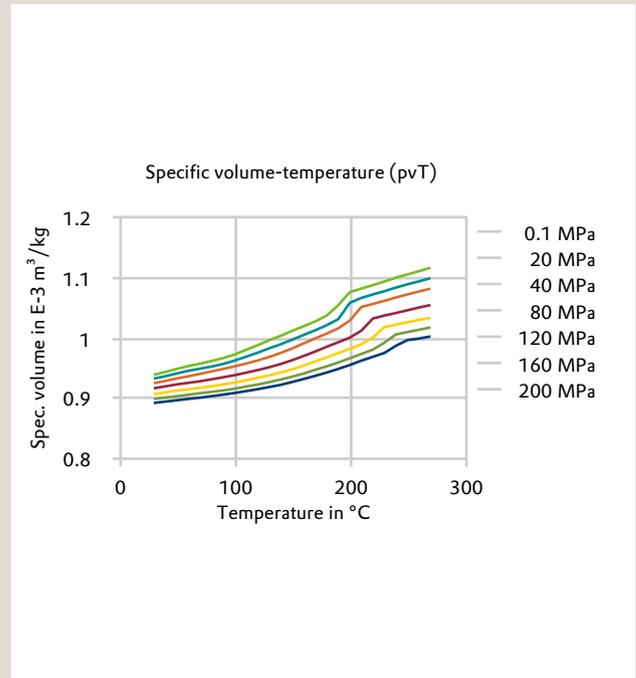
Secant modulus-strain



Dynamic Shear modulus-temperature



Specific volume-temperature (pvT)



Characteristics

Applications

Hygiene and cosmetics, Monofilament

Processing

Profile extrusion

Chemical Media Resistance

Acids

- ✓ Acetic Acid (5% by mass) (23°C)
- ✓ Citric Acid solution (10% by mass) (23°C)

Bases

- ✓ Sodium Hydroxide solution (35% by mass) (23°C)
- ✓ Sodium Hydroxide solution (1% by mass) (23°C)
- ✓ Ammonium Hydroxide solution (10% by mass) (23°C)

Alcohols

- ✓ Isopropyl alcohol (23°C)
- ✓ Methanol (23°C)
- ✓ Ethanol (23°C)

Hydrocarbons

- ✓ n-Hexane (23°C)
- ✓ Toluene (23°C)
- ✓ iso-Octane (23°C)

Ketones

- ✓ Acetone (23°C)

Ethers

- ✓ Diethyl ether (23°C)

Salt solutions

- ✓ Sodium Chloride solution (10% by mass) (23°C)
- ✓ Sodium Carbonate solution (20% by mass) (23°C)
- ✓ Sodium Carbonate solution (2% by mass) (23°C)

Other

- ✓ Ethyl Acetate (23°C)

- ✓ Hydrogen peroxide (23°C)
- ✓ Water (23°C)

Rheological calculation properties	dry	Unit	Test Standard
Min. mold temperature	30	°C	-
Max. mold temperature	100	°C	-
Min. melt temperature	230	°C	-
Max. melt temperature	270	°C	-