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

Processing
Injection molding, Extrusion

Delivery form
Pellets, Granules

Optics
Translucent

Conformity
Food contact

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	**319000 / 247000**	psi	ISO 527
Tensile strength	**8410 / -**	psi	ISO 527
Yield stress	**8410 / 7690**	psi	ISO 527
Yield strain	**4 / 16**	%	ISO 527
Stress at 50% strain	**5950 / ***	psi	ISO 527
Stress at break	**6090 / ***	psi	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**	ftlb/in^2	ISO 179/1eU
Charpy impact strength, -30°C	**N / N**	ftlb/in^2	ISO 179/1eU
Charpy notched impact strength, +23°C	**2.38 / 2.85**	ftlb/in^2	ISO 179/1eA
Type of failure	**C / C**	-	-
Charpy notched impact strength, -30°C	**2.85 / 2.85**	ftlb/in^2	ISO 179/1eA
Type of failure	**C / C**	-	-
Flexural modulus, 23°C	**287000 / 189000**	psi	ISO 178
Flexural stress at conv. deflection, 23°C	**9570 / 5800**	psi	ISO 178
Flexural strength, 23°C	**11300 / 7980**	psi	ISO 178
Flexural strain at flexural strength, 23°C	**7 / 9**	%	ISO 178
Flexural stress at break, 23°C	**N / N**	psi	ISO 178
Flexural strain at break, 23°C	**N / N**	%	ISO 178
Puncture - maximum force, +23°C	**985 / -**	lbf	ISO 6603-2
Puncture - maximum force, -30°C	**1280 / -**	lbf	ISO 6603-2
Puncture energy, +23°C	**469 / -**	in-lb	ISO 6603-2
Puncture energy, -30°C	**531 / -**	in-lb	ISO 6603-2

Thermal properties	dry / cond	Unit	Test Standard
Melting temperature	**419 / ***	°F	ISO 11357-1/-3
Glass transition temperature, DSC	**113 / ***	°F	ISO 11357-1/-2
Temp. of deflection under load A, 1.80 MPa	**149 / ***	°F	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	**302 / ***	°F	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	**419 / ***	°F	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	**356 / ***	°F	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	**7.22E-5 / ***	in/in/°F	ISO 11359-1/-2
Coeff. of linear therm. expansion, 23°C to 55 °C, normal	**6.67E-5 / ***	in/in/°F	ISO 11359-1/-2
Melting Temperature	**419**	°F	ASTM D 3418

Physical properties	dry / cond	Unit	Test Standard
Density	**1.06 / -**	g/cm³	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	**1.06**	g/cm³	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	**0.0630 / ***	in	-
Burnin behav. at thickness h	**HB / ***	class	IEC 60695-11-10
Thickness tested	**0.1260 / ***	in	-

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	**711 / 686**	kV/in	IEC 60243-1
Dielectric strength, AC, S20/P50	**711 / -**	V/mil	Sim. to IEC 60243-1

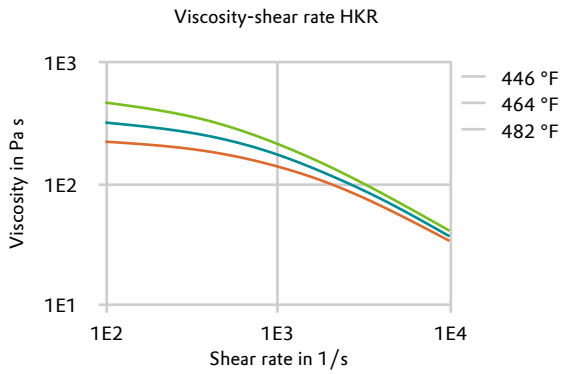
Rheological properties	**dry / cond**	**Unit**	**Test Standard**
Melt volume-flow rate, MVR	**75 / ***	cm^3/10min	ISO 1133
Temperature	**240 / ***	°C	-
Load	**5 / ***	kg	-
Molding shrinkage, parallel	**1.3 / ***	%	ISO 294-4, 2577
Molding shrinkage, normal	**1.4 / ***	%	ISO 294-4, 2577
Mold temperature	**176 / ***	°F	-
Melt temperature	**482 / ***	°F	-

Polymer analytics	**dry / cond**	**Unit**	**Test Standard**
Viscosity number	**4430 / ***	in^3/lb	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	**482**	°F	ISO 294
Injection Molding, mold temperature	**176**	°F	ISO 294
Injection Molding, injection velocity	**7.87**	in/s	ISO 294
Injection Molding, pressure at hold	**10200**	psi	ISO 294

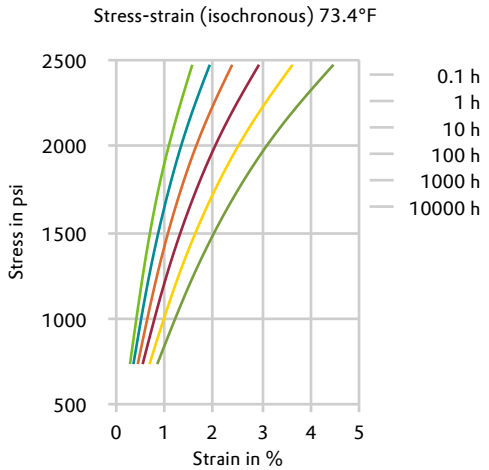
Diagrams

Viscosity-shear rate HKR

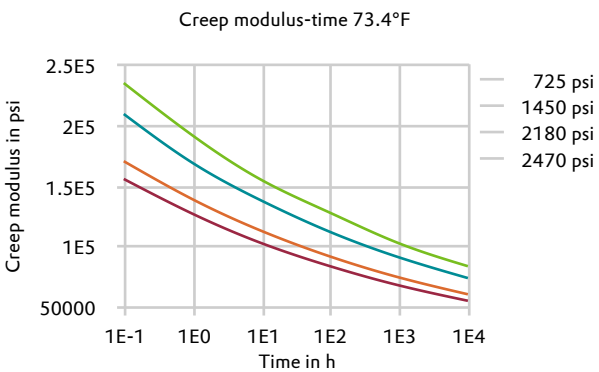


Shearstress-shear rate HKR

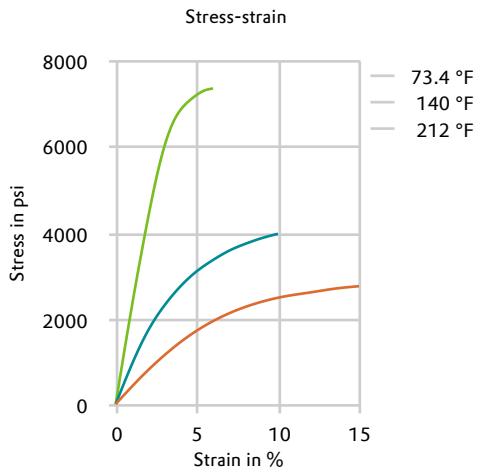
Stress-strain (isochronous) 73°F



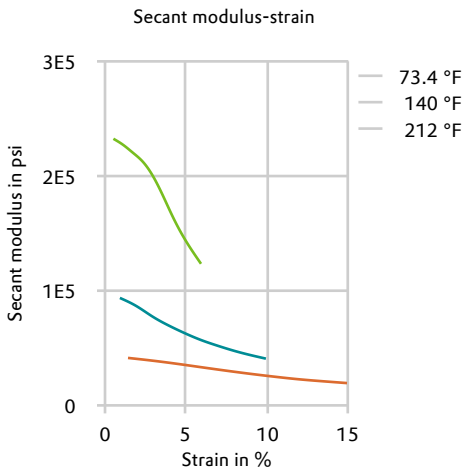
Creep modulus-time 73°F



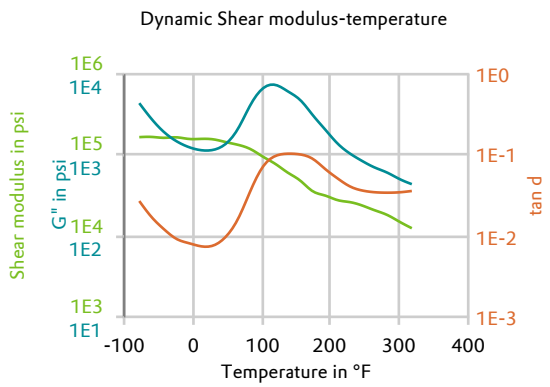
Stress-strain



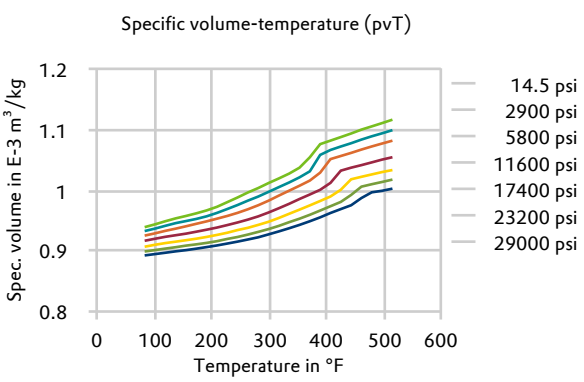
Secant modulus-strain



Dynamic Shear modulus-temperature



Specific volume-temperature (pvT)



VESTAMID®

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	**86**	°F	-
Max. mold temperature	**212**	°F	-
Min. melt temperature	**446**	°F	-
Max. melt temperature	**518**	°F	-