

Product Information

VESTAMID® E47-S3

HEAT- AND LIGHT-STABILIZED COMPOUND BASED ON POLYAMIDE 12 ELASTOMER FOR MOLDING OF SPORT SHOE SOLES

VESTAMID® E47-S3 is a PA 12 elastomer consisting of PA12 segments and softening segments. The material is free of volatile or migrating plasticizer.

The VESTAMID® E represent thermoplastic elastomers generically characterized as polyether block copolyamides (PEBA) consisting of PA 12 and polyether segments.

VESTAMID® E47-S3 is especially developed for sport shoe soles. It has good impact strength at low temperatures.

VESTAMID® E47-S3 is supplied as spherical pellets in moisture-proof packaging, ready for processing.

The process temperatures should be within a range of 180°C – 220°C.

Pigmentation may affect values.

Inside the original and undamaged packaging, the product has a shelf life of at least 2 years when stored in dry rooms at temperatures not exceeding 30°C.

Key Features

Industrial Sector

Sustainable, Industry and Engineering, Sports and Lifestyle

Sustainability

Sustainable electricity

Processing

Injection molding, Extrusion

Delivery form

Pellets, Granules

Optics

Translucent

Resistance to

Heat (thermal stability), Hydrolysis / hot water, UV / light / weathering, Wear / abrasion, Fatigue resistance

Additives

Unfilled

LCA-values	dry	Unit	Test Standard
LCA name of certificate	VESTAMID® E mix	-	ISO 14040, 14044
LCA certifier	TÜV Rheinland	-	ISO 14040, 14044
Blue water consumption	14.2	kg	ISO 14040, 14044
Global Warming Potential incl. bio. C incl. LUC	6.5	kg CO ₂ eq./kg	ISO 14040, 14044
Global Warming Potential excl. bio. C incl. LUC	6.5	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	-1.6	kg CO ₂ eq./kg	ISO 14040, 14044

Mechanical properties ISO	dry / cond	Unit	Test Standard
Tensile modulus	18900 / -	psi	ISO 527
Tensile strength	3920 / -	psi	ISO 527
Stress at 50% strain	1890 / -	psi	ISO 527
Stress at break	3920 / -	psi	ISO 527
Nominal strain at break, tB	450 / -	%	ISO 527
Typical for the mat. nom. strain at br., tB	200	%	ISO 527
Tensile creep modulus, 0,5% Strain, 1000h	* / 13100	psi	ISO 899-1
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	N / -	ftlb/in ²	ISO 179/1eA
Charpy notched impact strength, -30°C	N / -	ftlb/in ²	ISO 179/1eA
Tensile-impact strength, notched, atN +23°C	80.9 / -	ftlb/in ²	ISO 8256/1
Flexural modulus, 23°C	17400 / -	psi	ISO 178

Mechanical properties (TPE)	dry / cond	Unit	Test Standard
Stress at 5% elongation	870 / -	psi	ISO 527
Stress at 10% elongation	1290 / -	psi	ISO 527
Stress at 20% elongation	1670 / -	psi	ISO 527

Stress at 50% elongation	1960 / -	psi	ISO 527
Stress at 100% elongation	2420 / -	psi	-
Strain at break TPE	202 / -	%	ISO 527
Stress at break TPE	3310 / -	psi	ISO 527

Thermal properties	dry / cond	Unit	Test Standard
Melting temperature	315 / *	°F	ISO 11357-1/-3
Glass transition temperature, DSC	-58 / *	°F	ISO 11357-1/-2
Temp. of deflection under load A, 1.80 MPa	113 / *	°F	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	149 / *	°F	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	284 / *	°F	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	158 / *	°F	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	0.000128 / *	in/in/°F	ISO 11359-1/-2
Coeff. of linear therm. expansion, 23°C to 55 °C, normal	0.000117 / *	in/in/°F	ISO 11359-1/-2
Melting Temperature	315	°F	ASTM D 3418

Physical properties	dry / cond	Unit	Test Standard
Density	1.02 / -	g/cm ³	ISO 1183
Water absorption	1 / *	%	Sim. to ISO 62
Humidity absorption	0.4 / *	%	Sim. to ISO 62
Shore D hardness	47 ^[b] / -	-	ISO 7619-1
Density	1.02	g/cm ³	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	-
Burnin behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	0.1181 / *	in	-

Electrical properties	dry / cond	Unit	Test Standard
Volume resistivity, V	1E9 / -	Ohm*m	IEC 62631-3-1
Relative permittivity, 100Hz	8.5 / -	-	IEC 62631-2-1
Relative permittivity, 1MHz	4.7 / -	-	IEC 62631-2-1
Dissipation factor, 100Hz	1200 / -	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	1300 / -	E-4	IEC 62631-2-1
Dielectric strength, AC, S20/S20, t. 1 mm	940 / -	kV/in	IEC 60243-1

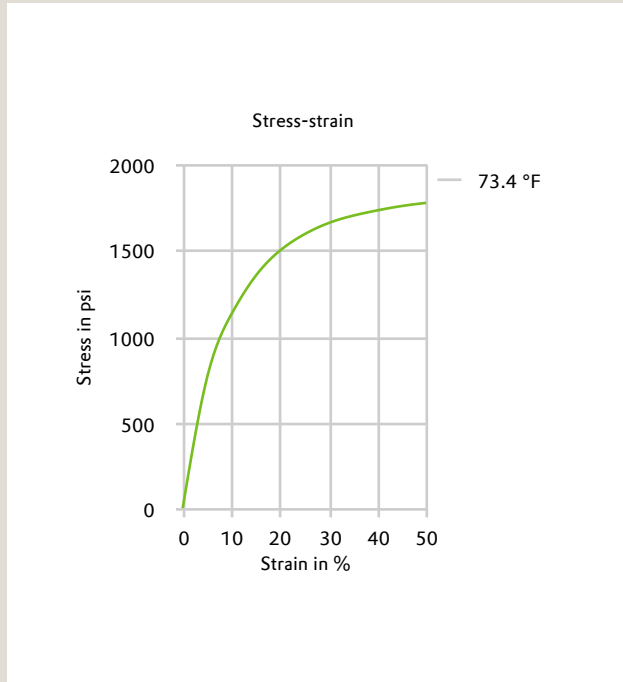
Rheological properties	dry / cond	Unit	Test Standard
Melt volume-flow rate, MVR	65 / *	cm ³ /10min	ISO 1133
Temperature	240 / *	°C	-
Load	2.16 / *	kg	-
Molding shrinkage, parallel	0.3 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	0.8 / *	%	ISO 294-4, 2577
Mold temperature	95 / *	°F	-
Melt temperature	392 / *	°F	-

Polymer analytics	dry / cond	Unit	Test Standard
Viscosity number	5260 / *	in ³ /lb	ISO 307, 1157, 1628

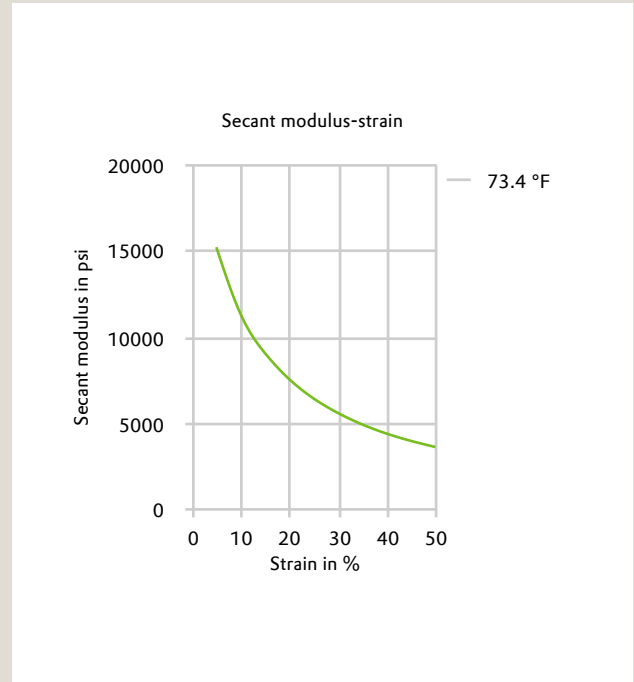
Test specimen production	dry	Unit	Test Standard
Injection Molding, melt temperature	392	°F	ISO 294
Injection Molding, mold temperature	95	°F	ISO 294
Injection Molding, injection velocity	7.87	in/s	ISO 294
Injection Molding, pressure at hold	10200	psi	ISO 294

Diagrams

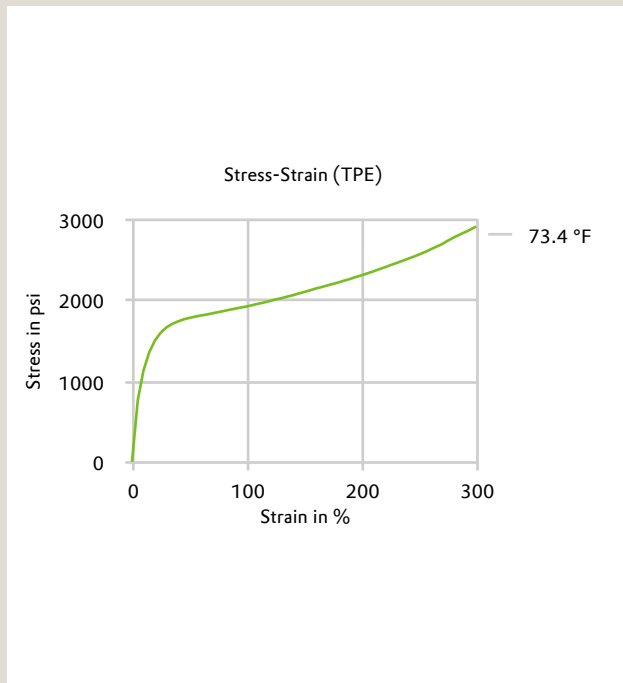
Stress-strain



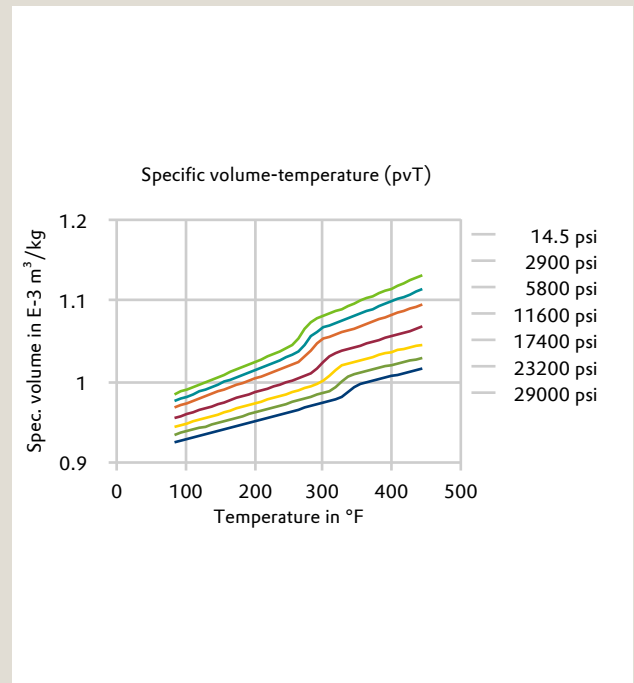
Secant modulus-strain



Stress-Strain (TPE)



Specific volume-temperature (pvT)



Characteristics

Processing

Profile extrusion

Color

Natural color

Special Characteristics

Light-stabilized, U.V. stabilized, High heat resistant

Additives

Light stabilizer, Heat stabilizer

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	59	°F	-
Max. mold temperature	104	°F	-
Min. melt temperature	356	°F	-
Max. melt temperature	428	°F	-