

Product Information

# VESTAMID® LX9008 BK 9.7504

## HIGH-VISCOSITY, PLASTICIZER-FREE EXTRUSION COMPOUND WITH AN EXTRAORDINARY LONG-TERM HEAT RESISTANCE

**VESTAMID® LX9008 BK 9.7504** is a plasticizer-free polyamide 12 compound, with an especially high long-term resistance under thermal load.

VESTAMID® LX9008 BK 9.7504 is suitable to produce flexible tubes that are permanently exposed to higher temperatures, e.g., in the engine compartment of motor vehicles. Especially when used as diesel fuel lines they show significant advantages compared with standard grades, obvious in storage tests with diesel fuel.

The material absorbs only little moisture, thus leading to nearly unaffected dimensions and properties of the finished parts at changing ambient conditions.

Using VESTAMID® LX9008 BK 9.7504 for fuel lines one must pay attention to certain preconditions. The Technical Marketing Department gives you advice in selecting the suitable VESTAMID® compound.

The use of colorants may affect property 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

Automotive and Mobility, Sustainable

#### Sustainability

Sustainable electricity

#### Processing

Extrusion

#### Delivery form

Pellets, Granules

#### Resistance to

Heat (thermal stability), UV / light / weathering, Oil / fuels

#### Electrical

Insulating

#### Conformity

Automotive

#### Additives

Unfilled

LCA-values	dry	Unit	Test Standard
LCA name of certificate	<a href="#">VESTAMID® L Compound low</a>	-	ISO 14040, 14044
LCA certifier	<a href="#">TÜV Rheinland</a>	-	ISO 14040, 14044
Blue water consumption	<b>25.7</b>	kg	ISO 14040, 14044
Global Warming Potential incl. bio. C incl. LUC	<b>6.1</b>	kg CO <sub>2</sub> eq./kg	ISO 14040, 14044
Global Warming Potential excl. bio. C incl. LUC	<b>6.1</b>	kg CO <sub>2</sub> eq./kg	ISO 14040, 14044
Land use (ReCiPe 2016)	<b>0.1</b>	Annual crop eq. y	ISO 14040, 14044
GWP savings as compared to 2023 reference	<b>-2.5</b>	kg CO <sub>2</sub> eq./kg	ISO 14040, 14044

Mechanical properties ISO	dry / cond	Unit	Test Standard
Tensile modulus	<b>1450 / 970</b>	MPa	ISO 527
Tensile strength	<b>41 / 39</b>	MPa	ISO 527
Yield stress	<b>41 / 39</b>	MPa	ISO 527
Yield strain	<b>5 / 17</b>	%	ISO 527
Stress at 50% strain	<b>38 / 36</b>	MPa	ISO 527
Stress at break	<b>49 / 47</b>	MPa	ISO 527
Nominal strain at break, tB	<b>165 / 170</b>	%	ISO 527
Typical for the mat. nom. strain at br., tB	<b>150</b>	%	ISO 527
Charpy impact strength, +23°C	<b>N / N</b>	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength, -30°C	<b>N / N</b>	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, +23°C	<b>40 / 90</b>	kJ/m <sup>2</sup>	ISO 179/1eA
Type of failure	<b>P / P</b>	-	-
Charpy notched impact strength, -30°C	<b>22 / 22</b>	kJ/m <sup>2</sup>	ISO 179/1eA
Type of failure	<b>C / C</b>	-	-
Flexural modulus, 23°C	<b>1190 / 1000</b>	MPa	ISO 178
Flexural stress at conv. deflection, 23°C	<b>- / 32</b>	MPa	ISO 178
Flexural strength, 23°C	<b>48 / 43</b>	MPa	ISO 178

Flexural strain at flexural strength, 23°C	- / 8	%	ISO 178
Flexural stress at break, 23°C	- / N	MPa	ISO 178
Flexural strain at break, 23°C	- / N	%	ISO 178

Thermal properties	dry / cond	Unit	Test Standard
Melting temperature	176 / *	°C	ISO 11357-1/-3
Glass transition temperature, DSC	47 / *	°C	ISO 11357-1/-2
Temp. of deflection under load A, 1.80 MPa	48 / *	°C	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	113 / *	°C	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	175 / *	°C	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	145 / *	°C	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	90.5 / *	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	176	°C	ASTM D 3418

Physical properties	dry / cond	Unit	Test Standard
Density	1010 / -	kg/m <sup>3</sup>	ISO 1183
Water absorption	1.4 / *	%	Sim. to ISO 62
Humidity absorption	0.7 / *	%	Sim. to ISO 62
Shore D hardness	73 <sup>[b]</sup> / 73 <sup>[b]</sup>	-	ISO 7619-1
Density	1010	kg/m <sup>3</sup>	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	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	<b>1E12 / 2.3E10</b>	Ohm*m	IEC 62631-3-1
Surface resistivity, C, circular electrodes	<b>- / 5.7E14</b>	Ohm per square	IEC 62631-3-2
Relative permittivity, 50Hz	<b>- / 5</b>	-	IEC 62631-2-1
Relative permittivity, 100Hz	<b>3.7 / 4.7</b>	-	IEC 62631-2-1
Relative permittivity, 1MHz	<b>2.9 / 3.1</b>	-	IEC 62631-2-1
Dissipation factor, 100Hz	<b>520 / 1040</b>	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	<b>320 / 390</b>	E-4	IEC 62631-2-1
Dielectric strength, AC, S20/S20, t. 1 mm	<b>38 / 37</b>	kV/mm	IEC 60243-1
Dielectric strength, AC, S20/P50	<b>37 / -</b>	kV/mm	Sim. to IEC 60243-1
CTI, test solution A, 50 drops value	<b>600 / -</b>	-	IEC 60112
Assessment of the insulation group	<b>I</b>	-	DIN EN 60664-1

Rheological properties	dry / cond	Unit	Test Standard
Melt volume-flow rate, MVR	<b>N / A / *</b>	cm <sup>3</sup> /10min	ISO 1133
Molding shrinkage, parallel	<b>0.2 / *</b>	%	ISO 294-4, 2577
Molding shrinkage, normal	<b>1.9 / *</b>	%	ISO 294-4, 2577

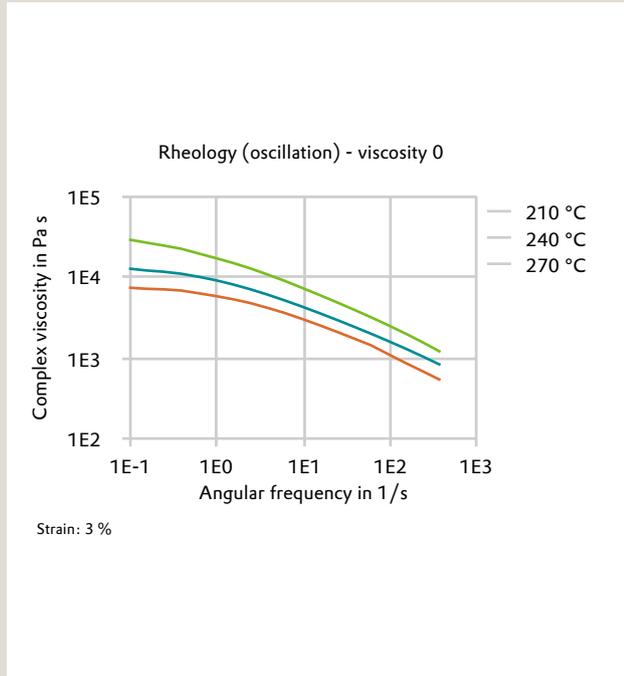
Pipes Properties	dry / cond	Unit	Test Standard
Impact strength with pendulum, pipe, -40°C	<b>N / *</b>	J	DIN 73378
Tube dimension, OD x WT	<b>8 x 1 / *</b>	mm	DIN 73378
Cold impact resistance, breaks of 10, -40°C, 912g	<b>0 / *</b>	-	SAE J2260, J2043
Tube dimension, OD x WT	<b>8 x 1 / *</b>	mm	SAE J2260, J2043
Cold impact resistance, breaks of 10, -40°C, 454g	<b>0 / *</b>	-	SAE J844
Tube dimension, OD x WT	<b>8 x 1 / *</b>	mm	SAE J844
Cold impact resistance, breaks of 10, -40°C, 454g	<b>0 / *</b>	-	SAE J844
Tube dimension, OD x WT	<b>8 x 1</b>	mm	SAE J844
Pretreatment	<b>2h boiling water</b>	-	SAE J844

Cold impact resistance, breaks of 10, -40°C, 454g	<b>0 / *</b>	-	SAE J844
Tube dimension, OD x WT	<b>8 x 1</b>	mm	SAE J844
Pretreatment	<b>24h 110°C</b>	-	SAE J844
Cold impact resistance, breaks of 10, -40°C, 880g	<b>0 / *</b>	-	Sim. to VW Audi PV 3905
Tube dimension, OD x WT	<b>8 x 1 / *</b>	mm	Sim. to VW Audi PV 3905
Burst hoop stress, 23°C, H2O	<b>44 / *</b>	MPa	DIN 53758, historical

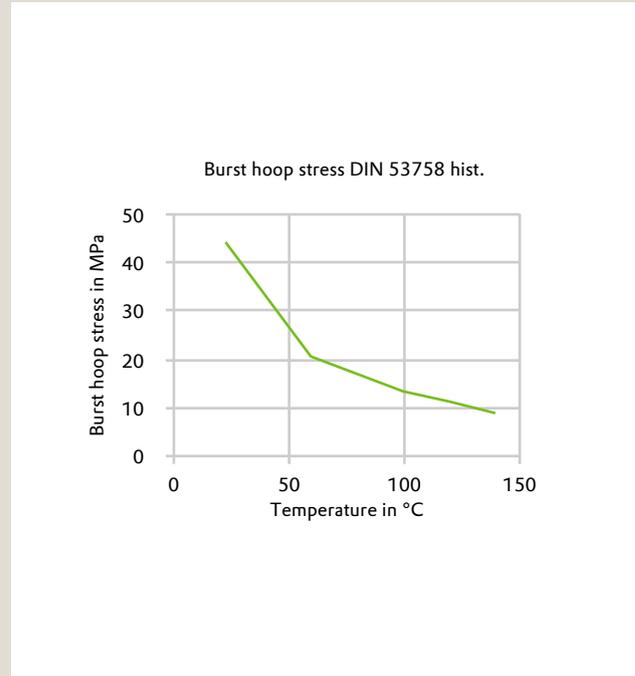
<b>Test specimen production</b>	<b>dry</b>	<b>Unit</b>	<b>Test Standard</b>
Injection Molding, melt temperature	<b>240</b>	°C	ISO 294
Injection Molding, mold temperature	<b>60</b>	°C	ISO 294
Injection Molding, injection velocity	<b>200</b>	mm/s	ISO 294

Diagrams

Rheology (oscillation) - viscosity 0



Burst hoop stress DIN 53758 hist.



Characteristics

Applications

Tube and hose

Processing

Profile extrusion, Pipe/Tube extrusion

Special Characteristics

High heat resistant

Color

Black

Additives

Heat stabilizer

Chemical Resistance

Fuel resistance

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)

#### Mineral oils

- ✓ SAE 10W40 multigrade motor oil (23°C)
- ✓ Insulating Oil (23°C)

#### Standard Fuels

- ✓ ISO 1817 Liquid 1 (60°C)
- ✓ ISO 1817 Liquid 2 (60°C)
- ✓ ISO 1817 Liquid 3 (60°C)
- ✓ ISO 1817 Liquid 4 (60°C)
- ✓ Standard fuel without alcohol (pref. ISO 1817 Liquid C) (23°C)
- ✓ Standard fuel with alcohol (pref. ISO 1817 Liquid 4) (23°C)
- ✓ Diesel fuel (pref. ISO 1817 Liquid F) (23°C)
- ✓ Diesel fuel (pref. ISO 1817 Liquid F) (90°C)
- ✓ Diesel EN 590 (100°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)
- ✓ Zinc Chloride solution (50% by mass) (23°C)

