

Product Information

# VESTAMID® NRG 3001 NC

## HIGH-VISCOSITY, HEAT- AND LIGHT-STABILIZED PA12 COMPOUND FOR EXTRUSION

**VESTAMID® NRG 3001** is a polyamide 12 compound developed for the manufacturing of hydrocarbon transport piping systems and liners. VESTAMID® NRG 3001 is characterized by easy processing and excellent dimensional control during pipe extrusion, especially by processing of large diameter pipes.

The material has an excellent resistance to hydrocarbons (i.e. crude oil) and oilfield chemicals (i.e. paraffin inhibitors). The properties of components made of VESTAMID® NRG 3001 are not affected by the contact with these media, resulting in high dimensional stability.

The process temperature should be within a range of 220°C to 240°C. Generally, VESTAMID® NRG 3001 is processable on most of the commercially available PE extrusion machines.

VESTAMID® NRG 3001 is supplied as cylindrical granules, ready for processing, in moisture-proof bags.

The results shown have been generated from a low number of production lots. Therefore, they are preliminary and not yet the result of a statistical evaluation. Therefore they must not be used to establish specifications.

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, Energy, Oil and Gas

#### Sustainability

Sustainable electricity

#### Processing

Injection molding, Extrusion

#### Delivery form

Pellets, Granules

#### Resistance to

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

#### 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>1320 / -</b>	MPa	ISO 527
Tensile strength	<b>38 / -</b>	MPa	ISO 527
Yield stress	<b>40 / -</b>	MPa	ISO 527
Yield strain	<b>14 / -</b>	%	ISO 527
Stress at 50% strain	<b>38 / -</b>	MPa	ISO 527
Stress at break	<b>48 / -</b>	MPa	ISO 527
Nominal strain at break, tB	<b>160 / -</b>	%	ISO 527
Typical for the mat. nom. strain at br., tB	<b>200</b>	%	ISO 527
Poisson's ratio, 23°C	<b>0.43 / *</b>	-	ISO 527
Poisson's ratio, var. temp.	<b>0.45 / *</b>	-	ISO 527
Temperature	<b>100 / *</b>	°C	ISO 527
Charpy impact strength, +23°C	<b>N / -</b>	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength, -30°C	<b>N / -</b>	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, +23°C	<b>54 / -</b>	kJ/m <sup>2</sup>	ISO 179/1eA
Type of failure	<b>P / -</b>	-	-
Charpy notched impact strength, -30°C	<b>15 / -</b>	kJ/m <sup>2</sup>	ISO 179/1eA

Thermal properties	dry / cond	Unit	Test Standard
Melting temperature	176 / *	°C	ISO 11357-1/-3
Thermal conductivity, LFA, solid state	0.24 / *	W/(m K)	ISO 22007-4
Vicat softening temperature A, 10 N, 50 K/h	172 / *	°C	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	140 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, 23°C to 55 °C, normal	135 / *	E-6/K	ISO 11359-1/-2
Melting Temperature	176	°C	ASTM D 3418

Physical properties	dry / cond	Unit	Test Standard
Density	1020 / -	kg/m <sup>3</sup>	ISO 1183
Water absorption	1.6 / *	%	Sim. to ISO 62
Humidity absorption	0.9 / *	%	Sim. to ISO 62
Moisture content	0.02 / -	Gew.-%	ISO 15512
Bulk density, Granulate	598	kg/m <sup>3</sup>	-
Weight per 1000 granules	15.4 / -	g	-
Density	1020	kg/m <sup>3</sup>	ASTM D 792

Rheological properties	dry / cond	Unit	Test Standard
Melt volume-flow rate, MVR	N / A / *	cm <sup>3</sup> /10min	ISO 1133
Molding shrinkage, parallel	0.4 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	1.5 / *	%	ISO 294-4, 2577
Mold temperature	60 / *	°C	-
Melt temperature	290 / *	°C	-

Test specimen production	dry	Unit	Test Standard
Injection Molding, melt temperature	290	°C	ISO 294
Injection Molding, mold temperature	60	°C	ISO 294
Injection Molding, injection velocity	200	mm/s	ISO 294

# VESTAMID®

## Characteristics

### Applications

Tube and hose

### Color

Natural color

### Special Characteristics

Light-stabilized, High heat resistant, High viscosity