Product Information

VESTAMID® NRG 3901 BK

HIGH-VISCOSITY, HEAT-AND LIGHT-STABILIZED POLYAMIDE 12 COMPOUND FOR EXTRUSION

VESTAMID® NRG 3901 BK is a high molecular grade PA 12 material developed by Evonik. VESTAMID® NRG 3901 BK is a polyamide 12 compound developed for the manufacturing of hydrocarbon transport piping systems and liners.

VESTAMID® NRG 3901 BK 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 3901 BK are not affected by the contact with these media, resulting in high dimensional stability.

We recommend a processing temperature between 220 °C (428 °F) and 260 °C (500 °F) during the injection molding and extrusion process.
The mold temperature should be within a range of 60 °C (140 °F) to 100 °C (212 °F).

Drying at 80 °C (176 °F) for 2 hours to 4 hours before processing is recommended.

Generally, VESTAMID® NRG 3901 BK is processable on most of the commercially available PE extrusion machines.

Polyamide 12 is a high performance thermoplastic polymer with increased performance characteristics that translates into safe operations over the life of the installed pipeline. It has a considerable record of safe and proven experience in many demanding applications, including fuel lines in passenger cars, air brake tubing in trucks and offshore applications.

VESTAMID® NRG 3901 BK is supplied as cylindrical granules, ready for processing in moisture-proof packaging.

Pigmentation may affect values.

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.

VESTAMID®

Key Features

Industrial Sector
Sustainable, Energy, Oil and Gas

Sustainability
Sustainable electricity

Delivery form
Pellets, Granules

Resistance to
Heat (thermal stability), UV / light / weathering

Additives
Unfilled

LCA-values	dry	Unit	Test Standard
LCA name of certificate	VESTAMID® L Compound low	-	ISO 14040, 14044
LCA certifier	TÜV Rheinland	-	ISO 14040, 14044
Blue water consumption	**25.7**	kg	ISO 14040, 14044
Global Warming Potential incl. bio. C incl. LUC	**6.1**	kg CO_2 eq./kg	ISO 14040, 14044
Global Warming Potential excl. bio. C incl. LUC	**6.1**	kg CO_2 eq./kg	ISO 14040, 14044
Land use (ReCiPe 2016)	**0.1**	Annual crop eq. y	ISO 14040, 14044
GWP savings as compared to 2023 reference	**-2.5**	kg CO_2 eq./kg	ISO 14040, 14044

Mechanical properties ISO	dry / cond	Unit	Test Standard
Tensile modulus	**196000 / -**	psi	ISO 527
Tensile strength	**5800 / -**	psi	ISO 527
Yield stress	**5800 / -**	psi	ISO 527
Yield strain	**9 / -**	%	ISO 527
Stress at break	**6670 / -**	psi	ISO 527
Nominal strain at break, tB	**140 / -**	%	ISO 527
Poisson's ratio, 23°C	**0.43 / ***	-	ISO 527
Poisson's ratio, var. temp.	**0.45 / ***	-	ISO 527
Temperature	**212 / ***	°F	ISO 527
Charpy impact strength, -40°C	**N / -**	ftlb/in^2	ISO 179/1eU

Thermal properties	dry / cond	Unit	Test Standard
Melting temperature	**351 / ***	°F	ISO 11357-1/-3
Thermal conductivity, LFA, solid state	**1.67 / ***	BTU in/(hr ft² °F)	ISO 22007-4
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	**7.78E-5 / ***	in/in/°F	ISO 11359-1/-2
Melting Temperature	**351**	°F	ASTM D 3418

Physical properties	dry / cond	Unit	Test Standard
Density	**1.02 / -**	g/cm³	ISO 1183
Shore D hardness	**73**[b] **/ -**	-	ISO 7619-1
Ball indentation hardness	**11000 / -**	psi	ISO 2039-1
Density	**1.02**	g/cm³	ASTM D 792

b: 3 seconds

Test specimen production	dry	Unit	Test Standard
Injection Molding, melt temperature	**500**	°F	ISO 294
Injection Molding, mold temperature	**140**	°F	ISO 294
Injection Molding, injection velocity	**7.87**	in/s	ISO 294

Characteristics

Special Characteristics
Light-stabilized, High heat resistant, High viscosity

Additives
Light stabilizer, Heat stabilizer

Color
Black