

Product Information

# VESTAMID® NRG 3101 YE

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

**VESTAMID® NRG 3101 YE** is a high molecular grade PA 12 material developed by Evonik. VESTAMID® NRG 3101 YE is a polyamide 12 compound developed for the manufacturing of hydrocarbon transport piping systems and liners.

VESTAMID® NRG 3101 YE 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 3101 YE 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 3101 YE is processable on most of the commercially available PE extrusion machines.

VESTAMID® NRG 3101 YE is supplied as cylindrical granules, ready for processing, in moisture-proof bags.

Polyamide 12 is a high performance thermo- plastic polymer with increased performance characteristics that translates into safe operations over the life of the installed pipe- line. 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 off-shore applications.

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

Energy, Oil and Gas

#### Resistance to

Heat (thermal stability), UV / light / weathering

**Delivery form**  
Pellets, Granules

**Additives**  
Unfilled

<b>Mechanical properties ISO</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
Tensile modulus	<b>196000 / -</b>	psi	ISO 527
Tensile strength	<b>5800 / -</b>	psi	ISO 527
Yield stress	<b>5800 / -</b>	psi	ISO 527
Yield strain	<b>12 / -</b>	%	ISO 527
Stress at break	<b>7250 / -</b>	psi	ISO 527
Nominal strain at break, tB	<b>190 / -</b>	%	ISO 527
Typical for the mat. nom. strain at br., tB	<b>&gt;150</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>212 / *</b>	°F	ISO 527
Charpy impact strength, -40°C	<b>N / -</b>	ftlb/in <sup>2</sup>	ISO 179/1eU

<b>Thermal properties</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
Melting temperature	<b>351 / *</b>	°F	ISO 11357-1/-3
Thermal conductivity, LFA, solid state	<b>1.67 / *</b>	BTU in/(hr ft <sup>2</sup> °F)	ISO 22007-4
Vicat softening temperature A, 10 N, 50 K/h	<b>338 / *</b>	°F	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	<b>7.78E-5 / *</b>	in/in/°F	ISO 11359-1/-2
Melting Temperature	<b>351</b>	°F	ASTM D 3418

<b>Physical properties</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
Density	<b>1.02 / -</b>	g/cm <sup>3</sup>	ISO 1183
Shore D hardness	<b>73<sup>[b]</sup> / -</b>	-	ISO 7619-1
Ball indentation hardness	<b>11000 / -</b>	psi	ISO 2039-1
Density	<b>1.02</b>	g/cm <sup>3</sup>	ASTM D 792

b: 3 seconds

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

### Characteristics

#### Applications

Tube and hose

#### Special Characteristics

Light-stabilized, High heat resistant, High viscosity

#### Color

Yellow

#### Additives

Light stabilizer, Heat stabilizer