## VESTAMID® NRG 2101 yellow

## Polyamide 12

**Evonik Industries AG** 

## Message:

For Gas Pipe Fittings

VESTAMID® NRG 2101 yellow is a high molecular grade PA 12 material developed by Evonik.

Its superior performance characteristics make it an ideal choice for expanding the use of thermoplastic piping systems at higher operating pressure and larger diameters to replace metallic piping systems in a safe and cost effective manner.

Besides extending the operating pressure limits of thermoplastic piping systems, VESTAMID® NRG 2101 yellow offers many of the same benefits, and in most instances more superior performance, as conventional PE piping systems.

Tough and durable

Corrosion resistant

Resistant to heavy hydrocarbons

High resistance to Slow Crack Growth and

Rapid Crack Propagation

Increased installation efficiencies

Worry free performance

These characteristics make the VESTAMID<sup>®</sup> PA12 material an ideal choice when selecting appropriate thermoplastic piping materials in extending your gas distribution infrastructure.

We recommend a processing temperature between 230°C (446°F) and 260°C (500°F) in some cases up to 280°C (536°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.

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 off-shore applications.

General Information			
Features	Durable		
	Good Toughness		
	High Molecular Weight		
	Hydrocarbon Resistant		
Appearance	Yellow		
Processing Method	Extrusion		
	Injection Molding		
Physical	Nominal Value	Unit	Test Method
Density (23°C)	1.02	g/cm³	ISO 1183
Hardness	Nominal Value	Unit	Test Method
Shore Hardness (Shore D)	73		ISO 868
Ball Indentation Hardness <sup>1</sup>	76.0	MPa	ISO 2039-1
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus	1350	МРа	ISO 527-2
Tensile Stress (Yield)	40.0	МРа	ISO 527-2
Tensile Strain			ISO 527-2
Yield	12	%	

Break	> 150	%	
Hydrostatic Design Basis			
20°C	21.7	MPa	
60°C	13.8	MPa	
Slow Crack Growth Resistance - 20 bar,			
20% notched	> 2000	hr	
PENT - 2.4 MPa (80°C)	> 2000	hr	ASTM F1473
RCP <sup>2</sup>			ISO 13477
FST critical pressure : 0°C	3.00	MPa	
S4 critical pressure : 0°C	0.270	MPa	
Strength - Maximum Required (20°C)	18.0	MPa	ISO 9277
Impact	Nominal Value	Unit	Test Method
Charpy Unnotched Impact Strength			
(-40°C)	No Break		ISO 179/1eU
Thermal	Nominal Value	Unit	Test Method
Vicat Softening Temperature	170	°C	ISO 306/A
Melting Temperature <sup>3</sup>	177	°C	ISO 11357-3
Injection	Nominal Value	Unit	
Drying Temperature	80.0	°C	
Drying Time	2.0 to 4.0	hr	
Processing (Melt) Temp	230 to 280	°C	
Mold Temperature	60.0 to 100	°C	
Extrusion	Nominal Value	Unit	
Drying Temperature	80.0	°C	
Drying Time	2.0 to 4.0	hr	
Melt Temperature	230 to 280	°C	
NOTE			
1.	H30		
2.	110mm SDR 11		
3.	2nd Heating		

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