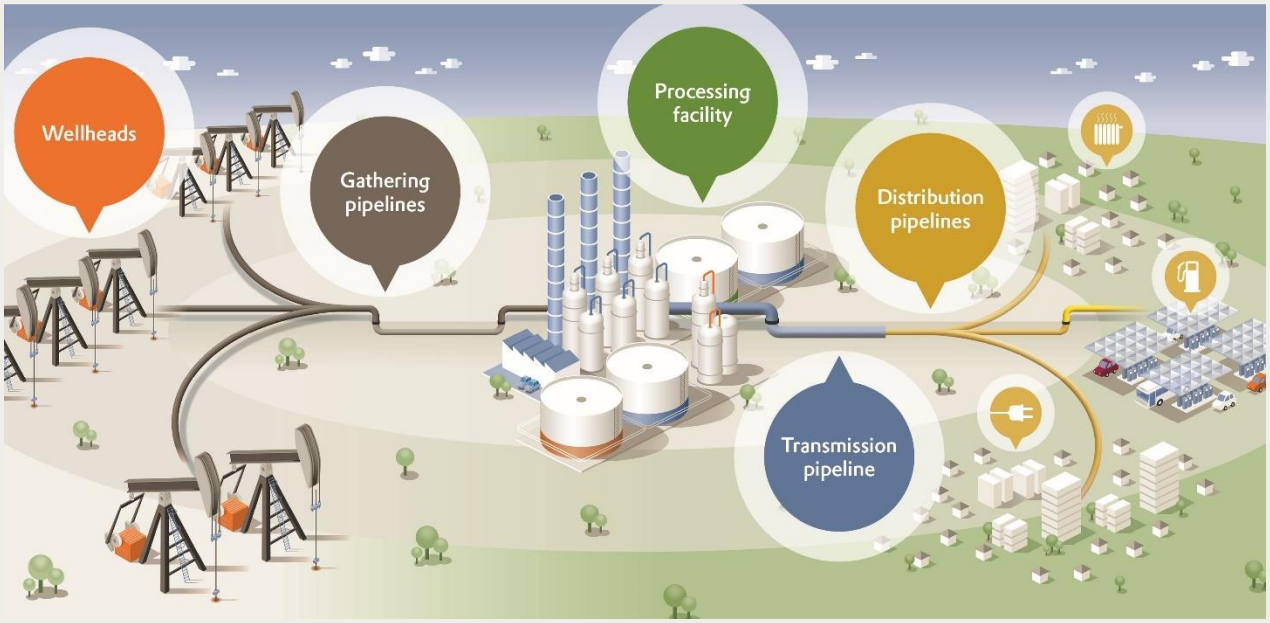
Product Information

PA12 LINE PIPE – VESTAMID® NRG 5901

PA12 VESTAMID NRG 5901 is a black resin developed for line pipes, applicable for above ground installations. It increases the value and reliability of the pipeline assets at a lower cost. Compared to coated carbon steel pipe, costs are about 30% lower because cathodic protection is not required, and installation can be done using low-cost techniques similar to HDPE pipe systems. Nevertheless, it can operate at much higher pressures, up to 315 psi.



GATHERING AND FLOWLINES

Gathering and flowlines are used in rural areas to transport crude oil, natural gas, or multiphase fluids from the production site (wellhead) to a central collection point. They generally operate at relatively mid-high pressures and flow and are smaller in diameter than transmission lines. Historically, it has been a market for carbon steel pipes but due to corrosion issues, thermoplastics are now in use and PA12 VESTAMID® NRG 5901 is the cost-efficient choice to replace steel.

PA12 VESTAMID® NRG 5901 is suitable for use at elevated temperatures and is rated for temperatures up to 180°F in accordance with the PPI TR4 listing. It can operate up to 315 psi for unregulated gas gathering systems. Furthermore, it can be coiled and thermo-fused and has an extensive range of accessories.

PPI TR-4 Listing

Temperature °F [°C]	MDPE [psi]	HDPE [psi]	PA12 [psi]
73°F [23°C]	1,250	1,600	3,150
140°F [60°C]	1,000	800	2,000
180°F [80°C]	N/A	N/A	1,600

Fluid service factors for PA12 line pipes (FSF) acc. to ASTM F3524

Service	FS
Dry gas gathering	1.00
Wet gas gathering	0.95
Multiphase fluid	0.95
Liquid hydrocarbons	0.95
Oilfield water	1.00

PRESSURE RATING

PA12 VESTAMID® NRG has a proven track record in several Onshore and Offshore Oil & Gas applications, it is a reliable choice. It can be installed buried or above ground without restrictions as it has UV stabilization package that protects the thermoplastic material from the UV radiation.

HDB = hydrostatic design basis at design temperature, psi [MPa]
DF = system design factor
FSF = fluid service factor
DR = dimension ratio
MOP = design pressure, psi [MPa]

$$MOP = \frac{2 \times HDB \times DF}{DR - 1} \times FSF$$

acc. to ASTM F3524

ESTIMATION OF THE PA12 MAXIMUM ALLOWABLE OPERATING PRESSURE FOR THE TRANSPORTATION OF DRY GAS GATHERING AND OILFIELD WATER (FSF=1.00).

Temperature °F [°C]	73–100 °F [23–40 °C]		100–140 °F [40–60 °C]		140–180 °F [60–80 °C]	
HDB [psi]	3,150		2,000		1,600	
Design factor [Df]	0.5		0.5		0.5	
Dimension ratio [DR]	[psi]	[bar]	[psi]	[bar]	[psi]	[bar]
17	197	13.6	125	8.6	100	6.9
13.5	252	17.4	160	11.0	128	8.8
11	315	21.7	200	13.8	160	11.0
9			250	17.2	200	13.8
7.3					254	17.5

*for operation at high temperatures please contact Evonik team

ESTIMATION OF THE PA12 MAXIMUM ALLOWABLE OPERATING PRESSURE FOR THE TRANSPORTATION OF WET GAS GATHERING, MULTIPHASE FLUID, AND LIQUID HYDROCARBON (FSF=0.95).

Temperature °F [°C]	73–100 °F [23–40 °C]		100–140 °F [40–60 °C]		140–180 °F [60–80 °C]	
HDB [psi]	3,150		2,000		1,600	
Design factor [Df]	0.5		0.5		0.5	
SDR	[psi]	[bar]	[psi]	[bar]	[psi]	[bar]
17	187	12.9	119	8.2	95	6.5
13.5	239	16.5	152	10.5	122	8.4
11	299	20.6	190	13.1	152	10.5
9			238	16.4	190	13.1
7.3					241	16.6

*for operation at high temperatures please contact Evonik team

PA12 STANDARDS AND CODES

ASTM F3524	Standard Specification for Polyamide-12 (PA12) Line Pipe
ISO 16486	PAU-12 gas piping systems up to 18 bar MOP (Part -1 to -6)
IRAM ISO 16486	PAU-12 gas piping systems (Argentina)
ABNT NBR 16486	PAU-12 gas piping systems (Brazil)
SNI ISO 16486	PAU-12 gas piping systems (Indonesia)
ICONTEC NTC 6105	PAU-12 gas piping systems (Colombia)
EN ISO 16486	PAU-12 gas piping systems (Europe)
NMX-X-047-SCFI	PAU-12 pipes and fittings to transport natural gas (Mexico)
NOM-003-ASEA	NG and LP pipe distribution (Mexico)
ISO 17885	Mechanical fittings for pressure piping systems - specifications
ASTM F2785	PAU-12 gas piping systems for 250psi MAOP
ASTM F1733	PAU-12 butt fusion fittings
ASTM F2145	PAU-12 mechanical fittings
ASTM F2767	PAU-12 electrofusion fittings
ASTM F1973	PAU-12 Anode-less Risers and Transition Fittings
NFPA 54	National Fuel Gas Code
NFPA 58	Liquefied Petroleum Gas Code
ASME B31.8	Code for pressure piping
DOT-PHMSA	49 CFR 192.121 Design of Plastic Pipe
DOT-PHMSA	49 CFR 192.123 Design Limitations
ANSI GPTC Z380.1	Guide for Gas Transmission, Distribution, and Gathering Piping Systems
AS 2994	Plastics pipes and fittings for gas reticulation (Australia)
AS/NZS 4645	Gas distribution networks (Australia/New Zealand)

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