Technical Specification for Polyamide 12 (PA12) Nylon Pneumatic Tubes

Polyamide 12 (PA12) Nylon Pneumatic Tubing Technical Data Sheet

Document Number: TDS-PA12-2026-V5
Manufacturer: Hefei Yuan Nai Pneumatic Equipment Co., Ltd. / YUANNAI TUBE
Quality Commitment: 20 years of dedication · 100% pure raw materials · zero recycled materials

1. Product Overview and Application Positioning

The material is carefully selected and extruded from entirely new, pure feedstock, with particular attention paid to dimensional stability, resistance to various media, and compatibility with pipe laying processes. PA12 material features low moisture absorption, excellent dimensional stability, and good chemical resistance—properties that make it well suited to production. No recycled or regenerative material is added.

- **Applicable media:** compressed air, mineral oil/hydraulic oil, diesel fuel, gasoline fuel, antifreeze, etc.
- **Extended applications:** lubricating oils, industrial water at ambient temperature, and other industrial media may be used only after material compatibility and validation under the corresponding operating conditions have been completed.
- **Product positioning:** Fixed piping for industrial equipment, connections for pneumatic components, auxiliary instrumentation piping, and proven lubrication piping systems.
- **Environmental compliance documentation:** Compliance with RoHS, REACH, and other requirements shall be subject to valid declarations or test reports pertaining to the actual raw materials, color masterbatches, and finished products.
- **Special purpose:** No default commitment is made regarding applicability to food contact, drinking water, medical applications, or respiratory gas systems.

2. Physical and Mechanical Properties

Test item	Numeric value
Density	Approximately 1.01 g/cm³
Hardness	65 ± 5 Shore D
Tensile stress at yield	Dry state:>48 MPa; moisture-adjusted state:>38 MPa
Tensile modulus	In the dry state: approximately 1600–1700 MPa; in the moisture-adjusted state: approximately 1100–1250 MPa.
Water absorption/hygrometric absorption rate	Approximately 0.3%–0.7%
Fusion temperature	Approximately 180°C
Pneumatic operating temperature range	-40°C ~ +120°C

3. Specifications and dimensions, as well as pressure-bearing parameters (under standard conditions of 23°C)

(1) Metric Sizes

Model	External diameterOD	Bore sizeID	Common difference	Working pressureWP	Bursting pressure of tank shellBP	Bending radius	Standard sample length
YN-PA12 0425	4.0 mm	2.5 mm	±0.10 mm	29 bar (426 psi)	64 bar (928 psi)	20 mm	200 m
YN-PA12 0640	6.0 mm	4.0 mm	±0.10 mm	27 bar (398 psi)	83 bar (1209 psi)	30 mm	200 m
YN-PA12 0850	8.0 mm	5.0 mm	±0.10 mm	29 bar (426 psi)	86 bar (1251 psi)	30 mm	100 m
YN-PA12 0855	8.0 mm	5.5 mm	±0.10 mm	19 bar (266 psi)	57 bar (798 psi)	45 mm	100 m
YN-PA12 0860	8.0 mm	6.0 mm	±0.10 mm	17 bar (256 psi)	49 bar (711 psi)	50 mm	100 m
YN-PA12 1065	10.0 mm	6.5 mm	±0.10 mm	24 bar (355 psi)	83 bar (1209 psi)	80 mm	100 m
YN-PA12 1080	10.0 mm	8.0 mm	±0.10 mm	14 bar (213 psi)	31 bar (455 psi)	85 mm	100 m
YN-PA12 1280	12.0 mm	8.0 mm	±0.10 mm	16 bar (241 psi)	48 bar (696 psi)	93 mm	100 m
YN-PA12 1410	14.0 mm	10.0 mm	±0.10 mm	12 bar (174 psi)	48 bar (696 psi)	75 mm	100 m
YN-PA12 1612	16.0 mm	12.0 mm	±0.10 mm	14 bar (213 psi)	39 bar (568 psi)	95 mm	100 m

(2) Imperial Fractional/inch Sizes

Nominal specifications	External diameterOD	Bore sizeID	Common difference	Working pressureWP	Bursting pressure of tank shellBP	Bending radius	Standard sample length
1/8″	3.175 mm	1.58 mm	±0.10 mm	20 bar (290 psi)	80 bar (1160 psi)	25 mm	200 m
1/4″	6.350 mm	4.35 mm	±0.10 mm	14 bar (203 psi)	56 bar (812 psi)	30 mm	200 m
3/8″	9.525 mm	6.35 mm	±0.10 mm	14 bar (203 psi)	56 bar (812 psi)	80 mm	100 m
1/2″	12.70 mm	9.60 mm	±0.10 mm	10 bar (145 psi)	40 bar (580 psi)	125 mm	100 m

4. Packaging, Appearance, and Customization Support (OEM/ODM)

1. Standard colors: milky white, dark blue, black, red (customization available)
2. Example of metering and coding on the tube body: AIR PASSAGE PA12 8X5 001M (supports customized customer-brand logos, model identifiers, and continuous meter-number marking)
3. Packaging specifications: wrap film packaging

The indicators in this data table represent reference values based on laboratory tests conducted at room temperature; for specific operating conditions, please refer to the actual test results.