Blue Cast Nylon (PA) Polyamide

General Guide & Technical Data

Overview

When using Cast Nylon rods in manufacturing or machining processes, several key specifications are important to consider:

General Guide

- **Melting Temperature:** The melting point of cast nylon is typically around 210°C to 220°C.
- **Service Temperature:** This is the temperature at which a material can continuously operate without significant degradation over time. For cast nylon, it is typically up to around 90°C.
- **Working Temperatures:** Cast nylon typically has a working temperature range from -40°C to around 100°C. This is the temperature range in which the material can function normally without any significant loss of performance.
- **Hardness:** On the Rockwell scale, nylon typically falls between R110-R120. On the Shore D scale, it could be around 85D.
- **Cutting Speeds:** Generally, you can machine nylon at high speeds. For turning on a lathe, the speed can be between 500-2500 RPM depending on the diameter of the rod. Smaller diameters typically require higher speeds.
- **Feed Rate:** The feed rate will depend on the depth of cut and the tool's nose radius, but generally, a feed rate of 0.2 - 0.4 mm/rev might be a good starting point.
- **Depth of Cut:** For roughing operations, a depth of cut of up to 3 mm may be possible. For finishing, a depth of cut of around 0.5 mm might be appropriate.
- **Tooling:** Use sharp, high-speed steel (HSS) or carbide-tipped tools for best results.
- **Coolant:** While coolant isn't strictly necessary for machining nylon, it can help to evacuate chips and prevent them from being re-cut. If used, a standard water-soluble coolant is typically suitable.
- **Workholding:** Care must be taken when clamping nylon, as it is softer and more prone to deformation than metals. Excessive clamping force can distort the part.
- **Chip Control:** As with any machining operation, effective chip control is important. Because nylon is quite ductile, it tends to form long, stringy chips, which can wrap around the tool and workpiece if not effectively managed. Regularly clearing chips and potentially using a chip breaker can help.

These are fairly standard specifications, but if you have specific needs or if the nylon will be used in an extreme environment (for example, very high or low temperatures, corrosive chemicals, etc.), it might be a good idea to consult with a materials engineer to find the best product for your application.Always consult with a machining expert or your tool manufacturer when setting up a new operation.

Technical Data

General properties	Test method	Unit	Value
Specific Gravity (23°C / 23°C	ASTM D792-13 (Test Method A)	-	1.160
Water absorption	ASTM D570-98 (2018) 24hr Immersion)	%	0,68
Mechanical properties			
Tensile Strength	ASTM D638-14(*)	MPa	85.2
Elongation at break	ASTM D638-14 (*)	%	28
Flexural Strength	ASTM D790-17 (Procedure A)	MPa	89.1
Izod Impact Resistance	ASTM D256-10 (2018) (Test Method A)	J/m	28
Rockwell Hardness (HRR)	ASTM D785-08 (2015) (Procedure A)	-	116
(*) Specimen Type: Type I, Speed of Testing: 50mm/min	-	-	-