Data Sheet
PRODEC® 303

PRODEC® (PRODuction EConomy), is a special quality of austenitic stainless steel. The uniformity and optimal machinability of PRODEC allows fabricators to machine at higher speeds and feeds, producing superior quality parts at the lowest total cost. It should be considered for automatic screw machines where extensive machining is required. PRODEC 303 is nonmagnetic in the annealed condition but may become slightly magnetic as a result of cold working.

PRODEC 303 is resistant to mildly corrosive atmospheres but is inferior to 304 because of the high sulfur content. For optimum corrosion resistance, it is recommended that PRODEC 303 be chemically treated to remove sulfides from the final surface of the parts.

The high sulfur content, added for machinability, is detrimental to hot workability. If hot forming is necessary, PRODEC 304 or an intermediate sulfur level should be considered. When forging is necessary, it should be done in the 1800-2200°F range, and should be followed by annealing at 1900°F minimum and water quenching or rapid cooling by other means.The cold formability of PRODEC 303 is limited by the sulfur content. Bending with a generous bend radius may be considered for PRODEC 303. When cold forming is required, PRODEC 304 should be considered.

PRODEC 303 is not recommended for applications requiring welding. The high sulfur level in PRODEC 303 makes it prone to weld solidification cracking. If welding is necessary, AWS E312 filler metal may be considered.

PRODEC 303 is easily machined and produces small brittle chips. PRODEC 303 may be machined at high speeds with deep cuts and heavy feeds on powerful, rigid equipment using good lubricants and sharp tooling.

Specifications

UNS: S30300 **W. Nr./EN:** 1.4305 **ASTM:** A 582 **AMS:** 5640

Chemical Composition, %

	Cr	Ni	C	Mn	P	S	Si	Fe
MIN	17.0	8.0	–	–	–	0.3	–	–
MAX	19.0	10.0	0.15	2.0	0.2	–	1.0	balance

PRODEC 303 contains 0.30% minimum sulfur for enhanced machinability, substantially higher than the 0.15% minimum required by ASMT

Features

- Melted and processed to maximize machinability
- Improved machanibility over 304/304L and 316/316L

Applications

- Automatic screw machines

Physical Properties

Density: 0.285 lb/in^3 **Modulus of Elasticity:** 29 x 10^6 psi **Linear Expansion 60-212°F:** 9.4 x 10^{-6}/°F
Thermal Conductivity: 8.7 Btu/ft hr °F **Heat Capacity:** 0.12 Btu/lb °F **Electrical Resistivity:** 27.6 Ω in x 10^{-6}

Mechanical Properties

Typical Tensile Properties

Tensile Strength, ksi	90
Yield Strength, ksi	43
% Elonation in 2 inches	55
% Reduction of area	60
Hardness, HB	180

High Speed Tooling

	Turning	Cut-Off	Forming	Drilling	Reaming	End Milling	Tapping	Threading
Depth/Width, (dia/in)	0.005-0.200 0.002-0.004	1/16 1/4	1 2	1/4 1/2 1-2	1/4 1-2	0.050-1/2 0.050-1/2	7 threads per inch	25 threads per inch
Speed, (sfm)	115-130 135-180	90-120 100-130	100-130 90-120	70-80 85-95 100-110	90-110 90-110	130-160 130-160	10-115	40-50
Feed, (in/rev)	0.015-0.02 0.005-0.01	0.0015-0.002 0.0025-0.003	0.0020 0.0015	0.007 0.012 0.020	0.006 0.025	0.003 0.006	–	–

Carbide Tooling

	Turning	Cut-Off	Forming	Drilling	Reaming	End Milling	Tapping	Threading
Depth/Width, (dia/in)	0.005-0.200 0.002-0.004	1/16 1/4	1 2	1/4 1/2 1-2	1/4 1-2	0.050-1/2 0.050-1/2	7 threads per inch	25 threads per inch
Speed, (sfm)	375-700 600-900	275-400 325-450	375-425 350-400	– 700 800	– –	300-450 360-500	–	–
Feed, (in/rev)	0.025-0.030 0.007-0.010	0.002-0.004 0.004-0.008	0.003-0.006 0.002-0.004	– 0.005 0.007	– –	0.004 0.008	–	–

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