

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 304/304L is an improved version of standard 304/304L processed for improved machinability and outstanding uniformity. PRODEC 304/304L offers faster machining speeds, longer tool life, improved part quality and lower total cost of machined parts. PRODEC 304/304L is nonmagnetic in the annealed condition, but may become slightly magnetic as a result of cold working or welding.

Rolled Alloys Machining Quality (PRODEC) 304/304L bar can increase yields and extend tool life to reduce machining costs. PRODEC 304/304L is a versatile, general purpose stainless steel with good resistance to atmospheric corrosion, to many organic and inorganic chemicals, and to food and beverages. It has also been used in vacuum processing equipment and specialized instruments where high integrity is essential.

Although improvements in machinability in the past have been associated with reduced corrosion resistance, PRODEC 304/304L has been shown to have corrosion resistance within the range typically expected to 304/304L stainless steel. Because of its low carbon content, PRODEC 304/304L retains this corrosion resistance in the as-welded condition.

It is common for PRODEC 304/304L to be dual certified as PRODEC 304L and PRODEC 304 when that material meets both the lower carbon limit of 304L and the slightly higher strength of 304. PRODEC 304/304L is readily welded by full range of conventional welding procedures except oxyacetylene. AWS E308L/ER308L filler metal should be used with PRODEC 304/304L steel.

Specifications

UNS: S30400, S30403 W. Nr./EN: 1.4301, 1.4307 ASTM: A 240, A 276, A 479, A 312 AMS: 5511, 5513, 5639, 5647

Chemical Composition, %

	Cr	Ni	C	Mn	P	S	Si	Fe
MIN	18.0	8.0	—	—	—	0.015	—	—
MAX	20.0	11.0	0.03	2.0	0.045	0.03	0.75	balance

Features

- Extended tooling life
- Reduce machining cost

Applications

- Chemical process equipment
- Food and beverage industry

Physical Properties

Density: 0.285 lb/in³ Modulus of Elasticity: 29 x 10⁶ 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	Yield Strength, ksi	Elongation in 2 inches, %	Reduction of area, %	Hardness, HB
85	35	60	70	160

Minimum Tensile Properties (ASTM A 276)

Tensile Strength, ksi	Yield Strength, ksi	Elongation in 2 inches, %	Reduction of area, %
75	30	40	50

Turning

Feed, in/rev		< 0.012	0.012 - 0.02	0.02 - 0.04
Cutting Depth, in		0.08	0.08 - 0.2	0.2 - 0.4
Cutting Speed, sfm	C7	820	–	–
	C6	650	590	330
	C5	–	490	295
	HSS	130	115	65

Drilling

High Speed Steel Twist Drills

Drill Diameter in	0.04	0.12	0.2	0.4	0.6	0.8	1.2
Speed RPM	3200-3800	1600-1800	1080-1270	540-640	360-430	270-320	180-220
SFM	33-38	50-57	57-66	57-66	57-66	57-66	57-66
Feed in/rev	0.002	0.004	0.008	0.012	0.014	0.016	0.018

Notes: 1. Cutting Fluid: Ample flow of 10% emulsion coolant., 2. With short NC drills, feeds can be increased about 40%, 3. When hole depth exceeds 4x diameter, clear chips from hole., 4. With TiN-Coated HSS drills, speed can be increased 10%, 5. Table applies to rotating workpieces, as in drilling a bar in a lathe. For rotating drill and fixed workpiece, as in drilling a hole in a plate, the maximum speed should not exceed 50 sfm, but higher feeds may be considered depending on drill alignment, rigidity, and machine power.

Indexable Insert Drills Cemented Carbides

Drill Diameter in	0.8	1.2	1.6	2.0
Speed RPM	655-820	655-820	655-820	655-820
Feed in/rev	0.004	0.005	0.006	0.008
Type of Carbide	Center	C6	C6	C6
	Periphery	C7	C7	C7

Notes: Cutting Fluid - Pressure: >44 psi; Amount: > 6.5 gal/min

Cutting data for indexable insert drills are highly dependent on the make of the drill; the manufacturer's recommendations should be considered.

Milling

	Face Milling	Side Milling	End Milling	End Milling
Speed, sfm	490 - 820	590 - 790	490 - 720	165 - 330
Cemented Carbide Feed	0.006 - 0.012	0.01 - 0.012	0.004 - 0.008	0.002 - 0.008
Type of Carbide	C7 - C6	C7 - C6	C7 - C6	C5
HSS Tool, sfm	80 - 100	80 - 100	80 - 100	–
HSS Feed, in/tooth	0.005 - 0.008	0.005 - 0.008	0.001 - 0.006	–



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