Technical Data Sheet
304E®

General Presentation

304E® alloy is preferred in the production of mass-produced materials where high elongation is desired and surface properties are expected to be good.

Classification

Austenitic stainless steel

Application

304E® alloy is used in mass production materials such as coffee pots, cooking utensils and in places such as ice cream containers.

Processing

Heat treatment cannot harden 304E®. Rapid cooling after heating to 1010-1120°C can be used for solution treatment or annealing. Cold working is the only way to harden it.

Forming

The grade has exceptional forming properties. It is possible to draw it without any intermediate stages of heat softening.

Weldability

The fusion welding performance of 304E® stainless steel is excellent, both with and without fillers. For filler rods and electrodes in 304E®, AISI-308 stainless steel is recommended. Heavy welded sections may necessitate post-weld annealing. This step is not required for 304E®. AISI-321 may be used if post-weld heat treatment is not possible.

Corrosion

In a variety of environments and when in contact with various corrosive media, 304E® has excellent corrosion resistance. Pitting and crevice corrosion can occur in chloride-containing environments. Temperatures above 60°C can cause stress corrosion cracking.

Chemical Properties

Chemical properties of the alloy is given below (maximum values unless indicated otherwise).

C (%)	Si (%)	Mn (%)	P (%)	S (%)	Cr (%)	Ni (%)	N (%)
0,070	1,00	2,00	0,045	0,015	17,5 to 19,5	8,0 to 8,5	0,10

Mechanical Properties

The following table summarizes the mechanical properties at room temperature (minimum values).

Tensile S. (MPa), Rm	Yield S. (MPa), Rp 0,2	Elongation (%)	Elastic Modulus (GPa)	Hardness (HV)
520	220	55	197	180

Some Physical Properties

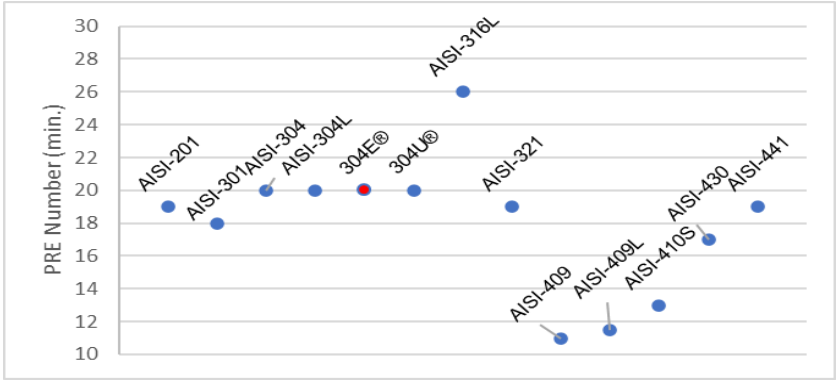
Thermal conductivity at 20 °C (W/(m.K)	Specific thermal capacity at 20 C° J/(kg.K)	Electrical resistivity at 20 °C (Ω.mm2/m)
15	500	0,73

Comparison With Different Stainless Steel Grades

	304U®	304E®	AISI-304
% C + N	0.17	0.17	0.17
% Ni min. / max.	8.0 / 8.5	8.0 / 8.5	8.0 / 10.5
% Cr min. / max.	17.5 / 19.5	17.5 / 19.5	17.5 / 19.5
% Mo min. / max.	-	-	-

Corrosion Resistance

PRE number of each alloy is given on the graph below. 304E® is indicated with red dot on graph.



Avalaible Products

Process	Alloy Type	Alloy (AISI)	EN No.	Surface	Product Type	Range		
						thickness (mm)	width (mm)	length (cm)
Cold rolled + Solution annealed	Austenitic	201	1.4372	2B, 2D, 2H, 2J, 2C, NO:4, SB	Coil, strip, sheet, plate, disc	0,25-3	50-1300	20-600 or coil
		301	1.4310					
		304/304L	1.4301/1.4307					
		304E®/304U®	-					
		316L	1.4404					
		321	1.4541					
	Ferritic	409/409L	1.4512					
		410S	1.4000					
		430	1.4016					
		441	1.4509					

Geometrical Properties

The tolerances of thickness according to TS EN ISO 9445-2 Standard is given below (dimensions in milimeters).

Specified thickness	Special tolerances for a specified width of	
(t)	w ≤ 1000	1000 < w ≤ 1300
t < 0,30	±0,030	-
0,30 ≤ t < 0,40	±0,030	±0,035
0,40 ≤ t < 0,50	±0,035	±0,035
0,50 ≤ t < 0,60	±0,035	±0,035
0,60 ≤ t < 0,80	±0,040	±0,040
0,80 ≤ t < 1,00	±0,040	±0,050
1,00 ≤ t < 1,20	±0,050	±0,055
1,20 ≤ t < 1,50	±0,055	±0,060
1,50 ≤ t < 2,00	±0,065	±0,070
2,00 ≤ t < 2,50	-	-
2,50 ≤ t < 3,00	-	-

The tolerances on width for cold-rolled wide strip and sheet/plate cut from cold-rolled wide strip mill edges is given below (dimensions in milimeters).

Tolerances for a specified width of	
600 ≤ w < 1000	1000 ≤ w ≤ 2100
+25 0	+30 0

The tolerances on sheet-plate cut from cold-rolled wide strip mill edges is given below (dimensions in milimeters).

Tolerance	
Length	Normal
≤ 1500	+5 /0

- For thickness tolerances, EN/2 is in our productibility.
- The width tolerances are for slit edge materials.

Edge Wave, Flatness Tolerances

- According to standard h/l rate is 0.03 max.
- For clients with special requests on flatness we can produce EN/2.

Sheet/plate

- Minimum sheet length is 200 mm, maximum sheet length is 6000 mm.
- Minimum width is 425 mm, maximum width is 1300 (1500 mm is avalaible for contract manufacturing).
- Producible thicknesses are between 0,3 – 3 mm.
- The above mentioned min. and max. Values are machine manufacturability.
- Information should be obtained from planning for plate combinations.
- Sheets can be filmed.
- Sheets can be labeled.

Mandrel Dia. (mm)	Thickness (mm)		Width (mm)		Length (cm)		Mandrel Tonnage	Packet Tonnage
Entry	Min.	Max.	Min.	Max.	Min.	Max.	Max.	Max.
503	0,5	3	425	1500	20	600	10	2,5

Strip

- Strip inner diameter is 508 mm.
- For thicknesses of 0.90 mm and above, the slitting process is combined as 50 mm*15mm. The strip outer diameter is a maximum of 1750 mm.
- For thicknesses below 0.90 mm, the slitting process is combined as 50 mm * 15 mm. Maximum roll weight should be 10 tons.
- Slitting is not performed in thicknesses below 0.30 mm thickness.
- Paper wrapping is not possible for strips under 350 mm width.
- For thicknesses over 1.80 mm, the slitting process should be asked to the planning department.
- Thin film coating can be done on the edge cutting.
- It is possible to label on the edge cut rolls.

Cutting Type	Mandrel Dia. (mm)		Thickness (mm)		Width (mm)	
	Entry	Exit	Min.	Max.	Min.	Max.
Edge Cutting	508 - 610	508 - 610	0,3	3	300	1280
Multi Slitting	508 - 610	508 - 610	0,6	3	40	-

Subjected Certificates and Standards

Certificates:

- TS EN ISO 9001:2015
- TS EN ISO/IEC 17025:2017
- TS EN ISO 9001:2015 EN AS 9100:2018
- IATF 16949:2016
- TS ISO 10002:2018
- 2014/68/EU: EN 764-5, section 4.2 and AD 2000-Merkblatt W0
- TS EN 10088-2:2014,
- 2001/95/EC General Product Safety Directive
- 1935/2004 EU Food Contact Regulations (EC)
- 98/79/EC In Vitro Diagnostics Medical Devices and Repealing Directive
- EU 2017/745 Medical Devices
- EU NO 305/2011 Construction Products Regulation
- 2011/65/EU Restriction of Hazardous Substances Directive ROHS
- 2016/26/EU, 2017/225/EU, 2018/35/EU REACH
- 2014/34/EU ATEX

Standards:

- TS EN 10088-2:2014,
- TS EN 10088-4:2013,
- TS EN 9445-2:2010,
- TS EN 10028-7:2016,
- TS 3157 EN ISO 3651-2:2000,
- ASTM A240/A240M-22b-2022,
- ASTM A480/A480M-22a-2022,
- ASME SA 240/SA 240M-2021,
- ASME SA 480/SA 480M-2021,
- ASTM A262,
- EN 764-5 Section 4.2,
- ISPM 15:2019 Fumigation

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