

Specification
ultron

For UHP gas applications in semiconductor industry and fine chemistry

ultron

ep Electropolished



1. SURFACES QUALITIES

Tubes and fittings:	Inner surface (ep)	Outer surface
ultron	Ra_{avg} ≤ 0,25 µm (10 µin)	Ra_{avg} ≤ 1.0 µm (40 µin)

On request:	Ra _{avg} ≤ 0,13 µm (5 µin) Ra _{avg} ≤ 0,18 µm (7 µin) Ra _{avg} ≤ 0,38 µm (15 µin)	
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Pipe:	Inner surface (ep)	Outer surface
ultron	Ra_{avg} ≤ 0,51 µm (20 µin)	Mill finish, RA not defined

Additional notes:	<ul style="list-style-type: none"> - Tube and Fittings are prepared for orbital welding (acc. to Dockweiler guideline Doc. 8.3-9/7). - Ra values may differ for 1/8" tubes - Pipe will be supplied with a square cut (acc. to Dockweiler guideline Doc. 8.3-9/7). - Other specified surfaces or ends are available upon request. - The Ra value in the cold worked area of fittings (inner and outer surface) and on the surface of circumferential welds is not defined. For dimensions OD < 1/4" (6,35 mm) roughness is not defined. - Free of oil and grease acc. to CGA G-4.1-2018 and ASTM G93 – level A. - Electropolishing procedure acc. to Dockweiler guideline Doc. 8.4-40/3.1/3.3.1 - Cleanroom cleaning and packing (ISO Class 4 / Federal Class 10)
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2. MATERIALS

ultron	1.4404 / UNS S31603 (316L) 1.4435 / UNS S31603 (316L) UNS S31603 (316L)
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Hardness equivalent to:	<ul style="list-style-type: none"> - max. 180 HV* according to DIN EN ISO 6507-1 - max. 90 HRB* according to DIN EN ISO 6508-1 <p>* comparable to ASTM E-384 (HV) and ASTM E 18-22 (HRB)</p>
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3. DIMENSIONS

Imperial:	Imperial according to ASTM A269 / A270 / A632	
OD x WT	1/8" x 0.022" to 6" x 0.109"	3,18 x 0,56 mm to 152,4 x 2,77 mm

Pipe:	Pipe according to ASTM A312	
Dimensions	NPS 8, 10, 12 Schedule 10S	Length: min. 19.36 ft to max. 19.98 ft

Metric:		
OD x WT	6,00 x 1,00 mm to 35,00 x 1,50 mm	Length: 6000 mm -100/+90

Manufacturing process:	Seamless tubes (≤ 1")	Welded or seamless tubes (> 1")
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4. QUALITY AND TEST PROCEDURES

Verification of basic test certificate	Visual inspection	Endoscopic inspection of bright finished tubes
Verification of dimensions	Roughness measurements	Conductivity test (DI water)
TOC-measurement of DI water	Particle measurements	Scanning electron microscope (SEM)
XPS / ESCA	Auger analysis (AES)	

5. TECHNICAL TERMS OF DELIVERY

Tubes and fittings are prepared for orbital welding:

Tubes

Acc. to ASTM A 632 / A 269 / A 312 (Pipe), DIN EN 10217-7 / 10216-5 with a length of 19.35 ft - 19.98 ft (5900 - 6090 mm), max. 10% short lengths of min. 9.84 ft (3000 mm). Tubes with an outside diameter of 5.00 mm or smaller are supplied with a length of 2950 mm (+/-50 mm).

Tube fitting components

Prematerial acc. to ASTM A 269 / A 632 / A 312 / A 403 (Pipe), DIN EN 10217-7 / 10216-5

Machined components

Prematerial acc. to ASTM A 479, DIN EN 10088-3, DIN 17440, ASTM A403 (Pipe)

Marking always with

DOCKWEILER / DW-Number / Dimension / Material / Heat number

Tube, pipe and fittings shall be permanently marked as per Dockweiler guideline AA 8.5.2-80. The marking must provide all necessary information to trace back the heat number and the material grade.

6. DOCUMENTATION, PACKAGING & SHIPPING

Documentation

The documentation result by the Dockweiler Inspection Certificate 3.1 according to DIN EN 10204. Optional online documentation WebCert.

Packaging

Tubes and fittings filled with N2 (99.9998% incl. inert gas), capped with PA/PE squares and yellow PE caps, double-bagged and sealed in PE-sleeves.

The batch label on the foil contains the information ultron.

Shipping

Delivery in tubular container or wooden crate, fittings in strong cardboard box with shock absorbing filler.