

Specification
ultron

For UHP gas applications in semiconductor industry
and fine chemistry



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) Ra _{avg} ≤ 0,51 µm (20 µin)	
Pipe:	Inner surface (ep)	Outer surface
● ultron	Ra_{avg} ≤ 0,51 µm (20 µin)	Mill finish, Ra not defined
Additional notes:	- 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)	

2. MATERIALS

● ultron	1.4404 / UNS S31603 (316L), 1.4435 / UNS S31603 (316L), UNS S31603 (316L)
● ultron Alloy 22	N06022 according to ASTM B622 / B575 / B574 / B829 (1/4" to 1" seamless tubes)
Hardness equivalent to:	- max. 180 HV* according to DIN EN ISO 6507-1 - max. 90 HRB* according to DIN EN ISO 6508-1 * comparable to ASTM E-384 (HV) and ASTM E 18-22 (HRB)

3. DIMENSIONS

Imperial:	according to ASTM A269 / A270 / A63	
OD x WT	1/8" x 0.022" to 6" x 0.109"	3,18 x 0,56 mm to 152,40 x 2,77 mm
Metrisch:	according to DIN 11866	
OD x WT	6,00 x 1,00 mm to 35,00 x 1,50 mm	Lenght: 6000 mm -100/+90
Manufacturing process:	Seamless tubes (≤ 1")	Welded or seamless tubes (> 1")
Pipe:	according to ASTM A312	
OD x WT	NPS 8, 10, 12, 16, 20 Schedule 10S	219,08 x 3,76 mm bis 508,00 x 5,54 mm
Manufacturing process:	Welded tubes	

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 A632 / A269 / A270 / A312 (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). For electropolished tubes with an outer diameter ≤ 5.00 mm, the length is 2950 +/- 50 mm.

Tube fitting components

Prematerial according to DIN11865, ASTM A 403 (Pipe) and ASME B16.9 (Pipe).

Machined components

Prematerial acc. to ASTM A 479, DIN EN 10088-3, DIN EN 10272, DIN EN 10254, DIN EN 10222-5 and ASTM A 182

Marking always with

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

Tube, pipe and fittings are permanently marked. 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 (99.999% 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.