

SPECIFICATIONS
ULTRON, ULTRON VIM-VAR

For UHP gas applications in semiconductor industry and fine chemistry

ultron / ultron vimvar

ep

electropolished
cleanroom cleaning and packing

1. SURFACES QUALITIES

Tubes and fittings:	Inner surface (ep)	Outer surface
ultron	$Ra_{avg.} \leq 10 \mu\text{in} \text{ (} 0.25 \mu\text{m)}$	$Ra_{avg.} \leq 40 \mu\text{in} \text{ (} 1.0 \mu\text{m)}$
ultron vimvar	$Ra_{avg.} \leq 7 \mu\text{in} \text{ (} 0.18 \mu\text{m)}$	$Ra_{avg.} \leq 40 \mu\text{in} \text{ (} 1.0 \mu\text{m)}$
On request:	$Ra_{avg.} \leq 5 \mu\text{in} \text{ (} 0.13 \mu\text{m)}$ $Ra_{avg.} \leq 7 \mu\text{in} \text{ (} 0.18 \mu\text{m)}$ $Ra_{avg.} \leq 15 \mu\text{in} \text{ (} 0.38 \mu\text{m)}$	

Pipes and pipe fittings:	Inner surface (ep)	Outer surface
ultron	$Ra_{avg.} \leq 20 \mu\text{in} \text{ (} 0.51 \mu\text{m)}$	RA not defined

Additional notes:

- 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 $OD \leq 1/4"$ (6.35 mm) roughness is not defined.

- Free of oil and grease acc. to CGA G-4.1-2018 and ASTM G93 – level A.

- Cleanroom cleaning and packing (Federal Class 10 / ISO Class 4)

2. MATERIALS

ultron	1.4404 / UNS S31603 (316L), 1.4435 / UNS S31603 (316L), UNS S31603 (316L)
ultron Alloy C-22	N06022 (C-22) according to ASTM B622 / B575 / B574 / B829 (1/4" to 1" seamless tubes)
ultron vimvar	UNS S31603 (316L) VIM-VAR double melted stainless steel

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

Tubes and fittings:	Imperial according to ASTM A269 / A270 / A632	
OD ¹ x WT:	1/8" x 0.022" to 6" x 0.109"	219.08 x 3.76 mm to 323.9 mm x 4.57 mm
	¹ VIM-VAR only available up to 1"	
Manufacturing process:	Seamless Tubes $\leq 1"$ OD (25.40 mm)	Welded Tubes $\geq 1 \frac{1}{2}"$ OD (38.10 mm)

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

Manufacturing process:	Welded Tubes
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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. Different end preparations may be agreed on.

Tubes and Pipes

acc. to ASTM A 269 / A 632 / A 312 (Pipes), 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

Manufacturing and tolerances according to DIN11865, ASTM A 403 (Pipes) and ASME B16.9 (Pipes).

Machined components

Prematerial acc. to ASTM A 479, DIN EN 10088-3, DIN 17440, ASTM A 182 (Pipes)

Marking always with

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

Tubes, pipes and fittings are permanently marked. The marking provides all necessary information to trace back the heat number and the material grade.

6. DOCUMENTATION, PACKAGING AND SHIPPING

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

Tubes and fittings filled with N2 (99.999%), closed with PA/ PE squares and yellow PE caps, double-bagged and sealed in PE-sleeves.

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

The batch label on the foil contains the information ultron or ultron vimvar.