

Specification  
ASME BPE

For pharma, biotech and  
other life science industries

● ASME BPE

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ASME BPE SF1 / mechanically polished
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ASME BPE SF4 / electropolished



1. SURFACE QUALITIES

|                           |                                                                                                                                                                                                                                                                                                                                                |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tubes and fittings:       | Inner surface (mechanically polished)*                                                                                                                                                                                                                                                                                                         |
| ASME BPE SF0 - on request | No finish requirements                                                                                                                                                                                                                                                                                                                         |
| ● ASME BPE SF1            | Ra <sub>max.</sub> ≤ 0,51 µm / 20 µin (Dockweiler Standard)                                                                                                                                                                                                                                                                                    |
| ASME BPE SF2 - on request | Ra <sub>max.</sub> ≤ 0,64 µm / 25 µin                                                                                                                                                                                                                                                                                                          |
| ASME BPE SF3 - on request | Ra <sub>max.</sub> ≤ 0,76 µm / 30 µin                                                                                                                                                                                                                                                                                                          |
| Tubes and fittings:       | Inner surface (electropolished)                                                                                                                                                                                                                                                                                                                |
| ● ASME BPE SF4            | Ra <sub>max.</sub> ≤ 0,38 µm / 15 µin (Dockweiler Standard)                                                                                                                                                                                                                                                                                    |
| ASME BPE SF5 - on request | Ra <sub>max.</sub> ≤ 0,51 µm / 20 µin                                                                                                                                                                                                                                                                                                          |
| ASME BPE SF6 - on request | Ra <sub>max.</sub> ≤ 0,64 µm / 25 µin                                                                                                                                                                                                                                                                                                          |
| Surface treatment:        | <div><div>- Mechanically polished (or any other finishing method that meets the Ra max.):<br/>Cleaning and test procedure ASTM A 632, S3</div><div>- Electropolished:<br/>Procedure acc. to Spec. Doc. 8.4-40/3.2/3.3.2</div><div>- Free of oil and grease acc. to CGA G-4.1-2018 and ASTM G93 – level B (SF4) /<br/>level C (SF1)</div></div> |

2. MATERIALS

|                         |                                                                                                                                                                                               |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ● ASME BPE              | UNS S31603 (316L)*, UNS S31603 (316L), 1.4404, 1.4435*                                                                                                                                        |
|                         | * defined sulphur of 0.005 - 0.017%                                                                                                                                                           |
| Hardness equivalent to: | <div><div>- max. 180 HV* according to DIN EN ISO 6507-1</div><div>- max. 90 HRB* according to DIN EN ISO 6508-1</div></div> <div>* comparable to ASTM E-384 (HV) and ASTM E 18-22 (HRB)</div> |

3. DIMENSIONS

|                        |                                                       |                                     |
|------------------------|-------------------------------------------------------|-------------------------------------|
| Imperial:              | acc. to ASME BPE, Part DT                             |                                     |
| OD x WT                | 1/4" to 6" (0.250 x 0.035 inch to 6.000 x 0.109 inch) | 6,35 x 0,89 mm to 152,40 x 2,77 mm  |
| Manufacturing process: | Seamless tubes ≤ 1" OD (25.40 mm)                     | Welded tubes ≥ 1 1/2" OD (38.10 mm) |

4. QUALITY AND TEST PROCEDURES

|                                                                                     |                                           |                                                                                     |                           |                                                                                     |                                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------|---------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------|
|  | Verification of<br>basic test certificate |  | Visual inspection         |  | Endoscopic inspection<br>of bright finished tubes |
|  | Verification of<br>dimensions             |  | Roughness<br>measurements |                                                                                     |                                                   |

5. TECHNICAL TERMS OF DELIVERY

|                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tubes and fittings                                                                                                                                                                                                                              |
| Acc. to ASME BPE-2024, ASTM A 269/270, tubes with a length of 5900 - 6090 mm (19.35 ft - 19.98 ft), max. 10% short lengths of min. 3000 mm (9.84 ft). For electropolished tubes with an outer diameter ≤ 5.00 mm, the length is 2950 +/- 50 mm. |
| Marking always with                                                                                                                                                                                                                             |
| DOCKWEILER / DW-Number / Dimension / Material / Heat Number / ASME Certification Mark, Surface Finish Designation                                                                                                                               |
| Tubes, pipes and fittings shall be permanently marked as per ASME BPE-2024, DT-11. The marking must provide all necessary information to trace back the heat number and the material grade.                                                     |

6. DOCUMENTATION, PACKAGING AND SHIPPING

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| Documentation                                                                                                                                                                                                                                                                                                                                                                     |
| The documentation result by the Dockweiler Inspection Certificate 3.1 according to DIN EN 10204. Optional online documentation WebCert.                                                                                                                                                                                                                                           |
| Packaging                                                                                                                                                                                                                                                                                                                                                                         |
| Mechanically polished tubes and fittings are closed with transparent PE caps and are individually sealed in PE foil. The batch label on the foil contains the information ASME BPE SF1.<br><br>Electropolished tubes and fittings are closed with PA/ PE squares and yellow PE caps, sleeved and sealed in PE. The batch label on the foil contains the information ASME BPE SF4. |
| Shipping                                                                                                                                                                                                                                                                                                                                                                          |
| Delivery in tubular container or wooden crate, fittings in strong cardboard box with shock absorbing filler.                                                                                                                                                                                                                                                                      |