







REQUIREMENT - MINIMUM TENSILE STRENGTH OF LESS THAN 95 KSI
 SPECIMENS FOR CARBON
 IN TACTILES




CIS
 Consulting Inspection Services




Herzlich Willkommen!

**Manufacturer Standard
 Oder: Schweißen ohne
 „ASME Stamp“**

**Dr. Dirk Kölbl,
 Inspector & Supervisor**

TÜV Thüringen ASME Certificate





CERTIFICATE OF ACCREDITATION

This is to accredit the named organization as having had the adequacy of their program verified for the scope shown below in accordance with the applicable rules of The American Society of Mechanical Engineers Standard for Qualifications for Authorized Inspection. The accreditation granted by this certificate is subject to the provisions of the agreement set forth in the application.

ORGANIZATION: TÜV Thüringen a.V.,
 Müchelnstraße 64,
 Erfurt 99096
 Germany

SCOPE:
 Authorized Inspection Agency for performance of Authorized Inspection Agency activities controlled from the above location to cover Sections I, III Divisions 1 & 3, IV, VIII Divisions 1, 2 & 3, IX and XII of the ASME Boiler and Pressure Vessel Code

AUTHORIZED: September 16, 2015
 EXPIRES: October 24, 2018
 CERTIFICATE NUMBER: AIA-96


 Board Chair, Conformity Assessment

 Director, Conformity Assessment

Wir **Beraten**
Wir **Begleiten**
Wir **Helfen** bei:

- Handbucherstellung
- Verfahren
- Personalqualifikation
- Schulung
- Berechnung
- Abnahme
- Generalprobe
- Joint Review

NEW: ASME Product Certification Mark



Mit Designator: U, S, N, NA, ...

OLD: ASME Product Stamp



Codes

(ASME Boiler and Pressure Vessel Code)

A standard becomes a **Code** when it has been adopted by one or more governmental bodies and is enforceable by law, or when it has been incorporated into a business contract.

ASME STANDARDS

B16.5, B16.34, ...

A **Standard** can be defined as a set of technical definitions and guidelines that function as instructions for designers, manufacturers, operators, or users of equipment.

MANUFACTURER STANDARDS

Hierarchie der Regelwerke

• Vorschriften am Aufstellungsort der Anlage

(z.B. South Carolina - USA, North Carolina - USA, Alberta - Canada, Deutschland)

• ASME Boiler and Pressure Vessel Code

CONSTRUCTION CODES



REFERENCED CODES



INSERVICE CODES



MITGELTENDE STANDARDS



• National Board Inspection Code

NBIC

Und wohin exportieren Sie heute?

Bitte beachten Sie:

- Kundenforderungen

(Users Design Specification; Kundenbestellung; Technische Lieferspezifikationen etc.)

- Gesetze und Verordnungen am Aufstellungsort

- Code of Federal Regulations (10CFR50 ; 10CFR21)
- Bundesstaatliche Anforderungen?

Wo gibt es Informationen zu den Anforderungen? z.B. bei:

- => BSI International Survey (www.BSIgroup.com)
- => NB-370 Synopsis (www.nationalboard.org)
- => FDBR, Düsseldorf
- => VDMA, Frankfurt

Karte: Wikipedia







**Manufacturer Standard
Für Druckbehälter**

VIII Div.1 – Allowable Materials

CIS
TÜV Thüringen Group

Step 1
General material requirements

➔

Step 2
Specific material requirements

➔

Step 3
Material specifications

<p>UG-5 Plate - Bleche</p> <p>UG-6 Forgings - Schmiedestücke</p> <p>UG-7 Castings - Gussteile</p> <p>UG-8 Pipes and Tubes - Rohre</p> <p>UG-9 Welding Materials - Schweißzusatzwerkstoffe</p> <p>UG-12 Bolts and Studs - Schrauben und Bolzen</p> <p>UG-13 Nuts and Washers - Muttern und Unterlegscheiben</p> <p>UG-14 Rods and Bars - Drähte und Stangen</p>	<p>UCS Carbon and Low Alloy</p> <p>UNF Nonferrous</p> <p>UHA High Alloy</p> <p>UCI Cast Iron</p> <p>UCL Cladding, Linings</p> <p>UCD Cast Ductile Iron</p> <p>UHT Ferritic Steels enhanced by HT</p> <p>ULW Layered Construction</p> <p>ULT Low Temperature</p> <p>UHX Heat Exchangers</p> <p>UIG Impregnated Graphite</p>	<p>Section II Part A Ferrous Materials</p> <p>Section II Part B Nonferrous Materials</p> <p>Section II Part C Welding Materials</p> <p>Section II Part D Material Properties</p> <p style="text-align: right;"><i>Design</i></p>
<p>UG-10 Material according to a Specification not permitted, and Material not fully identified <i>Material nach nicht zugelassener Spezifikation, und nicht vollständig identifizierter Material</i></p>		<div style="border: 1px solid black; padding: 5px; background-color: #f0f0f0;"> <p>CODE CASE Material</p> </div>
<p>UG-11 Prefabricated or Preformed Pressure Parts - Vorgefertigte oder Vorgeformte Drucktragende Teile (Standardteile)</p>		

09-2015

ASME VIII Div.1 – UG-11

UG-11 PREFABRICATED OR PREFORMED PRESSURE PARTS FURNISHED WITHOUT A CERTIFICATION MARK

UG-11: Formteile und Normteile

(1) Cast, forged, rolled, or die formed **non-standard** pressure parts. Pressure parts such as shells, heads, removable doors, and pipe coils that are wholly formed by casting, forging, rolling, or die forming may be

Ungeschweisste Formteile werden wie Material behandelt



(2) Cast, forged, rolled, or die formed standard pressure parts that comply with an **ASME product standard**, either **welded or nonwelded** (. . . .)

ASME Normteile (Table U-3) können im Rahmen der Druckstufen eingesetzt werden, ohne Berechnung!
Aber nur die!



B16.5

(3) cast, forged, rolled, or die formed standard pressure parts that comply with a **standard other than an ASME product standard**, either **welded or nonwelded** (. . . .)

09-2015

ASME VIII Div.1 – Table U-3

Table U-3
Year of Acceptable Edition of Referenced Standards in This Division

E2015

Title	Number	Year
Seat Tightness of Pressure Relief Valves	API Std. 527	1991 (R2007) [Note (1)]
Unified Inch Screw Threads (UN and UNR Thread Form)	ASME B1.1	Latest edition
Pipe Threads, General Purpose (Inch)	ANSI/ASME B1.20.1	Latest edition
Cast Iron Pipe Flanges and Flanged Fittings, Classes 25, 125, and 250	ASME B16.1	2010
Pipe Flanges and Flanged Fittings, NPS 1/2 Through NPS 24 Metric/Inch Standard	ASME B16.5	2013 [Note (2)]
Factory-Made Wrought Buttwelding Fittings	ASME B16.9	Latest edition
Forged Fittings, Socket-Welding and Threaded	ASME B16.11	Latest edition
Cast Copper Alloy Threaded Fittings, Classes 125 and 250	ASME B16.15	Latest edition
Metallic Gaskets for Pipe Flanges — Ring-Joint, Spiral-Wound, and Jacketed	ASME B16.20	Latest edition
Cast Copper Alloy Pipe Flanges and Flanged Fittings, Class 150, 300, 600, 900, 1500, and 2500	ASME B16.24	2011
Ductile Iron Pipe Flanges and Flanged Fittings, Class 150 and 300	ASME B16.42	2011
Large Diameter Steel Flanges, NPS 26 Through NPS 60 Metric/Inch Standard	ASME B16.47	2011
Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)	ASME B18.2.2	Latest edition
Welded and Seamless Wrought Steel Pipe	ASME B36.10M	Latest edition
Guidelines for Pressure Boundary Bolted Flange Joint Assembly	ASME PCC-1	2013
Repair of Pressure Equipment and Piping	ASME PCC-2	2011
Pressure Relief Devices	ASME PTC 25	2014
Qualifications for Authorized Inspection	ASME QAI-1	Latest edition [Note (3)]
ASNT Central Certification Program	ACCP	Rev 7
ASNT Standard for Qualification and Certification of Nondestructive Testing Personnel	ANSI/ASNT CP-189	2006
Recommended Practice for Personnel Qualification and Certification in Nondestructive Testing	ASNT SNT-TC-1A	2006

(. . . .)

09-2015

ASME VIII Div.1 – UG-11

UG-11 PREFABRICATED OR PREFORMED PRESSURE PARTS FURNISHED WITHOUT A CERTIFICATION MARK

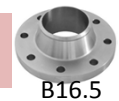
UG-11: Formteile und Normteile

(1) Cast, forged, rolled, or die formed **non-standard** pressure parts. Pressure parts such as shells, heads, removable doors, and pipe coils that are wholly formed by casting, forging, rolling, or die forming may be

Ungeschweisste Formteile werden als Material behandelt

(2) Cast, forged, rolled, or die formed standard pressure parts that comply with an **ASME product standard**, either **welded or nonwelded** (. . . .)

ASME Normteile (Table U-3) können im Rahmen der Druckstufen eingesetzt werden, ohne Berechnung!



(3) cast, forged, rolled, or die formed standard pressure parts that comply with a **standard other than an ASME product standard**, either **welded or nonwelded** (. . . .)

Normteile (nicht Table U-3) können unter folgenden Bedingungen eingesetzt werden



09-2015

ASME VIII Div.1 – UG-11

UG-11 PREFABRICATED OR PREFORMED PRESSURE PARTS FURNISHED WITHOUT A CERTIFICATION MARK



➔ Normteile (Table U-3) sind ASME zertifiziert
Teile-Hersteller braucht keine ASME Zulassung

➔ comply with an **ASME Product Standard** (=> UG-44 and Table U-3) or a **Manufacturer's standard** (incl. pressure-temperature ratings)
[=> the pressure-temperature rating and the basis for establishing the pressure-temperature rating shall be available with the Vessel Manufacturer]

➔ **not allowed for welded shells or heads or quick-actuating closures**

Normteile nicht für geschweisste Mäntel, geschweisste Böden oder Schnellverschlüsse

➔ **Materials shall be as permitted in VIII Div. 1 or the listed ASME product standard** (=

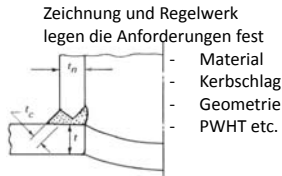
ASME Material ist gefordert!

➔ When **welding** is performed, it shall meet the requirements of UW-26(a), UW-26(b) and UW-26(c)
Schweißen nach technischen ASME Anforderungen!

➔ When Code required **heat treatment** is performed by the part manufacturer, the requirements shall be available to the Vessel Manufacturer (UG-90(b)(1)) and the Inspector (UG-90(b)(2))
Glühen nach technischen ASME Anforderungen!



ASME Section IX – Procedure Qualification



Entwurf der prWPS
Geltungsbereich mit Essential und Nonessential Variablen

Prüfstück Schweißen

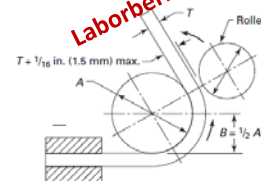


Qualifizierung eines Schweißverfahrens

WPS
essential + nonessential variables
Manf. Approval / Release
Herst. Genehmigung / Freigabe
Datum *Unterschrift*

PQR
Protokoll der Schweißparameter (essential variables) + Testergebnisse
Manf. Certification
Herst. Zertifizierung
Datum *Unterschrift*

Erprobung des Prüfstückes



ASME Section IX – Performance Qualification

Auswahl eines Schweißers und

Festlegung von Parametern:

- Badsicherung,
- Rohrdurchmesser
- F-Nummer,
- Dicke des einzubringenden Schweißgutes
- Schweißposition,
- etc.

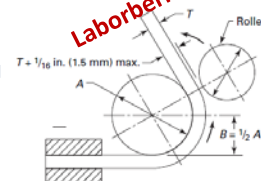
Prüfstück Schweißen



Qualifizierung eines Schweißers

WPQ
Schweißparameter (essential variables) + Geltungsbereiche + Prüfergebnisse
Manf. Certification
Herst. Zertifizierung
Datum *Unterschrift*

Erprobung des Prüfstückes



- Prüfergebnisse:
- Visuell (VT) und Biegeversuche, oder
 - Röntgen (RT), oder
 - Ultraschall (UT)

ASME VIII Div.1 – UG-11

UG-11 PREFABRICATED OR PREFORMED PRESSURE PARTS FURNISHED WITHOUT A CERTIFICATION MARK



EN 1092

- ➔ When Code required **volumetric examination** is performed by the part manufacturer, the completed radiographs and the examination reports shall be available to the Vessel Manufacturer (UG-90(b)(15)) and the Inspector (UG-90(c)(1)(i))

zFP nach ASME Anforderungen: Filme mitliefern!

- ➔ Parts made to an **ASME product standard** shall be **marked** as required by the ASME product standard.

Kennzeichnung nach Norm!

- ➔ Parts made to a **Manufacturer's standard** shall be **marked** with the name or trademark of the pressure part manufacturer and any other markings as required by the proprietary standard or other standard used for the pressure part

- ➔ The **Manufacturer of the completed vessels** shall have the **responsibility** to:
 - Ensure that all standard pressure parts comply with all applicable rules of Section VIII Div. 1
 - Ensure that all standard pressure parts are suitable for the design conditions of the completed vessel
 - obtain the necessary test reports

Behälterhersteller ist für alles verantwortlich!

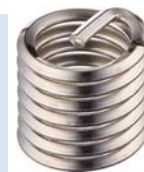
- Sicherstellen, daß die Teile der VIII-1 entsprechen
- Sicherstellen, daß die Teile geeignet sind
- Dokumentation zusammenstellen: dem AI vorlegen!

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ASME VIII Div.1 – UG-11

Manufacturer Standard Items: Was könnte das sein?

- Verschraubungen, Muffen, Kupplungen
- Armaturen
- Meßinstrumente
- Mannlochverschlüsse
- Wärmetauscherrohre
- Sonderflansche
- Und und und



- ~~Geschweißte Böden~~
- ~~Geschweißte Mantelschüsse~~
- ~~Schnellverschlüsse~~



ASME VIII Div.1 – UG-11

Manufacturer Standard: Inhalt?

- Beschreibung (Items)
- Einsatzbereich (Scope) & Grenzen (limits)
- Material (material used)
- pressure–temperature rating (Druckstufen)
- Grundlage für Druckstufen (the basis for establishing the pressure–temperature rating)
- Schweißen, Löten, Prüfen, Glühen
- Dokumentation (documents)

Ein Manufacturer Standard

Page 2 of 8 – Laserfin Tubes



1 Introduction

This Manufacturer Standard includes Schmöle Laserfin Tubes for the use in Pressure Vessels, Heat Exchangers, Superheaters, Economizers, Reheaters and other types of Pressure Equipment in accordance with ASME Boiler and Pressure Vessel Code Section VIII Division 1. This Standard is in full compliance with Paragraphs UG-8 and UG-11(d).

We hereby certify that Schmöle Laserfin Tubes are safe for the use in static pressure loads within the indicated pressure-temperature ratings. It shall be the user's responsibility to assure that all other loads are considered separately in the design of the pressure equipment. The pressure equipment design shall be the responsibility of the Manufacturer, see ASME Section VIII-1, Paragraph U-2(b).

By Issuance and Publication of this Manufacturer Standard SCHMÖLE GmbH certifies that it meets ASME Code paragraphs referenced. By marking of the Laserfin Tubes in accordance with this Standard we certify that the tubes are in full compliance with this Standard and the referenced ASME Code requirements, as related to the manufacturing operations, welding, tests, examinations and marking performed by SCHMÖLE GmbH. We have reviewed supplied certificates, documentation, material, and subcontracted services to the best of our knowledge and belief, and accepted them when related to our Laserfin Tubes as per this standard. We hereby certify that the welding operations have been performed in accordance with procedures by operators certified in accordance with

This standard includes the tube types designated

K441-73.0,
K441-74.0 Variation "S1", and "S2"
K441-75.0. Variation "S1", and "S2"

Manufacturer S

Schmöle La

Longitudinal welded S

In accordance with ASME Boi

Status: 1 June 2013

Ein Manufacturer Standard

2 Marking

The Tubes are marked with the original Tube Manufacturer marking, traceable to the Material Test Report. Please note that due to finning operations some marking may be obliterated.

The Tube bundle or the shipping box is marked with our SCHMÖLE tradename, the product LASERFIN and the Type designation "K441-73.0, K441-74.0 or K441-75.0. In case of the types -74 and 75, the Variation "S1", or "S2" will be added to clearly identify the product with the drawing and dimensions.

3 Manufacturing

The tubes will be finned using the Laser Beam Welding Process in a mechanized Machine Welding Process without the use of Filler Material. The procedure and the operators are fully qualified and certified in accordance with the requirements of ASME Code Section IX. Documentation by WPS, and WOPQ may be supplied upon request from our customers.

4 Testing

Each Tube is demineralized gauge pressed exceeding 1 the marking each tube.

Page 3 of 8 – Laserfin Tubes

5 Material

The tubes used are certified to ASME Section II Part A, Edition 2010, Addenda 2011, SA-249TP316L, or the equivalent ASTM Specification A-249 TP316L. The outside diameter is 25mm, the minimum thickness of the straight tube is 2,5mm, the minimum thickness of the extrados in the bend sections shall be 2,2mm.

The fin material is 0,4mm thick 1.4571 stainless steel strip material according to DIN EN 10088-2 (X6CrNiMoTi17-12-2), which is assigned P-No. 8.



Ein Manufacturer Standard

6 Pressure-Temperature Rating UG-11(d)(11)(b).

The maximum permissible temperature as per Section II Part D, Table 1A for SA-249TP316L is 454°C in Section VIII Division 1 applications. The user is cautioned that the mean metal temperature may not exceed 454°C in service under internal pressure. In cases where the pressure surface is exposed to direct firing, the fired surface temperature is limited to 454°C.

For external pressure service the maximum permissible mean metal service is 425°C.

The rated internal pressure at 454°C is 50 bar (5,0 MPa).
The rated external pressure at 425°C is 30 bar (3,0 MPa).
The rated internal pressure at 0°C is 50 bar (5,0 MPa).
The rated external pressure at 0°C is 30 bar (3,0 MPa).

The rated MDMT is 0°C at 50 bar (5,0 MPa) internal, 30 bar (3,0 MPa) external.
Any service below 0°C shall be subject to specific design evaluation.

7 Basis for establishing the pressure-temperature rating, UG-11(d)(11)(c)

The Pressure-Temperature ratings are based on ASME Code Section VIII Division 1, Ed 2010, Add 11a, Appendix 1 for the straight tubes using E=85% in accordance with UW-12(d) and the stress values permitted by UHA-23. Although the tubes are not girth welded, a butt welding connection without the application of RT is considered acceptable by UW-12(d) without re-design.

MDMT was established in accordance with UHA-51. The bend section was calculated in accordance with U-2(g) using ASME B31.3 - 2010 Process Piping, 304.2.1.

All design parameters consider a corrosion allowance of 1,02mm on the specified minimum thickness.



Haben Sie Fragen?
Wir haben Antworten!

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Karte: Wikipedia