

MATERIAL MANUFACTURE CERTIFICATE

This is to certify that the manufacturer

WESTERN FORGE AND FLANGE COMPANY
687 County Road 2201
Cleveland, TX
77327, USA

has implemented and is maintaining a certified quality assurance system which has undergone a

Specific Assessment for Materials

for applications covered by Council Directive 97/23/EC of 29 May 1997 on Pressure Equipment. The manufacturer is found to comply with PED Annex 1, section 4.3, for issue of Type 3.1 Material Certificates according to EN 10204:2004

Further details are given overleaf

Høvik, 2015-04-16
for **DNV GL**

This Certificate is valid until
2018-04-16

Marianne Spæren Marveng
Certification Manager

Rudy Frueboes
Technical Reviewer

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. Except for any liability caused by DNV GL's gross negligence or willful misconduct, DNV GL's maximum cumulative liability arising out of or related to the use of or reliance on this document shall be limited to USD 300 000. The digitally signed and electronically distributed document is the original and valid certificate. Ref.: www.dnv.com/digitalsignatures

Certificate No: **50137-2009-CE-HOU-DNV GL**
Job Id: **PRJC-96364-2008-PRC-USA**

Jurisdiction

Application of Council Directive 97/23/EC of 29 May 1997 on Pressure Equipment, adopted as regulation of 1999-06-09 no. 721 "Forskrift for Trykkpåkjent Utstyr" by the Norwegian Directorate of Civil Protection and Emergency Planning and by the Petroleum Safety Authority Norway.

Certificate history

Revision	Description	Issue Date
-	Original certificate	2009-03-15
1.0	Renewed certificate	2012-03-15
2.0	Revised to correct address	2012-04-16
3.0	Renewed certificate	2015-04-16

Products covered by this Certificate

The approved system covers the following products:

Product Group	Type of Material	Limitations
Forged Flanges and Ring Forgings	ferritic steels/austenitic steels/austentic steels/alloy steels, etc	See Attached listing of specifications/materials

Sites covered by this Certificate

Product Name	Production Site Name	Address
Forged Flanges and Ring Forgings	WESTERN FORGE AND FLANGE COMPANY	691 County Road 2201 Cleveland, TX 77327, USA

Performed Audits

DNV GL has carried out the Assessment of the Manufacturers Quality System to verify that the relevant requirements relating to the above listed product(s) have been implemented

Assessment has been carried out on the production site by DNV GL Business Assurance USA, Inc. as described in Assessment Report date 2016-03-04.

Terms and conditions

The certificate is subject to the following terms and conditions:

- The certificate is only valid for the material types and/or manufacturing premises listed above.
- The Manufacturer shall fulfil the obligations arising out of the quality system as approved and uphold it so that it remains adequate and efficient.
- The Manufacturer shall inform the local DNV GL Office of any intended updating of the quality system and DNV GL will assess the changes and decide if the certificate remains valid.
- Periodical audits will be held, in order to verify that the Manufacturer maintains and applies the quality system. DNV GL reserves the right, on a spot basis or based on suspicion, to pay unannounced visits.

The following may render this Certificate invalid:

- Changes in the quality system.
- Periodical audits not held within the allowed time window.

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MATERIALS / APPLICABLE SPECIFICATIONS

Legend:

- A – ASTM
- SA – ASME
- AMS – Aerospace Material Specification
- QQ – Federal Specification

04/14/15

GRADE	UNS NO.	FORGING SPECIFICATIONS
F304	S30400	A/SA182, A/SA403, QQ-S-763
F304H	S30409	A/SA182, A/SA403, QQ-S-763
F304L	S30403	ALL ABOVE + AMS 5647
F304LN	S30453	A182
F304N	S30451	A/SA182, A/SA403
F309	S30900	A/SA403, QQ-S-763
F310	S31000	A/SA182, A/SA403, QQ-S-763
F310S	S31008	QQ-S-763
F316	S31600	A/SA182, A/SA403, QQ-S-763
F316H	S31609	A/SA182, A/SA403, QQ-S-763
F316L	S31603	ALL ABOVE + AMS 5653
F316LN	S31653	A/SA182
F316N	S31651	A/SA182, A/SA403
F317	S31700	A/SA182, A/SA403, QQ-S-763
F317L	S31703	A/SA182
F321	S32100	A/SA182, A/SA403, AMS 5645
F321H	S32109	A/SA182, A/SA403
F347	S34700	A/SA182, A/SA403, AMS 5646/5654
F347H	S34709	A/SA182, A/SA403
F44 (254 SMO)	S31254	A/SA182
F45 (253 MA)	S30815	A/SA182
F47 (317LM)	S31725	A/SA182
F48 (317LMN)	S31726	A/SA182
F430	S43000	A/SA182
F6a (410)	S41000	A/SA182, AMS 5613
F6NM	S41500	A/SA182
F410S	S41008	A/SA182 (F6A), AMS 5613
NITRONIC 50	S20910	A/SA182, A/SA403 (XM-19)
NITRONIC 60	S21800	NONE
15-5 PH	S15500	A564, AMS 5659
17-4 PH	S17400	A/SA564 (630), AMS 5643
F51 (DUPLEX)	S31803	A/SA182
F60 (2205)	S32205	A/SA182
F53 (2507)	S32750	A/SA182
FERR 255	S39253*	A/SA182 (*F61/S32550 New UNS No.)
A105 CS	K03504	A/SA105
A350 LF-1	K03009	A/SA350
A350 LF-2	K03011	A/SA350
A350 LF-3	K32025	A/SA350
F1	K12822	A/SA182

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F5 (501SS)	K41545	A/SA182
F5a	K42544	A/SA182
F9	K90941	A/SA182
F11 CL-1	K11597	A/SA182
F11 CL-2	K11572	A/SA182
F11 CL-3	K11572	A/SA182
F12 CL-1	K11562	A/SA182
F12 CL-2	K11564	A/SA182
F22 CL-1	K21590	A/SA182
F22 CL-3	K21590	A/SA182
ALUM 1100	A91100	B/SB247, B/SB361
ALUM 2014	A92014	B/SB247, AMS 4133/4134
ALUM 3003	A93003	B/SB247, B/SB361
ALUM 5083	A95083	B/SB247, B/SB361
ALUM 5086	A95086	NONE
ALUM 6061	A96061	B/SB247, B/SB361, QQ-A-367, AMS4127/4146
ALUM 7075	A97075	B/SB247, QQ-A-367, AMS4141/4311
70/30 CU-NI	C71500	MIL-C-15726, MIL-C-24679
90/10 CU-NI	C70600	MIL-C-15726, MIL-C-24679
EVER 655	C65500	B/SB283 (HOT PRESSED)
NAVAL BRASS	C46400	B/SB283 (HOT PRESSED)
TITANIUM GR2	R50400	B/SB363, B/SB381
TITANIUM GR4	R50700	B/SB381
TITANIUM GR7	R52400	B/SB363, B/SB381
TITANIUM GR12	R53400	B/SB363, B/SB381
HAYNES HR160		HAYNES PS-6039-2
HAYNES 230	N06230	B/SB564, AMS 5891
HAYNES 242		HAYNES PS-6096-0
HAYNES 556	R30556	HAYNES PS-6042-2
7-MO PLUS (F52)	S32950	A/SA182
HASTELLOY-B	N10001	B366 (REFERENCE)
HASTELLOY-B2	N10665	B462, B366, B/SB564
HASTELLOY-B3	N10675	B462, B366, B/SB564
HASTELLOY-C4	N06455	B366 (REFERENCE)
HASTELLOY-C22	N06022	B462, B366, B/SB564
HASTELLOY-C276	N10276	B462, B366, B/SB564, AMS 5750
HAST C-2000	N06200	B462, B564
HASTELLOY-G	N06007	B366 (REFERENCE)
HASTELLOY-G3	N06985	B366 (REFERENCE)
HASTELLOY-G30	N06030	B462, B366 (REFERENCE)
HASTELLOY-N	N10003	B366 (REFERENCE)
HASTELLOY-X	N06002	B366 (REF), AMS 5754
NICKEL 200	N02200	B366, B/SB564
NICKEL 201	N02201	B366 (REF)
ALLOY 400	N04400	B366, B/SB564, QQ-N-281, MIL-F-23509

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GRADE	UNS NO.	FORGING SPECIFICATIONS
ALLOY K500	N05500	QQ-N-286
ALLOY 600	N06600	B366, B/SB564, AMS 5665
ALLOY 601	N06601	AMS 5715
INCONEL 617	N06617	B564
ALLOY 625	N06625	B366, B/SB564, AMS 5666
INCONEL 686	N06686	B564
INCONEL 690	N06690	B564
INCONEL 718	N07718	B/SB637, AMS 5662/5663/5664
INCONEL X750	N07750	B/SB637 (GR688), AMS 5542/5668
ALLOY 800	N08800	B366, B/SB564, AMS 5766
ALLOY 800H	N08810	B366, B/SB564
ALLOY 800HT	N08811	B366, B/SB564
ALLOY 825	N08825	B366, B/SB564
ALLOY 904L	N08904	NONE
ALLOY C20 (F20)	N08020	A182, B366, B/SB462
AL6XN (F58)	N08367	A182, B366, B/SB462, B/SB564
RA330	N08330	B366 (REF), AMS 5716
RA330 (W/ G.S.)	N08332	NONE
RA333	N06333	AMS 5717
25-6 MO	N08925	NONE
ULTIMET	R31233	NONE (REF: HAYNES MATERIAL)