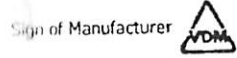


ThyssenKrupp VDM

ThyssenKrupp VDM GmbH Kleffstraße 23, D-58762 Altena Tel. +49 2392 552056
 Division Postbox 1251, D-58742 Altena Fax +49 2392 552827
 Bar and Forgings EMail thomas.gymnich@thyssenkrupp.com



Order No. 378173
 Delivery No. 98887
 Trademark **NICORROS**
 2.4360



114766

Inspection certificate 87823/0 Page 1 of 2
 DIN EN 10204/01.05 3.1 printed: 25.01.2011

ThyssenKrupp VDM USA, Inc. for
 Corrosion Materials, Baker
 306 Columbia Turnpike
 USA-07932 Florham Park

Product
 Bar, round, forged, stress relieved, machined, slightly oxidized

Specification	Material
ASTM B 164-03 (reapproved 08)	UNS N04400
ASME SB 164-2009b	UNS N04400
ASTM B 564-06 applicable for forgings	UNS N04400
ASME SB 564-2007 applicable for forgings	UNS N04400
QQ-N-281D Amd. 2 Class A / Form 1 10.85	Class A
NACE MR0175-2003	

Item	Pcs	Wht [kg]	Dimension [mm]	Cast	Lot	
4	1	491	127,00 Ø x 3048-4267,2	114835	103427866	5,000" dia x 10-14" NL
4	2	982	127,00 Ø x 3048-4267,2	114766	103431098	5,000" dia x 10-14" NL

Purchase Order No. 086782 / TKVDMUSA 25570

Analysis (weight %)
 LE=combustion analysis, OE=optical emission analysis, RF=XRF

ASTM B 164-03 (reapproved 08); ASME SB 164-2009b; ASTM B 564 06 applicable for forgings; ASME SB 564-2007 applicable for forgings

Cast	Melting Pr.	C	S	Ni	Mn	Si	Ti	Cu	Fe	Al	Co
114766	EFVD	top 0,14	<0,002	R63,51	0,98	0,14	0,050	32,80	2,15	0,100	0,03
		Meth LE	LE	RF	RF	RF	RF	RF	RF	RF	RF
114835	EFVD	top 0,13	<0,002	R63,86	1,05	0,14	0,020	32,54	2,04	0,100	0,03
		Meth LE	LE	RF	RF	RF	RF	RF	RF	RF	RF

QQ-N-281D Amd. 2 Class A / Form 1 10.85

Cast	Melting Pr.	C	S	Ni	Mn	Si	Ti	Cu	Fe	P	Al	Pb	Sn	Zn	Co
114766	EFVD	top 0,1	<0,002	63,46	1,0	0,1	0,050	R32,75	2,2	<0,002	0,100	<0,001	<0,002	<0,01	0,03
		Meth LE	LE	RF	RF	RF	RF	RF	RF	RF	RF	OE	OE	RF	RF
114835	EFVD	top 0,1	<0,002	63,81	1,1	0,1	0,020	R32,49	2,0	<0,002	0,100	<0,001	<0,002	<0,01	0,03
		Meth LE	LE	RF	RF	RF	RF	RF	RF	RF	RF	OE	OE	RF	RF

Sample Condition	stress relieved	Tensile Test						Hardness Test			Grain Size		
		Temp [°C]	Yield0.2% [ksi]	Yield1.0% [ksi]	Tensile	Elongation A [%]	RoA [%]	1 ASTM E 18	HRBW	1 ASTM E 112			
Lot	Sample No.												
103427866	1-A1	1 RT	72,2		94,3	4D 32			1 90 surface		1 No 8.0		
103431098	1-A1								1 91 surface		1 No 8.0		
103431098	1-A2	1 RT	62,9		90,1	4D 35							

HEAT# 114766

 TRACER# 644587

ISO 9001, AS9100, EN 9001
 LRQA Approval
 KLN 4000941/E

We herewith certify, that the material is in conformance with the above mentioned specifications Mark of the Inspector E

This certification was created by machine and is valid without signature

Thomas Gymnich, authorized inspection representative Date of release: 26.01.2011

87823-O-E This certified test report shall not be reproduced except in full, without the written approval of ThyssenKrupp VDM. The recording of false, fictitious or fraudulent statements or entries on the certificate may be punished as a felony under federal law.



Heat Treatment	Lot
550°C/0:45h/air	103431098
	103427866

Spectrographic analytical mixup test: without objection
Dimensional and visual inspection performed: without objection
No mercury contamination; no Radium, Luminous or Alpha source materials were used
in the manufacture or testing of the items furnished.
No weld repairs performed.
Country of Origin and Melt: Germany
Certified acc. to Pressure Equipment Directive (97/23/EC) by TÜV-CERT-Certification
body for pressure equipment of the TÜV Nord: notified body, reg.no. 0045.

HEAT# 114766

TRACER# 644587