

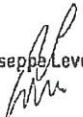
 ASOFORGE <small>Steels for the future</small>		INSPECTION CERTIFICATE / Werkzeugnis Acc. To EN 10204 - ISO 9001		MADE IN ITALY mod. Q.P9.02.b - rev.6	
ASOForge srl, Via Verginello 29/31 Castegnato BS(ITALY) - Tel. 030/6841011 Fax. 030/6841012			Certificate Nr./Zeugnis Nr. 1999/2021		Rev. 0
CUSTOMER					
Cliente / Kunde					
Client Order Nr.			P06235		
Ordine Nr. / Bestell Nr.			8210473		
ASO ORDER					
Ordine Aso / Auftrags Nr.					
REFERENCE STANDARDS			SSI rev. 5.3 - 2016 ed. / ASTM A276, A479, A182/SA 182, ASTM A262 Practice E, A193, ASME SA479 - SA193 / AMS-QQ-S-763B / AMS 5653 / AMS 5648 / NACE MR0175-ISO 15156, NACE MR0103, ASTM A320/A320M, ASME SA320/SA320M		
Client Item / Artikel Nr.		Heat N° / Schmelze		STEEL GRADE / Stahl	
19"		117896		F316 / F316L - UNS S31600 - UNS S31603	
Melting process / Schmelzprozess		Steel produced by electric furnace and refine in AOD / Elektrolichtbogenofen und Ausbau in der AOD-Konverter			
Chemical Analysis / Chemische Analyse					


 ASONEXT <small>Steels for the future</small>		CERTIFICATO DI ANALISI CHIMICA E METALLOGRAFICA <small>Chemical analysis and metallographical certificate. Certificat d'analyse chimique et metallographique. Derschreibungs- über die chemische Analyse und metallgraphische</small>		Azienda con sistema di gestione certificato secondo ISO 9001; ISO 14001; ISO 45001.		Manuale QAS Rev.: 0 Data: 01/10/2020													
CLIENTE:		ASOFORGE S.R.L. UNIPERSONALE		ORDINE N.		8015085													
<small>Purchaser / Client</small>		<small>Dettaglio</small>		<small>Purchase order no. / Commande nr / Bestellung nr.</small>		<small>ORDINE ASON N.</small>													
<small>Documento di controllo tipo</small>		3.1 3.2 2.2 (EN 10204)		STATO DI FORNITURA:		LINGOTTI GREZZI													
<small>Typ control Document</small>				<small>Delivery supply conditions / Etat de fourniture</small>		<small>Rau ingots / Lingots brut</small>													
<small>und / Aufbau in der AOD-Konverter</small>				<small>Lieferbedingungen</small>		<small>Rohstoffe</small>													
ACCIAIO PRODOTTO AL FORNO ELETTRICO ED AFFINATO IN AOD - Steel produced by electric furnace and refine in AOD - Acier produit au four électrique et affiné en AOD - Elektrolichtbogenofen und Aufbau in der AOD-Konverter																			
COLATA N. 117896 <small>Piece no. / Casting</small> <small>Stücknummer</small>		ACCIAIO 316L <small>Steel / Acier</small> <small>Stahl</small>		SPECIFICA/NORMA <small>Designation / Désignation / Spezifikationsnorme</small> <small>Derschreibungs-Norm</small>		ASTM A182 - 1.404 - SSI													
PROFILO 11000 <small>Ring / Section</small> <small>Profil</small>		PEZZI n. 2 <small>Pieces number / Nombre de pièces</small> <small>Anzahl Stücke</small>		<input type="checkbox"/> ACCIAIO DEGASATO SOTTOVUOTO <small>Degassed steel / Acier dégazé</small> <small>Vakuumtiefgeblasen</small>		<input checked="" type="checkbox"/> ACCIAIO NON DEGASATO <small>Not degassed steel / Acier non dégazé</small> <small>Nicht Vakuumtiefgeblasen</small>													
ANALISI CHIMICA - Chemical analysis - Analyse chimique - Chemische Zusammensetzung																			
C	Mn	Si	P	S	Cu	Cr	Ni	Mo	Sn	Al	V	Nb	Ti	B	As	Sb	Co	Ceq	
0.017	1.73	0.45	0.033	0.026	0.41	16.82	10.12	2.10	0.009	0.005	0.067	0.029	0.002	0.0029	0.006	0.0026	0.143		
ANALISI GAS		IDROGENO	OSSIGENO	AZOTO	Ca		W	Zr	Pb	Bi	Ta	Al sol.	B sol.	Pcm	Xf	Jf	Pre	Di	
<small>Gas analysis</small>		<small>p.p.m. hydrogen</small>	<small>p.p.m. oxygen</small>	<small>p.p.m. nitrogen</small>															
				693	0.0006		0.061												
TEMPERABILITA' JOMINY		Temp. Température	mm	1,5	3	5	7	9	10	11	13	15	20	25	30	35	40	45	50
UNI EN ISO 642			HRC																
GRANO AUSTENITICO: SCALA		Durezza		INCLUSIONI NON METALLICHE: SCALA															
<small>no change grain size check</small>		<small>HR100 impact</small>		<small>non metallic inclusion check</small>															
<small>grain size check on the pending absorption homogenizer</small>				<small>incluisions non métalliques subtile</small>															
				<small>prüfung mikroskopisch mit Lichtmikroskop</small>															
				A H= T= B H= C H= D H=															
The content is correct and accurate and all test results are in compliance with the material specification								RESPONSABILE GARANZIA DI QUALITA' <small>Quality Service - Responsable service Qualité - Qualitätssicherung</small> DANIELE RINALDI 				STABILIMENTO DI Ospiateto Italy 16-07-2021 Certificato 1999 / 2021 Zeri / Les Revisione / 0 Revisions							
NOTE:		* R500 x 2, UNS 31600/UNS 31603 - No welding repair has been performed. The material is verified to be free of radioactive contaminations. Radioactivity Co-60<0.1 Bq/g.																	

Statement confirming that all the operation have been performed in accordance with the Quality manual Rev. 00 dated 01/10/2020 /
 Erklärung, die bestätigt, dass alle Operationen in Übereinstimmung mit dem Quality manual Rev. 00 dated 01/10/2020 durchgeführt wurden
 (ASO-Qualitäts-Handbuch)

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		INSPECTION CERTIFICATE / Werkszeugnis Acc. To EN 10204 - ISO 9001		MADE IN ITALY mod. Q.P9.02.b - rev.6	
				CERT. TYPE 3.1	
ASOForge srl, Via Verginello 29/31 Castegnato BS(ITALY) - Tel. 030/6841011 Fax. 030/6841012			Certificate Nr./Zeugnis Nr. 1999/2021		Rev. 0
CUSTOMER Cliente / Kunde		'S			
Client Order Nr. Ordine Nr. / Bestell Nr.		P06235			
ASO ORDER Ordine Aso / Auftrags Nr.		B210473			
REFERENCE STANDARDS Standard di Riferimento / Referenzstandards		SS1 rev. 5.3 - 2016 ed. / ASTM A276, A479, A182/SA 182, ASTM A262 Practice E, A193, ASME SA479 - SA193 / AMS-QQ-S-753B / AMS 5653 / AMS 5648 / NACE MR0175-ISO 15156, NACE MR0103, ASTM A320/A320M, ASME SA320/SA320M			
Client Item / Artikel Nr.	Heat N° / Schmelze	STEEL GRADE / Stahl		CONDITION Trattamento / Waermebehandlung	
19"	117896	F316 / F316L - UNS S31600 - UNS S31603		Solution Annealing	

VDH: Visual, Dimensional and Surface Hardness / Visibilitaet, Dimension Oberflaechen Haerte


Bar Nr	Nominal section ["]	Real section ["]	Length[mm]	Weight [Kg]	Forging Reduction	Hardness test (HB)
						140 - 241
20	19"	19,19"	5014	7460	3,30:1	178 - 180
21	19"	19,17"	5007	7440	3,30:1	178 - 180

Material must be of European origin. According to ISO 9001:2008 - ISO 9002 - 1987 EN 29002 1987 Approval.
STAINLESS STEEL FORGED ROUND BARS


No Welding Performed, Mercury Free, Radioactivity Co.60 < 0,1 Bq/g. VISUAL INSPECTION: Satisfactory. Free from cracks, 100% anti-mix-test, free from toxic contamination. Mercury free. According to NACE MR0103.

Ingot type / Blockart Polygonal 11000	Country of origin / Ursprungsland ITALY
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Material description / Materialbeschreibung Forged steel bars
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		INSPECTION CERTIFICATE / Werkszeugnis Acc. To EN 10204 - ISO 9001		MADE IN ITALY mod. Q.P9.02.b - rev.6	
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P06235					
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Standard di Riferimento / Referenzstandards					
Client Item / Artikel Nr.		Heat N° / Schmelze		STEEL GRADE / Stahl	
19"		117896		F316 / F316L - UNS S31600 - UNS S31603	
CONDITION Trattamento / Waermebehandlung					
Solution Annealing					

Heat Treatment / Waermebehandlung

Lot -Nr. / Fertigungsauftr Nr. TT006814	Heating Temperature 1050 °C, holding time 8h:40min. Cooling in water
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Furnace temperature monitoring by thermocouple; method A (atmosphere). Furnace calibration according to API 6A Annex M

Mechanical Properties / Mechanische Eigenschaften

Mechanical testing on a p/elongation from the forged bar after quality heat treatment

Test One - bar size		19"					
Tensile test / Zugversuch		Lot nr. / Fertigungsauftr Nr.				Direction and position	
Temperature		Rm [Mpa]	Rp 0.2% [Mpa]	A2" [%]	Z [%]	Transversal - D/4 B.S.	
Required	20°C	> 485	> 205	> 30	> 50		
Obtained		521	222	58	71		


Impact test / Schlagbiegeversuch		Lot nr. / Fertigungsauftr Nr.				Direction and position	
Temperature		KV [joule]	KV Av. [joule]			Transversal - D/4 B.S.	
Required	20°C	inf.	inf.			Hard. / HBW	
Obtained		160 - 166 - 156	160,33			158 - 156 - 156	

Remarks / Notes / Anmerkungen:

Mechanical test according to ASTM A182

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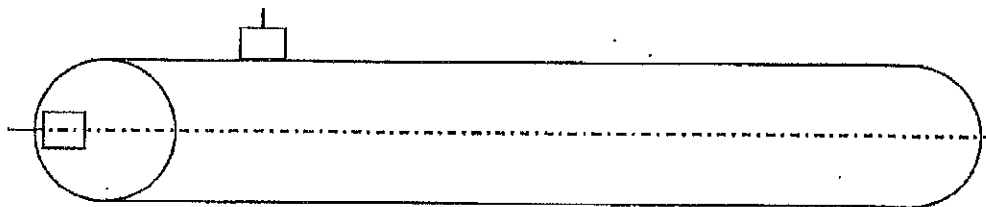
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ASOForge srl, Via Verginello 29/31 Castegnato BS(ITALY) - Tel. 030/6841011 Fax. 030/6841012			Certificate Nr./Zeugnis Nr. 1999/2021		Rev. 0
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ASO ORDER Ordine Aso / Auftrags Nr.		8210473			
REFERENCE STANDARDS Standard di Riferimento / Referenzstandards		SS1 rev. 5.3 - 2016 ed. / ASTM A276, A479, A182/SA 182, ASTM A262 Practice E, A193, ASME SA479 - SA193 / AMS-QQ-S-783B / AMS 5853 / AMS 5648 / NACE MR0175-ISO 15156, NACE MR0103, ASTM A320/A320M, ASME SA320/SA320M			
Client Item / Artikel Nr.	Heat N° / Schmelze	STEEL GRADE / Stahl		CONDITION Trattamento / Waermebehandlung	
19"	117896	F316 / F316L - UNS S31600 - UNS S31603		Solution Annealing	

Ultrasonic Inspection / Ultraschallprüfung

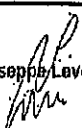
Reference Standard / Referenzstandards	ASTM A388 (6,4mm F.B.H. max)		
Test method / Ausführungsverfahren	DGS / AVG	Instrument / Ausrüstung	USN60
Test technique / Prüftechnik	pulse - echo - method	Reference block / Testkörper	V1
Transducers / Prüfkopftyp	B1S	Test frequency / Prüffrequenz	1 Mhz
Surface condition / Oberflächlicher zustab	Machined	Testing scope / Prüfumfang	100% of the surface
Sensitivity / Empfindlichkeit	6,4mm F.B.H.	Coupling / Kupplung	Couplant 333
Qualification operator / Prüfer Controlleur	UT 2 level - EN ISO 9712	Test result / Beachtung	Conform to : ASTM A388
Indications detect / Hinweise gefunden	Bars nr 20 & 21, No indications detect		

Bar Sketch - Stabform



The content is correct and accurate, all test results are in compliance with the material specification.

"Vedi Allegato Certificato di Analisi chimica e metallografica No 1999/2021" / "See annex Certificate of chemical analysis and metallographic No 1999/2021".

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