 ASOFORGE <small>Steel for the future</small>		INSPECTION CERTIFICATE / Werkszeugnis 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.			P06235		
ASO ORDER			8210473		
Ordine Aso / Auftrags Nr.			8210473		
REFERENCE STANDARDS			SS1 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		CONDITION Trattamento / Waermebehandlung
19"		117896	F316 / F316L - UNS S31600 - UNS S31603		Solution Annealing
Melting process / Schmelzprozess		Steel produced by electric furnace and refine in AOD / Elektrolitbogenofen und Ausbau in der AOD-Konverter			
Chemical Analysis / Chemische Analyse					

 ASONEXT <small>Steel for the future</small>		CERTIFICATO DI ANALISI CHIMICA E METALLOGRAFICA <small>Chemical analysis and metallographical certificate. Certificate d'analyse chimique et metallographique. Ders for the part of the chemical analysis and metallography.</small>		Azienda con sistema di gestione certificato secondo ISO 9001; ISO 14001; ISO 45001.		Manuale QAS Rev.: 0 Date: 01/10/2020	
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CLIENTE: ASOFORGE S.R.L. UNIPERSONALE <small>Purchaser / Client / Destinatör</small>		ORDINE N.: 8015085 <small>Purchase order no. / Commande nr. / Bestell nr.</small>		ORDINE ASO N.: 9211184 <small>ASO order confirmation no. / ASO ordine de recepțion nr. / Bestellnummer</small>	
DOCUMENTO DI CONTROLLO TIPO <input checked="" type="checkbox"/> 3.1 <input type="checkbox"/> 3.2 <input type="checkbox"/> 2.2 (EN 10204) <small>Document Control Type / Type de document de contrôle / Typ control Document</small>				STATO DI FORNITURA: <input checked="" type="checkbox"/> LINGOTTI GREZZI <small>Delivery supply condition / Etat de fourniture / Lieferbedingung</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 - Elektrolitbogenofen und Affinieren in der AOD-Konverter

COLATA N.: 117896 <small>Pour / Cast No. / Schmelznr.</small>		ACCIAIO 316L <small>Steel / Acier / Stahl</small>		SPECIFICA NORMA: ASTM A182 - 1.4404 - SS1 <small>Detailed list of instructions / Spécifications norme / Detschle liste Norm</small>	
PROFILO: 11000 <small>Size / Section / Profil</small>		PEZZI n.: 2 <small>Process number / Nombre de pièces / Anzahl Stücke</small>		<input type="checkbox"/> ACCIAIO DEGASATO SOTTOVUOTO <input checked="" type="checkbox"/> ACCIAIO NON DEGASATO <small>Disgassed steel / Acier dégausé / Vakuumstahl / Nitri Vakuumstahl</small>	

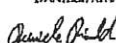
ANALISI CHIMICA - Chemical analysis - Analyse chimique - Chemische Zusammensetzung

C	Mn	Si	P	S	Cu	Cr	Ni	Mo	Su	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 ppm	OSSIGENO ppm	AZOTO ppm	Ca	W	Zr	Pb	Bi	Ta	Al sol.	B sol.	Pcm	Xf	Jf	Pre	Di
			693		0.0006	0.061										

TEMPRABILITA' JOMINY UNI EN ISO 642	Temp. Tempra C	mm	1,5	3	5	7	.9	10	11	13	15	20	25	30	35	40	45	50
		HRC																


GRANO AUSTENITICO: SCALA <small> austenite grain size check grain sa = 100 micr. scale / Prüfung austenit Korngröße</small>		Durezza HRC <small>HB / HRC</small>		INCLUSIONI NON METALLICHE: SCALA <small>Non metallic inclusion check incl. max. size and all types refer to ISO 4951 / Nichtmetallische Einschlüsse</small>	
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The content is correct and accurate and all test results are in compliance with the material specification			STABILIMENTO DI Ospitaletto Italy 16-07-2021		
NOTE: <small>remark / note / Bemerkung</small>		RESPONSABILE GARANZIA DI QUALITA' <small>Quality Service - Service Qualité - Qualitätssicherung</small>		Certificato 1999/2021 <small>Certificate / Certificat / Zertifikat</small>	
		DANIELE RINALDI 		Revisione 0 <small>Revised / Revisé / Revisieren</small>	

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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 ASOFORGE <small>Steel for the future</small>		INSPECTION CERTIFICATE / Werkzeugzeugnis 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		S			
Client Order Nr. Ordine Nr. / Bestell Nr.		P06235			
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-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		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)
20	19"	19,19"	5014	7460	3,30:1	140 - 241
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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 ASOFORGE <small>Steels for the future</small>		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					
Client Order Nr. Ordine Nr. / Bestell Nr.			P06235		
ASO ORDER Ordine Aso / Auftrags Nr.			8210473		
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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

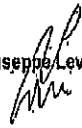
Mechanical testing on a piolongation from the forged bar after quality heat treatment

Test One - bar size		19"						Direction and position		Transversal - D/4 B.S.	
Tensile test / Zugversuch		Lot nr. / Fertigungsauftr Nr.									
	Temperature	Rm [Mpa]	Rp 0,2% [Mpa]	A2 ⁺ [%]	Z [%]						
Required	20°C	> 485	> 205	> 30	> 50						
Obtained		521	222	68	71						


Impact test / Schlagbiegeversuch		Lot nr. / Fertigungsauftr Nr.						Direction and position		Transversal - D/4 B.S.	
	Temperature	KV [joule]	KV Av. [joule]					Hard. / HBW			
Required	20°C	inf.	inf.					inf.			
Obtained		160 - 168 - 155	160,33					158 - 158 - 156			

Remarks / Notes / Anmerkungen:

Mechanical test according to ASTM A182

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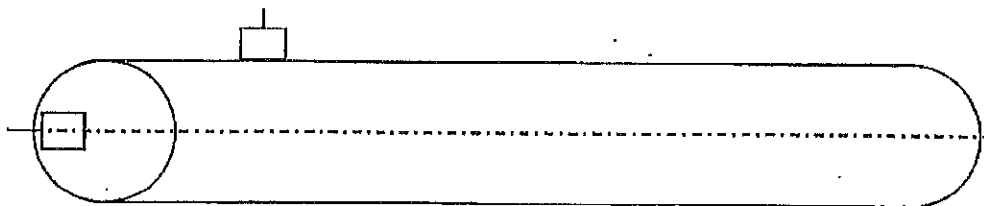
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		INSPECTION CERTIFICATE / Werkzeugeignis Acc. To EN 10204 - ISO 9001		MADE IN ITALY mod. Q.P9.02.b - rev.6	
				CERT. TYPE 3.1	
ASOForge srl, Via Verginello, 29/31 Castegnato BS(ITALY) - Tel. 030/6841011 Fax. 030/6841012			Certificate Nr./Zeugnis Nr. 1999/2021		Rev. 0
CUSTOMER					
Cliente / Kunde					
Client Order Nr. Ordine Nr. / Bestell Nr.					
P06235					
ASO ORDER Ordine Aso./ Auftrags Nr.					
8210478					
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 5653 / AMS 5648 / NACE MR0176-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	
CONDITION Trattamento / Waermebehandlung					
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 Zustand	Machined	Testing scope / Prüfumfang	100% of the surface
Sensitivity / Empfindlichkeit	6,4mm F.B.H.	Coupling / Kupplung	Couplant 333
Qualification operator / Prufer 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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Page 4/4	Werksachverständiger / Quality Control	Stamp and Signature Surveyor

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