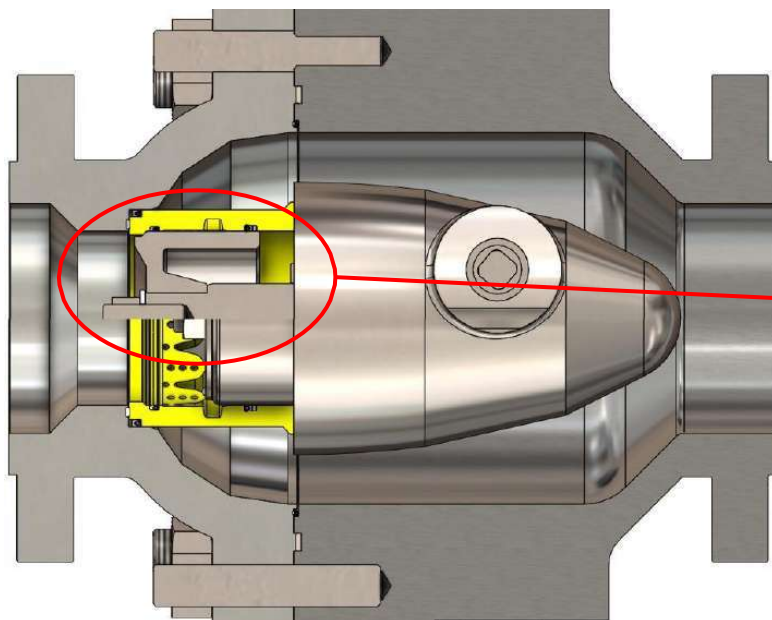


VS-T Robineti axiali de reglare

Robinetii axiali de reglare au fost proiectati in concordanta cu standardul ASME B16.34, cu dimensiuni fata-fata bazate pe standardul ASME B16.10, permitand interschimbabilitatea cu alte tipuri de robineti (robineti cu sfera, robineti cu bila, robineti fluture).



Trim personalizabil într-o singură etapă și în mai multe etape

- Compresibil & Incompresibil
- Anti-Cavitație
- Atenuarea zgomotului
- Cădere mare de presiune
- Înlocuire ușoară a garniturii
- Design de etanșare bidirecțională



Selecția de trimuri cu o singură etapă

Potrivit pentru căderi de presiune scăzute până la moderate:

- în funcție de selecția tipului
- capacitate foarte mare și reducerea considerabilă a zgomotului



Selecție de trimuri de gaz în mai multe etape

Trimuri cu zgomot ultra-scăzut, concepute special pentru aplicații de gaz cu cădere de presiune moderată până la mare.



Selecție de trimuri lichide în mai multe etape

Conceput pentru a evita cavitația la aplicații cu pierderi de presiune moderate până la mari. Potrivit și pentru aplicații în două faze.

VS-T Axial Isolation Valves

Robinetele noastre de izolare axiale au fost proiectate în conformitate cu standardul ASME B16.34 cu dimensiuni față-față bazate pe standardul API6D, care permite interschimbabilitate cu alte tipuri de robineti (cu sfera, cu sertar pana, bila). Sigilarea sigură la foc, efectuată în conformitate cu API 6FA și ISO 10497.

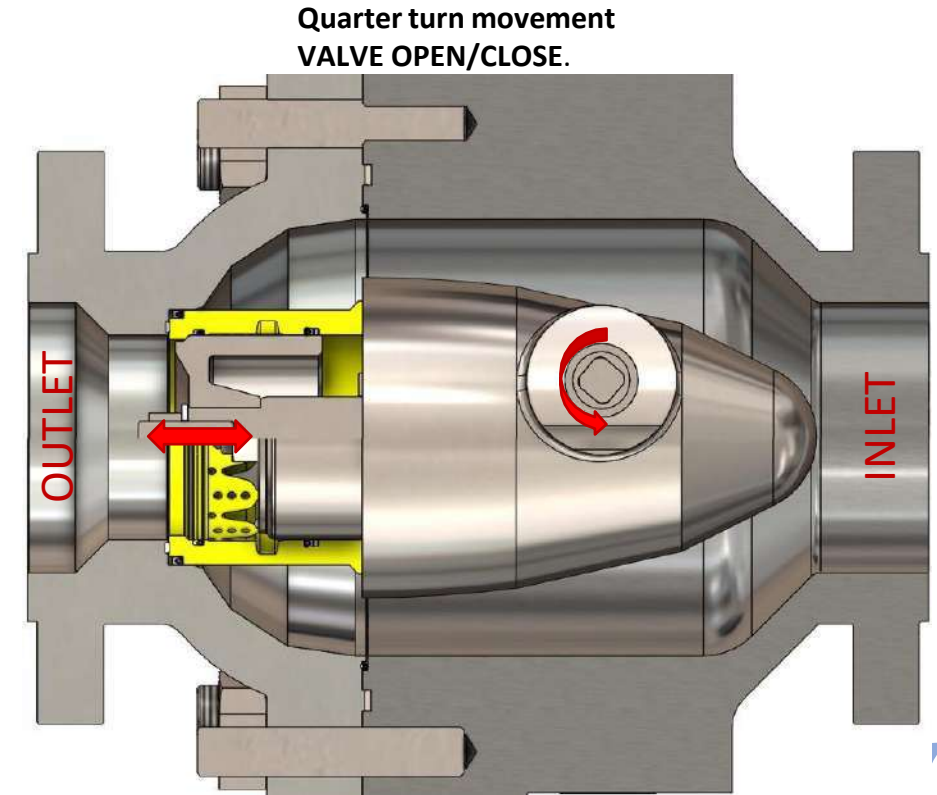
VS-T Robineti axiali de reglare debit

Opțiunile AXIAL Flow Trim

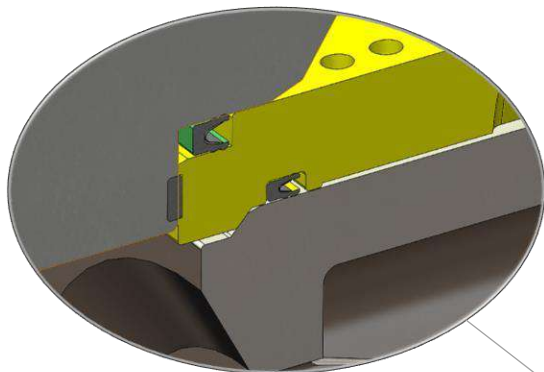
1. Piese de miez din carbură de tungsten. (92 HRC) opțional
2. Cușca/scaunul din carbură solidă de tungsten, oferă o rezistență excelentă la uzură împotriva condițiilor de eroziune a nisipului/slamului.

Beneficiile AXIAL Flow Trim

1. Metal + etanșare moale a garniturii scaunului, pentru o reținere sigură a presiunii.
2. Raționalizarea axială peste fluxul cepului îmbunătățește dinamica fluxului factor de recuperare.
3. Porturile de echilibrare a presiunii cu auto-spălare reduc sarcinile tijei și cuplul/împingerea de ieșire a actuatorului.
4. TSO-Clasa de scurgeri VI (FCI 70.2) cea mai bună din clasă.
5. Garniturile cu presiune echilibrată sunt aranjamente bidirecționale în avans, reducând forța de operare și permițând o durată de viață mare.



Beneficii



Etanșare bidirecțională (Clasa VI)

Oprire etanșă

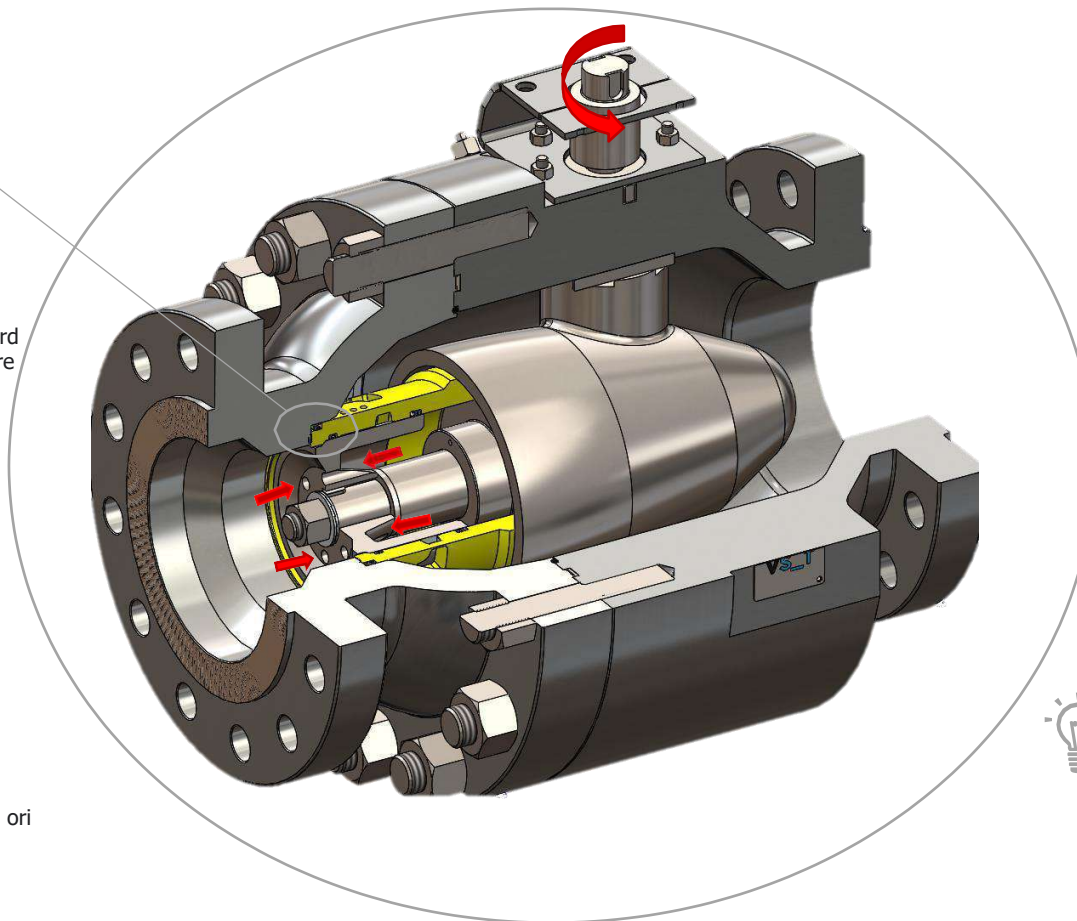
Tijă cu un sfert de tură
Mai puțină frecare, dispozitiv de acționare mai mic / standard scotch-yoke, design cu cea mai mică emisie fugitivă, mișcare rapidă.

Design unic al corpului cu construcție a capotei

Fabricare moale + metal (dublă) a etanșării, îndepărtarea trimului, poate fi posibilă întreținerea în linie.

Capacitate foarte mare

Robinetele axiale automate au capacitatea inerentă de două ori mai mare decât alte modele.
Designul VS-T, caracteristică specială TRIM, reduce dimensiunea robinetului.



Atenuarea zgomotului

Flux de intrare/ieșire evită turbulențele și conversia energiei.
Delta P este preluată numai pentru partea de tăiere.
Zgomotul dinamic este atenuat.



Cuplu redus și consum redus de energie

Robinetii de cuplu/împingere ultra-scăzute se mișcă cu ușurință, deoarece proiectarea echilibrului complet al presiunii la zero forță înapoi.



Nucleu dur TRIM rezistent la cavitație

Material cu granulație super-fină, rezistent la uzură, care va rezista la un serviciu dificil, fără pierderea integrității etanșării.



Design – Compact

Corpul robinetului a oferit o reducere a greutatei cu 30% până la 60% în comparație cu robinetii cu sfera / bila, în combinație cu o acționare foarte mică.



CV Fisa de calcul

Robinet de reglare: 6''x 300#



DESIGN INPUT

FLOW COEFFICIENT CV CALCULATION

Date	17-10-2022
RFQ Number	C225040X
Reference Number	Email
Client	SIS Oil&Gas
Tag Number	IV-006
Quantity	1

Reference Standards

1. IEC 60334-2-1

2. ANSI / ISA 575.01

FLOW PARAMETERS

UNITS	Case 1 (minimum)	Case 2 (Normal)	Case 3 (Maximum)	
Case Name				-
Upstream Pressure	Bara	12.00	22.00	33.00
Downstream Pressure	Bara	0.25	1.71	2.00
Upstream Temperature	Celsius	5	5	15
Flow Rate Gas	Kscmh	50.00	50.00	50.00
Flow Rate Liquid 1	M³/h	-	-	-
Flow Rate Liquid 2	M³/h	-	-	-

GAS PROPERTIES

Gas Type		Natural Gas	Natural Gas	Natural Gas	-
Specific Heat Ratio (Cp/Cv)		-	-	-	-
Specific Gravity of Gas		1.1215	1.227	1.209	-
Molecular Weight of Gas	Mol.Wt	24.04	24.04	24.04	-
Compressibility of Gas	Z	0.07	0.07	0.07	-
Viscosity of Gas	cP	0.0105	0.0105	0.0105	-

LIQUID 1 PROPERTIES

Liquid 1 Type		-	-	-	-
Specific Gravity of Liquid 1	kg/m³	-	-	-	-
Viscosity of Liquid 1	cP	-	-	-	-

LIQUID 2 PROPERTIES

Liquid 2 Type		-	-	-	-
Specific Gravity of Liquid 2		-	-	-	-
Viscosity of Liquid 2	cP	-	-	-	-

END CONNECTIONS

Upstream		6" Sch 40	6" Sch 40	6" Sch 40	-
Downstream		6" Sch 40	6" Sch 40	6" Sch 40	-

SUMMARY OF RESULTS

Calculated CV		320.14	308.56	125.09	-
Outlet velocity	m/s	40.1	80.2	130.1	-
Noise Level	dBA	78.69	73.6	76.8	-
Size / Rating		Axial Flow Control Valve: 6" ANSI 300			
Trim Size	Inch	300/64			
Max. Valve Rated CV	GPM	517.2			

COMMENTS

Offered Axial flow valve is best suitable for the above High pressure Gas flow controls System; limiting noise & vibration in process application.

Robinet de reglare: 12''x 600#



DESIGN INPUT

FLOW COEFFICIENT CV CALCULATION

Date	17-10-2022
RFQ Number	C-225040X
Reference Number	Email
Client	SIS Oil&Gas
Tag Number	IV-006
Quantity	1

Reference Standards

1. IEC 60334-2-1
2. ANSI / ISA 575.01

FLOW PARAMETERS	UNITS	Case 1 (Minimum)	Case 2 (Normal)	Case 3 (Maximum)	
Case Name					-
Upstream Pressure	Bara	35.00	50.0	60.00	-
Downstream Pressure	Bara	15.00	22.00	33.00	-
Upstream Temperature	Celsius	5	5	15	-
Flow Rate Gas	Kscmh	400.00	400.00	400.00	-
Flow Rate Liquid 1	M³/h	-	-	-	-
Flow Rate Liquid 2	M³/h	-	-	-	-

GAS PROPERTIES

Gas Type		Natural Gas	Natural Gas	Natural Gas	-
Specific Heat Ratio (C _p /C _v)		-	-	-	-
Specific Gravity of Gas		1.1215	1.227	1.209	-
Molecular Weight of Gas	Mol.Wt	24.04	24.04	24.04	-
Compressibility of Gas	Z	0.07	0.07	0.07	-
Viscosity of Gas	cP	0.0105	0.0105	0.0105	-

LIQUID 1 PROPERTIES

Liquid 1 Type		-	-	-	-
Specific Gravity of Liquid 1	kg/m³	-	-	-	-
Viscosity of Liquid 1	cP	-	-	-	-

LIQUID 2 PROPERTIES

Liquid 2 Type		-	-	-	-
Specific Gravity of Liquid 2		-	-	-	-
Viscosity of Liquid 2	cP	-	-	-	-

END CONNECTIONS

Upstream		12" Sch 40	12" Sch 40	12" Sch 40	-
Downstream		12" Sch 40	12" Sch 40	12" Sch 40	-

SUMMARY OF RESULTS

Calculated CV		882.6	623.76	549.1	-
Outlet velocity	m/s	80.13	80.17	140	-
Noise Level	dBA	78.03	77.6	73.7	-
Size / Rating		Axial Flow Control Valve: 12" ANSI 600			
Trim Size	Inch	500/64			
Max. Valve Rated CV	GPM	1436.8			

COMMENTS

Offered Axial flow valve is best suitable for the above High pressure Gas flow controls System; limiting noise & vibration in process application.

Robinet de reglare: 16''x 600#



DESIGN INPUT

FLOW COEFFICIENT CV CALCULATION

Date

RFQ Number

Reference Number

Client

Tag Number

Quantity

17-10-2022

C-225040X

SIS Oil&Gas

1

Reference Standards

1. IEC 60334-2-1

2. ANSI / ISA 575.01

FLOW PARAMETERS

CASE NAME	UNITS	Case 1 (Minimum)	Case 2 (Normal)	Case 3 (Maximum)	-
Upstream Pressure	Bara	55.00	50.0	60.00	-
Downstream Pressure	Bara	15.00	22.00	33.00	-
Upstream Temperature	Celsius	5	5	15	-
Flow Rate Gas	Kscmh	800.00	800.00	800.00	-
Flow Rate Liquid 1	M ³ /h	-	-	-	-
Flow Rate Liquid 2	M ³ /h	-	-	-	-

GAS PROPERTIES

Gas Type		Natural Gas	Natural Gas	Natural Gas	-
Specific Heat Ratio (C _p /C _v)		-	-	-	-
Specific Gravity of Gas		1.1215	1.227	1.209	-
Molecular Weight of Gas	Mol.Wt	24.04	24.04	24.04	-
Compressibility of Gas	Z	0.07	0.07	0.07	-
Viscosity of Gas	cP	0.0105	0.0105	0.0105	-

LIQUID 1 PROPERTIES

Liquid 1 Type		-	-	-	-
Specific Gravity of Liquid 1	kg/m ³	-	-	-	-
Viscosity of Liquid 1	cP	-	-	-	-

LIQUID 2 PROPERTIES

Liquid 2 Type		-	-	-	-
Specific Gravity of Liquid 2		-	-	-	-
Viscosity of Liquid 2	cP	-	-	-	-

END CONNECTIONS

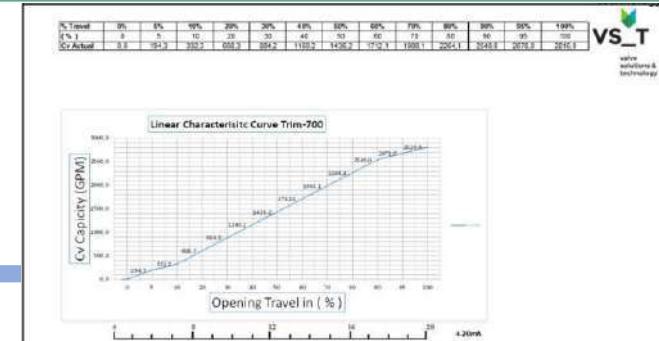
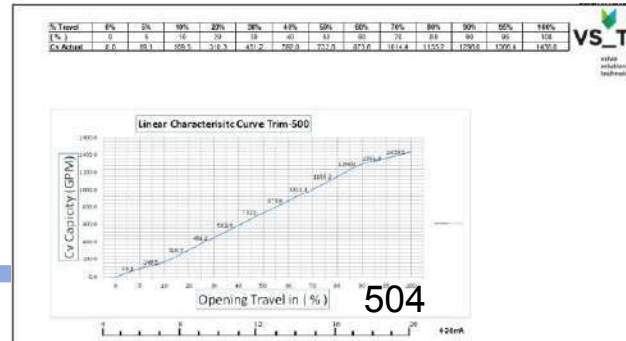
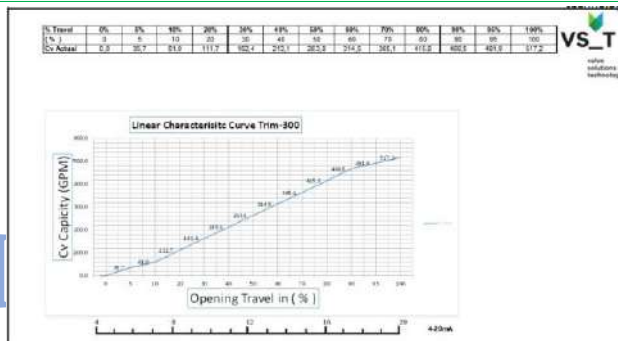
Upstream		16" Sch 40	16" Sch 40	16" Sch 40	-
Downstream		16" Sch 40	16" Sch 40	16" Sch 40	-

SUMMARY OF RESULTS

Calculated CV		1985.8	1403.4	1295.4	-
Outlet velocity	m/s	150.1	150.7	140.2	-
Noise Level	dBA	81.2	80.9	77.6	-
Size / Rating		Axial Flow Control Valve: 16" ANSI 600			
Trim Size	Inch	700/64			
Max. Valve Rated CV	GPM	2816			

COMMENTS

Offered Axial flow valve is best suitable for the above High pressure Gas flow controls System; limiting noise & vibration in process application.





**Robinet axial de reglare 6" Clasa 1500, A182 F 316
(Material forjat)**
Temperatura de proiectare: $-50^{\circ}\text{C} \div +121^{\circ}\text{C}$
Aplicatii: Faza mixta – Hidrocarburi + H₂O + (particule nisip)



**Robinet axial de reglare 8" Clasa 600, A350 LF2
(Material forjat)**
Temperatura de proiectare: $-46^{\circ}\text{C} \div +121^{\circ}\text{C}$
Aplicatii: Faza mixta- Hidrocarburi (Combustibil)

DIMENSIONI

ANSI Class 300 (PN50+)

ANSI Class 600 (PN100+)

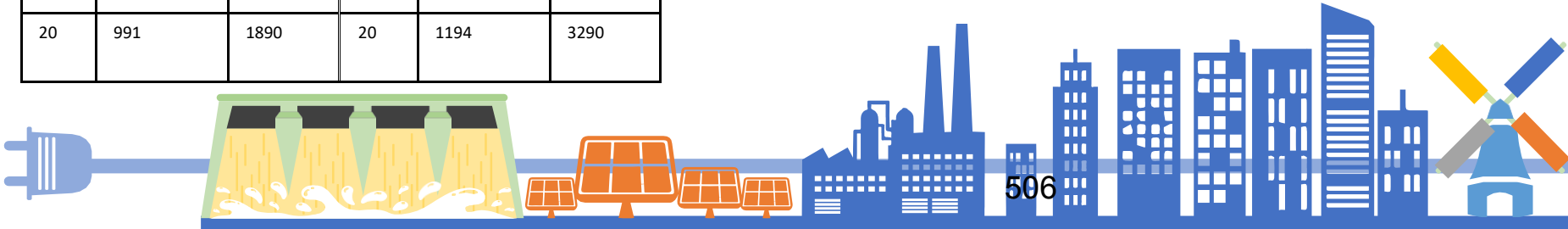
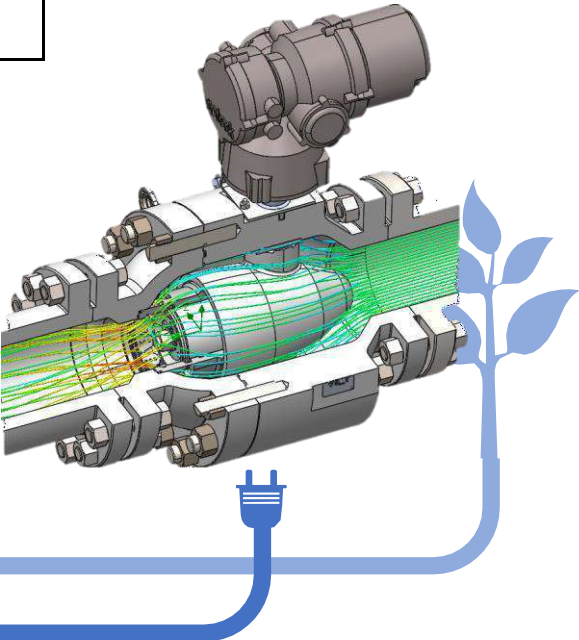
ANSI Class 1500 (PN250+)

ANSI Class 2500 (PN 420+)

API5000

API10000

DIMENSIONE	FTF C TO IN / OUT (RF)	GREUTATE (KG)	DIMENSIONE	FTF C TO IN / OUT (RF)	GREUTATE(KG)	DIMENSIONE	FTF C TO IN / OUT (RTJ)	GREUTATE(KG)	DIMENSIONE	FTF C TO IN / OUT (RTJ)	GREUTATE T(KG)	DIMENSIONE	FTF C TO IN / OUT(RTJ)	WEIGHT(KG)	SIZE	FTF C TO IN / OUT(RTJ)	WEIGHT(KG)
3	283	75	3	356	71	3	473	102	3	584	210	2-1/16	371	136	2-1/16	520	235
4	305	125	4	432	102	4	549	140	4	683	520	2-9/16	422	163	2-9/16	565	344
6	403	185	6	559	160	6	711	312	6	927	940	3-1/8	437	235	3-1/16	619	458
8	502	325	8	660	353	8	841	559	8	1038	1600	4-1/16	549	408	4-1/16	670	585
10	568	365	10	787	820	10	1000	978	10	1292	2400	7-1/16	812	750			
12	648	390	12	838	1150	12	1146	1590	12	1445	3400						
14	762	560	14	889	1470	14	1276	2150	14	1616	4700						
16	838	710	16	991	2560	16	1407	2900									
18	914	1120	18	1092	2950												
20	991	1890	20	1194	3290												



Caracteristici speciale:

- Robinet axial de reglare și actionare personalizate pentru fiecare aplicație unică de control.
- Potrivit pentru aplicații severe de șoc, cu TRIM din carbură de tungsten.
- Excepțional de potrivit pentru aplicații anti-supratensiuni
- Zgomot redus și anti-cavitație
- Emisii fugitive reduse: Clasa de etanșeitate B, conform ISO 15848-1 (opțional)
- Hidrogen (H₂)
- Design sigur la foc
- Oprire etanșă bidirecțională de încredere
- Nu este necesară nicio țevă de aerisire sau un salt în dimensiunea țevii pentru a reduce impactul cavitației în aplicațiile cu apă.
- Este disponibilă o gamă completă de actionari pneumatice și hidraulice, potrivite cu aranjamente de control personalizate. De asemenea, este disponibilă acționarea electrică.

- **Diametre: 2" – 20"**

- **Clasa presiune: ASME 300 – ASME 2500**

Clase de presiune mai mari de ASME 2500 la cerere

- Design compact
- Piston echilibrat sub presiune care necesita o actionare mica
- Control precis al presiunii, fluxului, temperaturii
- Deschiderea si inchiderea la presiune totala diferentiala
- Bi-directional
- Nivel de zgomot mai scazut decat tipurile conventionale de robineti
- Orientare verticala sau orizontala

STANDARDE DE PROIECTARE

Proiectare API 6D, ASME B16.34

Dimensiuni față în față API 6D, ASME B16.10, B16.47

Flanșe ASME B16.5, B16.25

Protecție împotriva incendiilor ISO 10497, API 6FA, BS 6755

Emisii fugitive ISO 15848, TÜV,

Testarea API 598

Marcaj CE, MSS-SP-25

Manevre superioare ISO 5210

(A01)

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(A06) Purchaser / Zákazník	KIT METAL, ROMANIA		
(A07) Contract No. / Objednávka č.	2019.10.10.-KIT/10.10.2019		
(A08) Order No. / Zakázka č.	20-7208		
Project / Projekt	Transgaz		
(A09) Serial No. / Výrobní číslo	D2052D0 / 1	(B08) Quantity / Počet kusů:	1 pc/ks
(B06) Type / Typ. označení	Ball valve/Kulový kohout K 83.3 113.204-584 (B09) NPS 32" Class 600		
(B02) Material / Materiál	A 350 LF2		
(A12) Tag No.	--		
(A04) Mark of manufacturer / Značka výrobce	MSA		
(A11) Actuating / Ovládání	SAEx 14.6, 63rpm+ ACExC 01.2 +GS250 Ser.no.: 0320MD88980		
(A10) Terms of delivery / Dodací podmínky	API 6D, 24th edition, Addendum 2-Errata 9		

(A02) **Inspection certificate / Inspekční certifikát**
 According to EN 10204 3.1 / Dle EN 10204 3.1
 (A03) **No. / Č. 0367/III/2020**

(D51) Pressure: 10,0 MPa Tlak	(D52) Max. temperat: +55°C Max. teplota	(D53) Inspectors stamp: K 16 Značka znalce
Pressure: 10,2 MPa Tlak	Min. temperat: -29°C Min. teplota	

(D54) Press. tests Tlakové zkoušky API 6D	(D55) Test medium Zkuš. médium	(D56) Test pressure Zkuš. tlak	(D57) Duration Zkuš. doba	(D58) Result of the test Výsledek zkoušky
Shell test Pevnost a nepropustnost	water voda	15,7 MPa	60 min	satisfactory vyhovuje
Test of function Funkční zkouška	water voda	10,0 MPa	P-0-0- 100 Nm 0-0-P- 100 Nm	satisfactory vyhovuje
Seat test left and right side Těsnost uzávěru levá a pravá strana	water voda	11,4 MPa	10 min	satisfactory vyhovuje
"DOUBLE BLOCK AND BLEED" Bloková zkouška	water voda	11,4 MPa	10 min	satisfactory vyhovuje
"DOUBLE PISTON EFFECT" Test DOUBLE PISTON EFFECT	water voda	11,4 MPa	10 min	satisfactory vyhovuje
Shell test Pevnost a nepropustnost	air vzduch	11,4 MPa	30 min	satisfactory vyhovuje
Seat test left and right side Těsnost uzávěru levá a pravá strana	air vzduch	0,6 MPa 11,4 MPa	10 min 30 min	satisfactory vyhovuje
Test of function Funkční zkouška	--	--	2x open and shut 2 x otevř. a zavř. 0-93sek z-93sek	satisfactory vyhovuje
Antistatic test	---	---	---	satisfactory vyhovuje

(Z01) We hereby certify, that the material described above has been tested and complies the terms of the contract.
 Potvrzujeme, že dodávka odpovídá podmínkám objednávky.

25.2.2020

Klanica Tomáš

MSA | CHELPIPE GROUP
 MSA a.s., Dolní Benešov
 03-13

(Z02) Date Datum	(Z03) Stamp of manufacturer and signature of inspector Razítko a podpis znalce výrobce
---------------------	---

(A05) Prepared by / Zpracovala: Hanzlíková Pavlína

Tiskopis 02-016

(A01)

MSA **CHELPIPE GROUP**

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(A06) Purchaser / Zákazník	KIT METAL, ROMANIA		
(A07) Contract No. / Objednávka č.	2019.10.10.-KIT/10.10.2019		
(A08) Order No. / Zakázka č.	20-7208		
Project / Projekt	Transgaz		
(A09) Serial No. / Výrobní číslo	D2052D0 / 2	(B08) Quantity / Počet kusů:	1 pc/ks
(B06) Type / Typ, označení	Ball valve/Kulový kohout	K 83.3 113.204-584	(B09) NPS 32" Class 600
(B02) Material / Materiál	A 350 LF2		
(A12) Tag No.	--		
(A04) Mark of manufacturer / Značka výrobce	MSA		
(A11) Actuating / Ovládání	SAEx 14.6, 63rpm+ ACExC 01.2 +GS250 Ser.no.: 0320MD88981		
(A10) Terms of delivery / Dodací podmínky	API 6D, 24th edition, Addendum 2-Errata 9		

(A02) **Inspection certificate / Inspekční certifikát**
 According to EN 10204 3.1 / Dle EN 10204 3.1
 (A03) **No. / Č. 0368/II/2020**

(D51) Pressure: 10,0 MPa Tlak	(D52) Max. temperat: +55°C Max. teplota	(D53) Inspectors stamp: K 16 Značka znalce
Pressure: 10,2 MPa Tlak	Min. temperat: -29°C Min. teplota	

(D54) Press. tests Tlakové zkoušky API 6D	(D55) Test medium Zkuš.médium	(D56) Test pressure Zkuš.tlak	(D57) Duration Zkuš.doba	(D58) Result of the test Výsledek zkoušky
Shell test Pevnost a nepropustnost	water voda	15,7 MPa	60 min	satisfactory vyhovuje
Test of function Funkční zkouška	water voda	10,0 MPa	P-0-0- 100 Nm 0-0-P- 100 Nm	satisfactory vyhovuje
Seat test left and right side Těsnost uzávěru levá a pravá strana	water voda	11,4 MPa	10 min	satisfactory vyhovuje
"DOUBLE BLOCK AND BLEED" Bloková zkouška	water voda	11,4 MPa	10 min	satisfactory vyhovuje
"DOUBLE PISTON EFFECT" Test DOUBLE PISTON EFFECT	water voda	11,4 MPa	10 min	satisfactory vyhovuje
Shell test Pevnost a nepropustnost	air vzduch	11,4 MPa	30 min	satisfactory vyhovuje
Seat test left and right side Těsnost uzávěru levá a pravá strana	air vzduch	0,6 MPa 11,4 MPa	10 min 30 min	satisfactory vyhovuje
Test of function Funkční zkouška	--	--	2x open and shut 2 x otevř. a zavř. 0-93sek z-93sek	satisfactory vyhovuje
Antistatic test	---	---	---	satisfactory vyhovuje

(Z01) We hereby certify, that the material described above has been tested and complies the terms of the contract.
 Potvrzujeme, že dodávka odpovídá podmínkám objednávky.

24.02.2020

Klanica Tomáš

(Z02) Date Datum (Z03) Stamp of manufacturer and signature of inspector Razítko a podpis znalce výrobce

(A05) Prepared by / Zpracovala: Hanzlíková Pavlína

Tiskopis 02-016

(A01)

CHELPIPE GROUP

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TEL: +420-553-881111 FAX: +420-553-651236 E-mail: sales@msa.cz WEB: www.msa.cz

(A06) Purchaser	KIT METAL, ROMANIA
(A07) Contract No.	2019.10.10.-KIT/10.10.2019
(A08) Order No.	20-7208
Project	Transgaz
(A09) Serial No	D205 2D0 / 1-2
(B06) Type	Ball valve K 83.3 113.204-584 (B09) NPS 32" Class 600 RF
(B02) Material	A 350 LF2
(A12) Tag No.	--
(A04) Mark of manufacturer	MSA
(A11) Actuating	SAEx 14.6, 63 rpm+ACExC 01.2+GS 250 NO.: 0320MD88980
(A10) Terms of delivery	API 6D, 24th edition, Addendum 2, Errata 9
(A03) Certificate No.	288/II/2020

(A02)

Certificate about material quality

According to EN 10204 3.1 / Dle EN 10204 3.1

Item	(B01) Component	(B02) Material	(B07) Heat. No.	(B08) Quant.	(B06) Work No.	(B03) Inspection certificate No.
1	Body	A 350 LF2	268943	2	1-2	15366/19
2	Bonnet	A 350 LF2	453059 453060 453058 454027	1 1 1 1	1 1 2 2	15655/19 15656/19 15654/19 15657/19
3	Ball	A 350 LF2	22020	2	1-2	01415-19
4	Seat	A 350 LF2	266606 264520	2 2	1-2 1-2	1030048743/40;194364/1 1030048743/40;191231/2
5	Stem	A 350 LF2	41297	2	1-2	01848/19
6	Gland plate	S355J2	1860949	2	1-2	1994-18b.
7	Bolt	A 193 B7	260673 260673		17/8"8UNx205 17/8"8UNx220	1902452/1 1902452/1
8	Nut	A 194 2H	1B0002303		17/8"8UN	1902445/3
9	Pipe	A333 GR.6	93028		1-2	36870/1/2019
10	Welding material	ER70S-3	463621		1-2	2015-2082000558-900006-003
11	Ball valve DN 25 PN 250	TSTE355	195AP2	2	1-2	435/19
12	Pressure plug	A 350 LF2	267080	2	1-2	2017/01/013343-MRO

(Z01) We hereby certify, that the material described above has been tested and complies the terms of the contract
II/2020 Kučera Petr

(Z02) Date (Z03) Stamp of manufacturer and signature of inspector

(A05) Prepared by: Hana Klancicová

Tiskopis 02-018

(A01)

MSA  **CHELPIPE GROUP**

MSA a.s., Hlučinská 641, 747 22 Dolní Benešov, Czech Republic
 TEL: +420-553-881111 FAX: +420-553-651236 E-mail: sales@msa.cz WEB: www.msa.cz

(A06) Purchaser	KIT METAL, ROMANIA	
(A07) Contract No.	2019.10.10.-KIT/10.10.2019	
(A08) Order No.	20-7208	
Project	Transgaz	
(A09) Serial No	D205 2D0 / 1-2	
(B06) Type	Ball valve	K 83.3 113.204-584 (B09) NPS 32" Class 600 RF
(B02) Material	A 350 LF2	
(A12) Tag No.	-	
(A04) Mark of manufacturer	MSA	
(A11) Actuating	SAEx 14.6, 63 rpm+ACExC 01.2+GS 250 NO.: 0320MD88980	
(A10) Terms of delivery	API 6D, 24th edition, Addendum 2, Errata 9	
(A03) Certificate No.	288/II/2020	

(A02) **Certificate about material quality**
 According to EN 10204 3.1 / Die EN 10204 3.1

Item	(B01) Component	(B02) Material	(B07) Heat. No.	(B08) Quant.	(B06) Work No.	(B03) Inspection certificate No.
13	Counter flange	A 350 LF2	267080 265641	3 1	1-2 1	15365/19 15364/19
14	Bolt	A 193 B7	11/74964		2"8UNx405	1902453/19
15	Nut	A 194 2H	1B0004982		2"8UN	1902452/1

(Z01) We hereby certify, that the material described above has been tested and complies the terms of the contract

MSA  **CHELPIPE GROUP**
 MSA, a.s., Dolní Benešov
 03-13

II/2020

Kučera Petr

(Z02) Date

(Z03) Stamp of manufacturer and signature of inspector

(A05) Prepared by: Hana Klanciová

Tiskopis 02-018

SIDERFORGEROSS 36011 Arsiero (VI) ITALY - Via Certosa di Mezzo, 38 Tel. 0445 714400 - Fax 0445 714444	Inspection Certificate Quality Control Department	COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV = ISO 9001 = ARSIERO PLANT 36011 Arsiero (VI) ITALY - Via Certosa di Mezzo, 38																																																															
N° 15366 19 REV.0 Date 09/01/2020		15024																																																															
Purchaser: MSA, A.S. HLUCINSKA 641 74722 DOLNI BENESOV - CZECH REPUBLIC CZ	Order No.: 4A04319B SFRG job No.: OV194783	Certificate type: EN 10204 ed. MARCH 2005 ☐ 2.2 ☒ 3.1 ☐ 3.2 Melting practice ☒ E.F.V.D. ☐ E.F. ☐ AOD ☐ VOD																																																															
CHEMICAL ANALYSIS / LADLE ANALYSIS																																																																	
MATERIAL: ASTM-A350-LF2-CL.1 ED.18		HEAT: 268943																																																															
SUPPLIER: ACCIAIERIE VENETE S.p.A.																																																																	
<table border="1" style="width:100%; border-collapse: collapse; font-size: x-small;"> <tr> <th>C</th><th>Mn</th><th>Si</th><th>Ni</th><th>Cr</th><th>S</th><th>P</th><th>Al</th><th>Cu</th><th>Mo</th><th>Ti</th><th>Sn</th><th>V</th><th>Nb</th><th>N</th><th>As</th><th>H</th><th>B</th><th>Ca</th><th></th><th></th></tr> <tr> <th>%</th><th>%</th><th>%</th><th>%</th><th>%</th><th>%</th><th>%</th><th>%</th><th>%</th><th>%</th><th>%</th><th>%</th><th>%</th><th>%</th><th>%</th><th>%</th><th>ppm</th><th>ppm</th><th>%</th><th></th><th></th></tr> <tr> <td>0,163</td><td>1,176</td><td>0,224</td><td>0,144</td><td>0,167</td><td>0,003</td><td>0,014</td><td>0,034</td><td>0,184</td><td>0,035</td><td>0,002</td><td>0,038</td><td>0,004</td><td>0,002</td><td>0,0082</td><td>0,005</td><td>1,5</td><td>1</td><td>0,0013</td><td></td><td></td></tr> </table>			C	Mn	Si	Ni	Cr	S	P	Al	Cu	Mo	Ti	Sn	V	Nb	N	As	H	B	Ca			%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	%			0,163	1,176	0,224	0,144	0,167	0,003	0,014	0,034	0,184	0,035	0,002	0,038	0,004	0,002	0,0082	0,005	1,5	1	0,0013		
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Note: Prodotti conformi ai requisiti dell'ordine - Products are in compliance with the requirements of the order - Les produits sont conforme à votre ordre - Produkt entsprechend bestellungs spezifikation.

Material conforming ☒ Quality Control Dept. Surveyor:
 Material non conforming ☐ MSA a.s. Dolni Benesov

SIDERFORGEROSS **Inspection Certificate** **Quality Control Department**

36011 Arsiero (VI) ITALY - Via Carliera di Mezzo, 36
Tel. 0445 714400 - Fax 0445 714444

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV - ISO 9001 - ARSIERO PLANT

36011 Arsiero (VI) ITALY - Via Carliera di Mezzo, 36

N° 15655 / 19 REV.0 Date 14/01/2020

Purchaser: MSA, A.S.
HLUCINSKA 641
74722 DOLNI BENESOV - CZECH REPUBLIC CZ

Order No.: 4A04319B

SFRG job No.: OV194783

Certificate type: EN 10204 ed. MARCH 2005
☐ 2.2 ☒ 3.1 ☐ 3.2

Melting practice
☒ E.F.V.D. ☐ E.F. ☐ ACD ☐ VOD

CHEMICAL ANALYSIS / LADLE ANALYSIS

MATERIAL: ASTM-A350-LF2-CL.2 ED.18 HEAT: 453059 SUPPLIER: Acciaierie Bertoli S.p.A.

C	Mn	Si	Ni	Cr	S	P	Al	Cu	Mo	Ti	Sn	V	Nb	N	As	H	Te	B	Ca	Co
%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	%	%
0,163	1,24	0,26	0,1	0,13	0,002	0,007	0,033	0,13	0,02	0,0023	0,006	0,004	0,003	0,0074	0,005	6,7	0,0001	1	0,001	0,009

C.E. (Long) = 0,416

TYPE	TEMP °C	HOURS	COOLING	TYPE	TEMP °C	HOURS	COOLING
NORMALIZING	910	6,5	AIR				

	REQUIRED	UTS		YS 0.2	YS	EL	RA	IMPACT TEST				HB on pieces	
		MPa	MPa	MPa	%	%	Dir.	Type	Temp °C	Av/Mn	J	Min	Max
FROM PIECE ☐	MIN	485	260		22	30	TAN	KV	-46	20	16		237
FROM QTC ☒	MAX	655											

Treated with the Pcs											OBTAINED						
N° TEST	DIM	SECT	LENGTH	TEMP	DIR	UTS	YS 0.2	YS	EL	RA	IMPACT TEST				HB on pieces		
	mm	mm	mm	°C		MPa	MPa	MPa	%	%	Dir.	Type	Temp °C	JOULE	Min	Max	
11170	12,50	12,72	50,00	20	TAN	505	323		39,0	75,0	TAN	KV	-46	61	73	81	

OUR CUSTOMER ITEM	DESCRIPTION	DRAWING	QUANTITY
2	FLANGE-FORGING 1375x779x559 F	4-2956-Z151/005847	1

REMARKS: MATERIAL ACCORDING TO SPEC. 005847

Nota: Prodotti conformi ai requisiti dell'ordine - Products are in compliance with the requirements of the order - Les produits sont conforme à votre ordre - Produkt entspricht bestellungs spezifikation.

Material conforming ☒ Quality Control Dept. **MSA** **CHETIVE GROUP**

Material non conforming ☐ Surveyor: **MSA, s.p.a. Dolni Benesov**

SGD 136/99 Page 1 di 1

SIDERFORGEROSSÌ **Inspection Certificate** **Quality Control Department**

36011 Arsiero (VI) ITALY - Via Carliera di Mezzo, 38
Tel. 0445 714400 - Fax 0445 714444

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV = ISO 9001 = ARSIERO PLANT
36011 Arsiero (VI) ITALY - Via Carliera di Mezzo, 38

N° 15656 / 19 REV.0 Date 14/01/2020

Purchaser: MSA, A.S.
HLUCINSKA 641
74722 DOLNI BENESOV - CZECH REPUBLIC CZ

Order No.: 4A04319B
SFRG job No.: OV194783

Certificate type: EN 10204 ed. MARCH 2005
☐ 2.2 ☒ 3.1 ☐ 3.2

Melting practice
☒ E.F.V.D. ☐ E.F. ☐ AOD ☐ VOD

CHEMICAL ANALYSIS / LADLE ANALYSIS

MATERIAL: ASTM-A350-LF2-CL.2 ED.18 HEAT: 453060 SUPPLIER: Acciaieria Bertoli Safau S.p.A.

C	Mn	Si	Ni	Cr	S	P	Al	Cu	Mo	Ti	Sn	V	Nb	N	As	H	Ta	B	Ca	Co
%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	ppm	%	ppm	%	%
0,164	1,24	0,24	0,09	0,13	0,003	0,008	0,029	0,13	0,02	0,0022	0,006	0,003	0,003	0,0063	0,006	0,8	0,0004	1	0,0018	0,008

C.E. (Long) = 0,41G

HEAT TREATMENT

TYPE	TEMP °C	HOURS	COOLING	TYPE	TEMP °C	HOURS	COOLING
NORMALIZING	910	0,5	AIR				

MECHANICAL TESTS

FROM PIECE ☐ FROM QTC ☒

Treated with the Pcs

REQUIRED	UTS	YS 0,2	YS	EL	RA	IMPACT TEST	HB
	MPa	MPa	MPa	%	%	Dir. Type Temp °C Avr/Min J	Min Max
MIN	485	250		22	30	TAN KV -46j 20j 15	
MAX	655						

OBTAINED

N° TEST	DIM	SECT	LENGTH	TEMP	DIR	UTS	YS 0,2	YS	EL	RA	IMPACT TEST	HB
	mm	mm	mm	°C		MPa	MPa	MPa	%	%	Dir. Type Temp °C JOULE	Min Max
11171	12,50	122,72	50,00	20	TAN	498	301		36,5	72,0	TAN KV -46j 54j 60j 65j	

OUR CUSTOMER ITEM	DESCRIPTION	DRAWING	QUANTITY
2	FLANGE-FORGING 1375x779x569 F	4-2956-Z151/005847	1

REMARKS: MATERIAL ACCORDING TO SPEC. 005847.

Note: Prodotti conformi ai requisiti dell'ordine - Products are in compliance with the requirements of the order - Les produits sont conformes à votre ordre - Produkt entspricht bestellungspezifikation.

Material conforming ☒ Quality Control Dept.: *[Signature]* Surveyor: **MSA** **CHEIF**
Material non conforming ☐ MSA, a.s. Dolni Benesov

QC Customer Part

930 138/59 Page 1 of 1



Inspection Certificate

Quality Control Department

30011 Arsiero (VI) ITALY - Via Corbello di Mezzo, 38
Tel. 0445 714400 - Fax 0445 714444

N° 15654 / 19 REV.0 Date 14/01/2020

COMPANY WITH
QUALITY SYSTEM
CERTIFIED BY DNV
= ISO 9001 =
ARSIERO PLANT
36011 Arsiero (VI) ITALY - Via Carliana di Mezzo, 38

Purchaser:
MSA, A.S.
HLUCINSKA 641
74722 DOLNI BENESOV - CZECH REPUBLIC CZ

Order No.:
4A04319B
SFRG job No.:
OV194783

Certificate type: EN 10204 ed. MARCH 2005
☐ 2.2 ☒ 3.1 ☐ 3.2
Melting practice
☒ E.F.V.D. ☐ E.F. ☐ AOD ☐ VOD

CHEMICAL ANALYSIS / LADLE ANALYSIS

MATERIAL: ASTM-A350-LF2-CL.2 ED.18

HEAT: 453058

SUPPLIER: Acciaieria Bertoli S.p.A.

C	Mn	Si	Ni	Cr	S	P	Al	Cu	Mo	Ti	Sn	V	Nb	N	As	H	Ta	B	Ca	Co
%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	%	ppm	%	%
0,166	1,23	0,23	0,09	0,13	0,003	0,007	0,028	0,14	0,02	0,0021	0,007	0,004	0,002	0,0062	0,005	1	0,0001	1	0,0009	0,01

C.E. (Long) = 0,417

HEAT TREATMENT

TYPE	TEMP °C	HOURS	COOLING	TYPE	TEMP °C	HOURS	COOLING
NORMALIZING	910	8,5	AIR				

MECHANICAL TESTS

		MPa	MPa	MPa	%	%	Dir.	Type	Temp. °C	Charpy	J	min	max
FROM PIECE	☐	MIN	485	250	22	30	TAN	KV	-46	20	16		237
FROM QTC	☒	MAX	555										

Treated with the Pcs

OBTAINED

NP TEST	DIM	SECT.	LENGTH	TEMP	DIR	UTS	YS 0,2	YS	EL	RA	IMPACT TEST				HB on pieces	
	mm	mm	mm	°C		MPa	MPa	MPa	%	%	Dir.	Type	Temp °C	JOULE	Min	Max
11169	12,50	122,72	50,00	20	TAN	500	314		37,0	73,0	TAN	KV	-46	56 63 71		151

OUR ITEM	CUSTOMER ITEM	DESCRIPTION	DRAWING	QUANTITY
2	from 20 to 20	FLANGE-FORGING 1375x779x559 F	4-2956-Z151/005847	1
	from to			
	from to			
	from to			
	from to			
	from to			

REMARKS

MATERIAL ACCORDING TO SPEC. 005847.

Risk: Prodotti conformi ai requisiti dell'ordine - Products are in compliance with the requirements of the order - Les produits sont conforme à votre ordre - Produkt entspricht bestellungs spezifikation.

Material conforming ☒
Material non conforming ☐

Quality Control Dept.
Signature: *Carlo*

Surveyor:

MSA

MSA

SQO 136/09 Page 1 di 1



SIDERFORGEROSS **Inspection Certificate** **Quality Control Department**

36011 Arsiero (VI) ITALY - Via Cortiera di Mezzo, 38
Tel. 0445 714400 - Fax 0445 714444

N° 15657 / 19 REV.0 Date 14/01/2020

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV = ISO 9001 = ARSIERO PLANT
36011 Arsiero (VI) ITALY - Via Cortiera di Mezzo, 38

Purchaser: MSA, A.S.
HLUCINSKA 641
74722 DOLNI BENESOV - CZECH REPUBLIC CZ

Order No.: 4A04319B

SFRG job No.: OV194783

Certificate type: EN 10204 ed. MARCH 2005
☐ 2.2 ☒ 3.1 ☐ 3.2

Melting practice
☒ E.F.V.D. ☐ E.F. ☐ AOD ☐ VOD

CHEMICAL ANALYSIS / LADLE ANALYSIS

MATERIAL: ASTM-A350-LF2-CL.2 ED.18

HEAT: 454027

SUPPLIER: Acciaieria Bertoli Safau S.p.A.

C	Mn	Si	Ni	Cr	S	P	Al	Cu	Mo	Ti	Sn	V	Nb	N	As	H	Ta	B	Ca	Co
%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	ppm	%	ppm	%	%
0,16	1,22	0,22	0,06	0,12	0,002	0,009	0,03	0,09	0,01	0,0028	0,006	0,009	0,002	0,0066	0,005	0,9	0,0001	1	0,0015	0,01

C.E. (Long) = 0,401

HEAT TREATMENT

TYPE	TEMP °C	HOURS	COOLING	TYPE	TEMP °C	HOURS	COOLING
NORMALIZING	910	6,5	AIR				

MECHANICAL TESTS

REQUIRED	UTS	YS 0,2	YS	EL	RA	IMPACT TEST	HB on pieces
	MPa	MPa	MPa	%	%	Dir. Type Temp °C Av/Mn J	Min Max
FROM PIECE ☐	MIN	485	250	22	30	TAN KV -46 20 16	237
FROM QTC ☒	MAX	655					

Treated with the Pcs

OBTAINED

N° TEST	DIM	SECT.	LENGTH	TEMP. °C	UTS	YS 0,2	YS	EL	RA	IMPACT TEST	HB on pieces
	mm	mm	mm	°C	MPa	MPa	MPa	%	%	Dir. Type Temp °C JOULE	Min Max
11172	12,50	122,72	50,00/20	TAN	508	327		38,5	74,0	TAN KV -46 64 77 85	158

OUR ITEM	CUSTOMER ITEM	DESCRIPTION	DRAWING	QUANTITY
2	from 20 to 20	FLANGE-FORGING	4-2956-Z151/005847	1
	from to	1375x779x559 F		
	from to			
	from to			
	from to			
	from to			

REMARKS

MATERIAL ACCORDING TO SPEC. 005847.

Note: Prodotti conformi ai requisiti dell'ordine - Products are in compliance with the requirements of the order - Les produits sont conforme à votre ordre - Produkt entspricht bestellungs spezifikation.

Material conforming ☒ Quality Control Dept. **ERFO** **SL** Surveyor: **MSA** **CHIEF** **6 F D**

Material non conforming ☐

MSA, A.S. Dolni Benesov

SGO 138/08 Page 1 di 1



R20001

NSF

AZIENDA CON CERTIFICAZIONI DI SISTEMA ISO 9001 BV

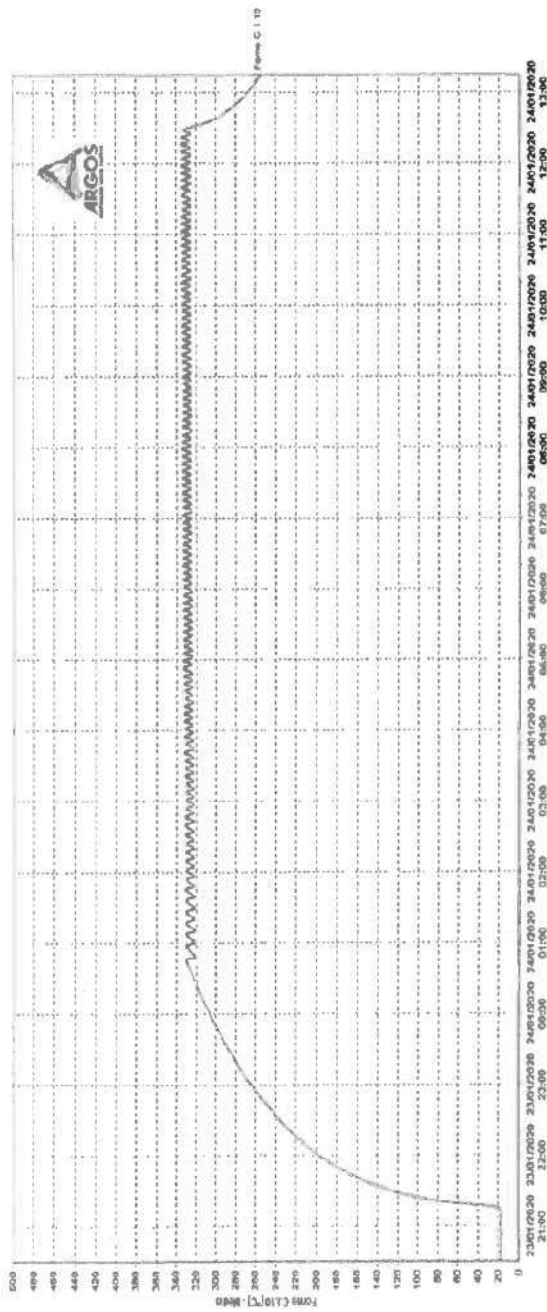
CONFERMA PER LA SOSTENIBILITÀ

CERTIFICATO DI CONFORMITÀ E COLLAUDO
Conformity and test certificatePagina: 1
Page:

Cliente Customer	DE TOMI S.R.L.	Numero Collaudo Testing Nr.	CAM / 2020 / 0000000353	Numero Doc. Document Number	414 / MI	Data Date	27-01-2020
Commessa / Work order	7/00						
Specifiche / Specification	UNI ISO 4527, ASTM B 733, UNI EN 10204 tipo 3.1						
Analisi Chimica (Ni) Chemical Analysis (Ni)	88 - 90 %	Analisi Chimica (P) Chemical Analysis (P)	10 - 12 %	Analisi Chimica (Altri) Chemical Analysis (Others)	< 0,05 %		
Controllo Visivo Appearance	CONFORME						
Spessore Thickness	CONFORME	Con Strumento Magnetico Magnetic Instrument	☒	Con sezione metallografica Cross-Section	☐	Con pesata with Weight	☐
Aderenza Adhesion	CONFORME	Con piega provino 180° with bend test	☐	Con punzone with impact test	☒	Con raschietto with scraper test	☒
Ferroxil Test Ferroxil Test	Acido Nitrico Test Nitric Acid Test		Nebbia Salina Salt spray test				
Osservazioni Notes							

ARGOS SPA Controllo Qualità:

Codice Articolo Article Code	Articolo Article	Mat. Mat.	Pre Lavorazioni Primary Processing	Lavoraz. Processing	Carrello Batch	Rugosità Ra Roughness	Microdurezza Microhardness	Q.tà Qty
SFE817E	SFERA 32° A320 LF3 DWG.2007-029 REV.0 ORD.75800 - COMMESSA 190571 - COLATA 22020	FE	Sabbiatura / Micro sandblasting Protection drawing	NPELOY 30	22200 20180304		HV > 900	2.000



commessa 190671

COLATA 22070

BATCH NR. 62

n° 2 BALL 32" 50 μ HV > 900

protezione manto sterico

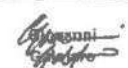
1
2

protezione manto sterico

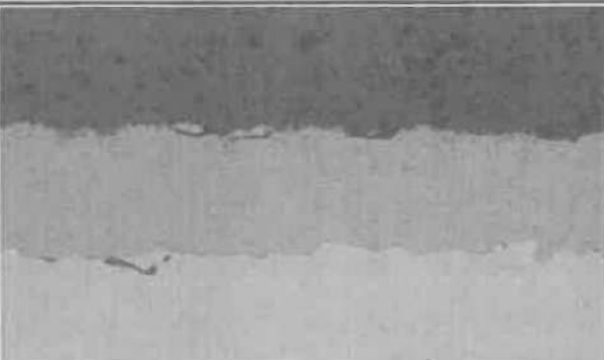
microhardness on copuon 998 HV m.v.

Argos Spa

MSA

		CERTIFICATO DI CONTROLLO INSPECTION CERTIFICATE		
		In accordo / According to		EN 10204 3.1
CERTIFICATO N°: L20017		DATA: 17/02/2020		
CERTIFICATE N°:		DATE:		
CLIENTE: MSA		DE TOMI COMMESSA: 190671		
CUSTOMER:		DE TOMI JOB:		
PROCEDURE APPLICABILI / APPLICABLE STANDARDS:				
WORK INSTRUCTION IS 22 REV.3				
PROCESSO: HVOF		SPECIFICA DI ACCETTABILITA': TECHNICAL SHEET TS1		
PROCESS:		ACCEPTANCE SPECIFICATION:		
DESCRIZIONE LAVORAZIONE EFFETTUATA / DESCRIPTION OF PERFORMED WORK:				
TCC su 2 Sfere 32" LF2 - Spessore Finale $\geq 150 \mu\text{m}$				
TCC on 2 Balls 32" LF2 - Finished Thickness $\geq 150 \mu\text{m}$				
DETTAGLI FORNITURA / ITEMS DESCRIPTION:				
DESCRIZIONE DESCRIPTION	N° SERIALE SERIAL NUMBER	N° DISEGNO DRAWING NUMBER	QUANTITA' QUANTITY	ORDINE CLIENTE CUSTOMER ORDER
BALLS 32"	D1 / D2	39U7-029 REV.A	2	5101719B ITEM 1
DOCUMENTI ALLEGATI / ENCLOSED DOCUMENTS:				
Laboratory Test: 20/020				
Dimensional Report: 20/020D_Balls				
Bond Test:				
RISULTATO RESULT	☒ CONFORME CONFORMING TO SPECIFICATION	☐ NON CONFORME NOT CONFORMING TO SPECIFICATION		
NOTE / NOTES:				
Controllo Qualità Quality Control	Responsabile CQ QC Manager	Cliente Customer	Terza Parte Third party	
				

MOD 8.2.4.01.06 REV.1

 DeTomi we think round		TEST DI LABORATORIO LABORATORY TEST		TEST N° / TEST N°:		
				20/020		
PROVA ESEGUITA / TEST PERFORMED		DESCRIZIONE / DESCRIPTION		DISEGNO N° / DRAWING N°		
HV / METALLOGRAPHY / BEND		2 BALLS 32"		SEE THE INSPECTION CERTIFICATE		
CLIENTE / CUSTOMER		COMMESSA DE TOMI / DE TOMI JOB		PROCEDURE DI RIFERIMENTO / STANDARD REFERENCE		
MSA		190671		IS 22 REV.3 - IS 24 REV.1		
ID PROVINO / SAMPLE ID	SCHEDA TECNICA / TECHNICAL SHEET	RIPORTO / COATING	LOTTO POLVERE / POWDER BATCH			
P2	TS1	WC-B0	1908022			
TEST ESEGUITI / TEST PERFORMED						
		PROVA DI DUREZZA HARDNESS TEST				
		HV 0,3 / 15				
		IN SEZIONE / SECTION				
		1612	1319	1339	1183	
		1242				
		MEDIA / AVERAGE			1339	
		SUPERFICIALE / ON SURFACE				
INGRANDIMENTO 100x / MAGNIFICATION 100x		MEDIA / AVERAGE				
NOTE / NOTES						
TEST METALLOGRAFICO METALLOGRAPHIC TEST		POROSITA' POROSITY		INTERFACCIA RIPORTO MATERIALE BASE INTERFACE COATING BASE MATERIAL		NOTE NOTES
		%	DIM. MAX	%	DIM. MAX	
RIPORTO COATING	RISULTATO TEST RESULT	0,1	-	3,1	-	
	ACCETTABILITA' ACCEPTANCE	1,0	-	6,0	-	
PROVA DI PIEGA BEND TEST		TIPO TYPE	ID PROVINO SAMPLE ID	RISULTATO RESULT	NOTE NOTES	
ACCETTABILITA' / ACCEPTANCE		Ø 15 mm x 180° ☒	P1	OK		
Non consentito il distacco intero del riporto ammesse cricche sul lato in tensione. / No complete spalling acceptable, cracks acceptable on tension side.		Ø 25 mm x 90° ☐				
		Altro / Other ☐				
ESITO DEI TEST TEST RESULTS		CONFORME ACCEPTABLE	ACCETTATO IN DEROGA ACCEPTED BY DEVIATION	NON CONFORME REJECTED		
METALLOGRAFIA / METALLOGRAPHY		☒	☐	☐		
PROVA DI DUREZZA / HARDNESS TEST		☒	☐	☐		
PROVA DI PIEGA / BEND TEST		☒	☐	☐		
Controllo Qualità Quality Control	Responsabile Controllo Qualità Quality Control Manager		Cliente Customer	Terza Parte Third party		
						

MOD. 8.2.4.01.05 REV.1

Esteemed
MSA A.S.
HLUCINSKA 641
CZ-74722 DOLNI BENESOV-CZECH REPUBLIC

CONFORMITY DECLARATION UNI EN ISO 10204 Type 2.1

Or.n.: 1030048743 / 40

UM	Quantity	Code	Description	Your Confirm/Item Yr-Order
No	4	PVT	TB63 890,00 779,00 102,00 32" LF2 CL.1 22.11.2019 GA05 mat. Not required PVT - Customer drawing 74U7-087-DPE Customer drw. rev. R00 PV treatment - PV ENP PO036 30µ 500-600 Hv Customer specification - BK customer mat. PTFE CAR.CARB 25% (P85) INS mat. PTFE CAR.CARB 25% (P85) TO10 mat. - OR Mat. T57/GED VITON A GLT/ED Sh.90-5 TU mat. - TORS mat. T57/GED VITON GLT/ED Sh.90-5 TOGR mat. T57/GED VITON A GLT/ED Sh.90-5 PYMO mat. AISI 302	5D07719G/4 8-74U7-0871/005901

Note:

- 1) Serial Number:
2019-32"-531 - 2019-32"-534
- 2) Raw material certificate N° 194364/1 (nr.3) + 191231/2 (nr 1)
in according to UNI EN ISO 10204 Type 3.1
- 3) Other

Certificate emission date
18.01.2020

Note: Material free from radioactive contamination.

We declare on our responsibility that the products regarding enclosed order are in conformity with what requested.

We declare the products are realized in Italy.

THIS CERTIFICATE IS GENERATED AUTOMATICALLY FROM OUR SYSTEM SO NO TO STAMP AND SIGNATURE

Gasket International Srl
tel +390307435465 - fax +390307435508
Via Galeoni 3C, 24060 Cividino di Castelli Calepio (BG) ITALY
Cap. Soc. - Share Capital € 200.000,00 REA 384287 C.F. e P.IVA Tax Code and VAT IT04651650964

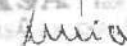
We make it possible

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	IRE- OMBA S.p.a	Test certificate / Certificato Prove Materiale		3.1 EN 10204									
	Cert. ISO 9001	IRE194364/1	N° - 194364/1	Rev									
													
Customer/Cliente: GASKET INTERNATIONAL S.R.L.													
Order/Ordine: 4000041199		Inspection/Collaudo: IRE OMBA		Job/Comm.: 194364									
Mater./Spec:		Forging ratio / Rapporto di Fucinatura >= 4:1											
LF2 CL1 ASTM A350/15/ ASTM A105/14		Manufactur. process: forged+rolled rings											
		Manufactur. process: Forged + rolled rings											
		Identification/Identificazione											
Prova n° Test-Batch	Item Pos.	Pieces n° Pezzi	ø est mm	ø int mm	h mm		HBW1	HBW2					
109526	020	20	890	779	100	PVAN02087032AR	146	148					
Chemical analysis % / Analisi chimica													
Heat n° / Colata		Steel mill / Acciaieria											
266606		ACC. VENETE S.P.A. - ITALY-(IT)											
		Cert. orig.		406138		Vacuum degassed							
C	Mn	Si	P	S	Cu	Cr	Ni	Mo	Al				
0.171	1.122	0.219	0.009	0.0100	0.179	0.116	0.154	0.039	0.021				
V	Nb	Ti	Sn	B	H	N	Ceq	P+S	Nb+V+Ti				
0.003	0.001	0.012	0.009	0.0003	0.00015	0.0089	0.412	0.019	0.016				
Cu+5Sn	Cr+Mo	CuCrMo	CuNiCrMo	CuNiCrMoV									
0.233	0.155	0.394	0.488	0.491									
Heat treatment / Trattamento termico													
Normal. 900°C Air													
Tension Test/Trazione +20°C ASTM A370/ ASTM E8 $\phi=12.5mm$ Lo=50mm													
Required values/Valori richiesti													
		Rp .2% N/mm2		Rp 1% N/mm2		Rm N/mm2		A4d %		A5d %		Z %	
Sense/Senso		min	max	min	max	min	max	min	max	min	max	min	max
TANG		275				485	655	22				30	
Obtained values/Valori rilevati													
Test n°	Sense/Senso	Rp .2% N/mm2		Rp 1% N/mm2		Rm N/mm2		A4d %		A5d %		Z %	
109526	TANG	347				500		34.1				73.7	
Impact test/Resilienza ASTM A370/ ASTM E23 10x10mm													
Required values/Valori richiesti													
Sense/Senso		Type/tipo	T°C	Med./Av.	Min.	U.M	Test/Prova		Val1	Val2	Val3	Med./Av.	
TANG		KV	-46	27	20	J	109526		90	93	86	89.67	
Hardness test / Durezza: ASTM A370 / ASTM E10													
Required values/Valori richiesti													
Min		Max		Type/tipo		Test/Prova		Val1		Val2			
		187		HBW		109526		146		150			
Spec/Note													
NACE MR0176/ISO15156-2 Ed.15						NACE MR 01-03/15							
APPROXIMATE MACHINING						GOODS ARE FREE FROM							
ALLOWANCE OVERMETAL 10mm						ARTIFICIAL RADIOACTIVITY							
MDS ME 0001 Rev.3 ED 2						API 6D 24th EDITION ANNEX F							

LOTTO N°: 0010051285





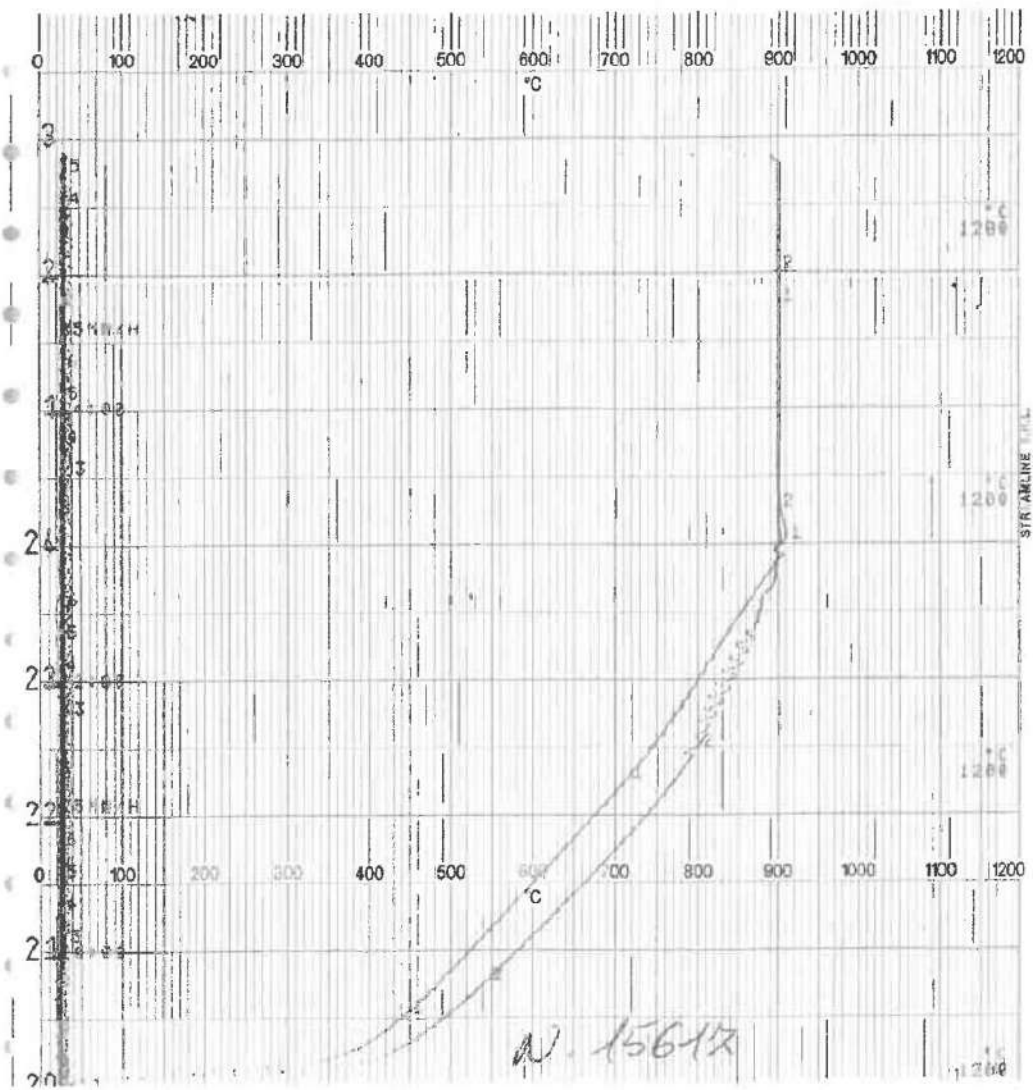
Data / Date (d/m/y)
19/06/19

Q.C DEPT.

Pag. 1 di 1


Martina Bolotti

IRE - OMBA Spa Via Carlo Serassi, 14 24100 BERGAMO ITALY BG Tel.: 035 / 41 60 811 Fax.: 035 / 41 60 856



ord: 4000041199

MSA
 the power of precision

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 IRE- OMBA S.p.a Cert. ISO 9001	Test certificate / Certificato Prove Materiale 3.1 EN 10204	
	IRE191231/2 	N° - Rev 191231/2

Customer/Cliente: **GASKET INTERNATIONAL S.R.L.**

Order/Ordine: **4000040454** Inspection/Collaudo: IRE OMBA Job/Comm.: **191231**

Mater./Spec.:

LF2 CL1 ASTM A350/15/ ASTM A105/14

Forging ratio / Rapporto di Forgiatura >= 4:1

Manufactur. process: forged+rolled rings

Manufactur. process: Forged + rolled rings

Identification/Identificazione

Prova n° Test-Batch	Item Pos.	Pieces n° Pezzi	ø est mm	ø int mm	h mm		HEW1	HEW2
106812	020	20	890	779	100	PVAN02087032AR		

Chemical analysis % / Analisi chimica

Heat n° / Colata		Steel mill / Acciaieria							
264520		ACC. VENETE S.P.A. - ITALY-IT)							
Cert. orig.		393027		Vacuum degassed					
C	Mn	Si	P	S	Cu	Cr	Ni	Mo	Al
0.176	1.107	0.214	0.007	0.007	0.130	0.123	0.133	0.0310	0.025
V	Nb	Ti	Sn	B	H	N	Ceq	P+S	Nb+V+Ti
0.005	0.003	0.009	0.007	0.0003	0.00016	0.0061	0.41	0.014	0.017
Cu+Sn	Cr+Mo	CuCrMo	CuNiCrMo	CuNiCrMoV					
0.172	0.154	0.284	0.417	0.422					

Heat treatment / Trattamento termico

Normal. 900°C Air

Tension Test/Trazione +20°C		ASTM A370/ ASTM E8		g=12.5mm		Lo=50mm							
		Required values/Valori richiesti											
		Rp .2% N/mm2		Rp 1% N/mm2		Rm N/mm2		A4d %		A5d %		Z %	
Sense/Senso		min	max	min	max	min	max	min	max	min	max	min	max
TANG		275				485	655	22				30	
		Obtained values/Valori rilevati											
Test n°		Rp .2% N/mm2		Rp 1% N/mm2		Rm N/mm2		A4d %		A5d %		Z %	
106812		346				512		33.7				73.3	

Impact test/Resilienza		ASTM A370/ ASTM E23		10x10mm						
Required values/Valori richiesti						Obtained values/Valori rilevati				
Sense/Senso	Type/tipo	T°C	Med./Av.	Min.	U.M	Test/Prova	Val1	Val2	Val3	Med./Av
TANG	KV	-46	27	20	J	106812	85	92	93	90

Hardness test / Durezza:		ASTM A370 / ASTM E10				
Required values/Valori richiesti				Obtained values/Valori rilevati		
Min	Max	Type/tipo	Test/Prova	Val1	Val2	
	187	HBW	106812	151	156	

Spec./Note

NACE MR0175/ISO15156-2 Ed.15
 APPROXIMATE MACHINING
 ALLOWANCE OVERMETAL 10mm
 MDS ME 0001 Rev.3 ED 2

NACE MR 01-03/15
 GOODS ARE FREE FROM
 ARTIFICIAL RADIOACTIVITY
 API 6D 24th EDITION ANNEX F

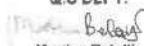
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 MSA

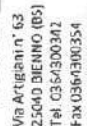
Data / Date (d/m/y)
14/03/19

Q.C DEPT.

Pag. 1 di 1


 Martina Belotti

IRE - OMBA Spa Via Carlo Serassi, 14 24100 BERGAMO ITALY BG Tel.: 035 / 41 60 811 Fax.: 035 / 41 60 856



MESSERS :
IRE-OMBA S.p.A
VIA C. SERASSI, 14
24025 BERGAMO

TEST REPORT N° : PM.19.049/05/06

Pag. 1 of 2

Apave Italia Cpm Job N° PM.19.049/05
Commissa Apave Italia Cpm N°

Date: 18/02/2019
Data

Order ddt n° : 1158
Ordine ddt n° :

Date : 18/02/2019
Data

Sample identification n°: 105889
Saggio identificato n°

Heat n° 264520
Colata n°

Sample received : 18/02/2019
Sagami ricevuti

Start test : 19/02/2019
Inizio prova
End test : 19/02/2019
Fine prova

Object : Chemical analysis - Steel declared as MS C02-00 Rev.3

Inspector

Customer

Laboratory operator

Laboratory management

This test report may not be partially copied without the written permission of APAVE ITALIA CPM SRL. The test results only concern samples and specimens differently agreed in the order. For the full page of content validity, will be found the original report kept in the archives of APAVE ITALIA CPM SRL.

MOD. PM 34 REV.02



Via Artigiani n° 63
25040 BIENNO (BS)
Tel 0364300342
Fax 0364300354
Mail info@cpmanave.it

LABORATORIO PROVE MECCANICHE

MESSERS :

IRE-OMBA S.p.A
VIA C. SERASSI, 14
24025 BERGAMO

TEST REPORT N°: PM.19.049/05/06
Rapporto di prova n°

DATE : 20/02/2019
Data

Pag. 2 of 2
Pag. 2 di 2

CHEMICAL ANALYSIS
Analisi chimica

Test n° 105889
Prova n°

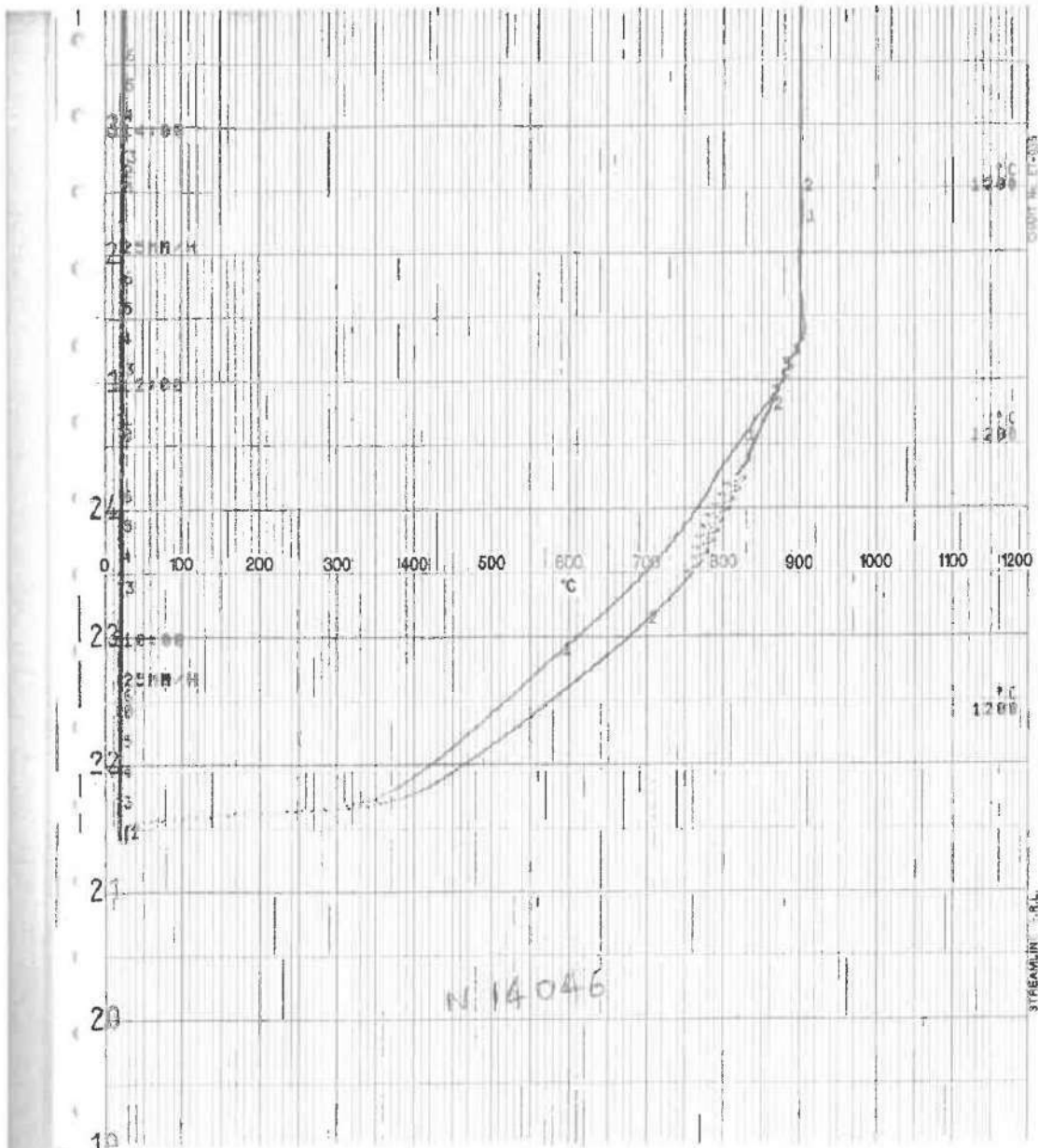
Heat n° 264520
Colonna n°

[%]	Limits / Limbi	O ₂
	Detected / Rilevato	18,9

Analysis performed by LECO



MSA
R
L



ORD: 4000040454

MSA/ *[Signature]*



Gaser Technical Coating
Gruppo **GASER**

CERTIFICATO DI CONFORMITA' E COLLAUDO EN 10204 3.1
Certificate of conformity and testing EN 10204 3.1

Cliente Customer

GASKET INTERNATIONAL SRL

Descrizione Articolo Item Description

PVS SEAT 32" LF2 CL.1 4100025173/00060 1030048743/000040

Materiale base Raw material

LF2 CL.1

Numero Vs. DDT	Number of your document	Data Vs. DDT	Date of your document	Nr. Ordine Cliente	Number Customer Order
200107		23/01/2020			

Numero Ns. DDT	Number of our document	Data Ns. DDT	Date of our document
000279		29/01/2020	

Numero pezzi	Number of pieces	Rapporto di controllo	Control report number
4,00		20/00248	

Specifica di riferimento	Ref. Specification	Riferimento ODP	ODP Reference
		20/00571	

Trattamento Treatment

ENP 10÷13% P

Metal Turn Over

≤3

Tipo prova	Test type	Valore riscontrato	Recording of value	Norma	Standard
VISUAL INSPECTION		PASSED		ASTM B 733 paragraph 7.2.1	
THICKNESS		30,00 µm		ASTM B 733 paragraph 9.3.5	
ADHESION		PASSED		WEIGHT METHOD	
ADHESION		PASSED		ASTM B 571 paragraph 9.4.2	
ADHESION		PASSED		IMPACT TEST	
HARDNESS		>550 HV		ASTM B 571 paragraph 3	
POROSITY		PASSED		BEND TEST	
				ASTM B 733 paragraph 9.5	
				MICRODUROMETER	
				ASTM B 733 paragraph 9.6.1	
				FERROXYL TEST	

Note Notes

Serial Nr. 531:534

Misurazione magnetica dello spessore effettuata prima del trattamento termico / thickness magnetic measurement done before heat treatment. COUPON A231

Firma responsabile controllo Responsible signature

GTC 7.5.1 R8 ED.2 REV.1 del 06/12/16

Gaser Technical Coating
Gruppo **GASER**
Via Enzo Ferrari, 51
36033 Isola Vicentina (VI)
P.I. e C.F.: 04005600244
Tel. 0444378937 - Fax 0444976219

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HUTA BANKOWA Spółka z o.o. ul. Sobieskiego 24 41-300 Dąbrowa Górnicza		Świadectwo odbioru 3.1 Nr 01848/19 Inspection certificate 3.1 Abnahmeprüfzeugnis 3.1 Certificat de réception 3.1 Свидетельство приемки 3.1 PN-EN 10204																																																																												
Zamawiający Ordered by - Besteller		Izotechnik spol. s r.o. ul. Bystrice nad Olsí 1260 , 739 95 Bystrice nad Olsí																																																																												
Adres wysyłkowy Address - Versandadresse		Izotechnik spol. s r.o. ul. Bystrice nad Olsí 1260 , 739 95 Bystrice nad Olsí																																																																												
Nr i data zamówienia Order No and date Nr und Datum der Bestellung		Zlecenie Order No Auftrag Nr																																																																												
OK4180256 z dnia 18/10/23		Hb/6206528/10/18 PL/273155484/2018/B1528																																																																												
LOT:		Wykonano wg norm Produced according to Herstellt gemäß Norm																																																																												
EN 10083-3:2006 EN 10083-1:2006 EN 10080:2003		Wagon Car No Wagen Nr WGM30317 WGM23X3																																																																												
B01 Przedmiot i wykonanie Item and specification (Heat and mechanical treatment etc.) Gegenstand und Ausführung (therm. und mechan. Bearbeitung usw.)		B09 Wymiar lub rysunek Dimension or drawing Abmessung oder Zeichnung																																																																												
Hot rolled round bars in quenched and tempered condition.		200 mm dt. 5000-6000 mm																																																																												
B02 Gatunek Steel grade Güte		42CrMo4+QT																																																																												
B07 Wytap Heat Schmelze		41297																																																																												
B08 Sztuk Pieces Stück		1																																																																												
B14 Wiązki Bundles Bünde		1																																																																												
B12 kg		1340																																																																												
B05 Reduction ratio 2.8 x.																																																																														
1. SKŁAD CHEMICZNY - CHEMICAL COMPOSITION - CHEMISCHE ZUSAMMENSETZUNG %																																																																														
B02 Wytap Heat Schmelze		<table border="1"> <tr> <th>C</th> <th>Mn</th> <th>Si</th> <th>P</th> <th>S</th> <th>Cu</th> <th>Cr</th> <th>Ni</th> <th>Mo</th> <th>V</th> <th>Sn</th> <th>As</th> <th>Ti</th> </tr> <tr> <td>0,43</td> <td>0,69</td> <td>0,25</td> <td>0,011</td> <td>0,023</td> <td>0,17</td> <td>1,04</td> <td>0,13</td> <td>0,20</td> <td>0,005</td> <td>0,011</td> <td>0,0087</td> <td>0,002</td> </tr> <tr> <th>Al</th> <th>Al met</th> <th>Nb</th> <th>N</th> <th>H₂</th> <th>O₂</th> <th colspan="7"></th> </tr> <tr> <td>0,026</td> <td>0,024</td> <td>0,003</td> <td>0,0066</td> <td>1,9ppm</td> <td>7ppm</td> <td colspan="7"></td> </tr> </table>												C	Mn	Si	P	S	Cu	Cr	Ni	Mo	V	Sn	As	Ti	0,43	0,69	0,25	0,011	0,023	0,17	1,04	0,13	0,20	0,005	0,011	0,0087	0,002	Al	Al met	Nb	N	H ₂	O ₂								0,026	0,024	0,003	0,0066	1,9ppm	7ppm																				
C	Mn	Si	P	S	Cu	Cr	Ni	Mo	V	Sn	As	Ti																																																																		
0,43	0,69	0,25	0,011	0,023	0,17	1,04	0,13	0,20	0,005	0,011	0,0087	0,002																																																																		
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0,026	0,024	0,003	0,0066	1,9ppm	7ppm																																																																									
41297		<table border="1"> <tr> <th colspan="5">Analiza kontrolna</th> <th colspan="5">Control analysis</th> <th colspan="3">Stückanalyse</th> </tr> <tr> <th>C</th> <th>Mn</th> <th>Si</th> <th>P</th> <th>S</th> <th>Cu</th> <th>Cr</th> <th>Ni</th> <th>Mo</th> <th>V</th> <th>Sn</th> <th>As</th> <th>Ti</th> </tr> <tr> <td>--</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> </tr> <tr> <th>Al</th> <th>Al met</th> <th>Nb</th> <th>N</th> <th>H₂</th> <th>O₂</th> <th colspan="7"></th> </tr> <tr> <td>--</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> <td colspan="7"></td> </tr> </table>												Analiza kontrolna					Control analysis					Stückanalyse			C	Mn	Si	P	S	Cu	Cr	Ni	Mo	V	Sn	As	Ti	--	--	--	--	--	--	--	--	--	--	--	--	--	Al	Al met	Nb	N	H ₂	O ₂								--	--	--	--	--	--							
Analiza kontrolna					Control analysis					Stückanalyse																																																																				
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Al	Al met	Nb	N	H ₂	O ₂																																																																									
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2. BADANIA MECHANICZNE - MECHANICAL TEST - MECHANISCHE UNTERSUCHUNGEN																																																																														
C01 Próba Nr Tests No Probe Nr		B05 Rodzaj obróbki termicznej prób Heat treatment of the sample. Metallurgischer Zustand der Probe.		C11 Re [MPa]		C12 Rm [MPa]		C13 A ₅ [%]		C14 Z [%]		Uderność temp. +20 °C Impact test probe Modis value, Mittelwert		C31 Twardość Hardness Härte [HB]																																																																
333		Sample in the delivery condition		619		613		21,4		61,6		58,77.89/75		-																																																																
3. BADANIA TECHNOLOGICZNE - TECHNOLOGICAL TESTS - TECHNOLOGISCHE UNTERSUCHUNGEN																																																																														
Ultrasonic testing SEP 1920-1 kl. B gr. 3.																																																																														
4. BADANIA METALOGRAFICZNE - METALLOGRAPHIC TESTS - METALLOGRAPHISCHE UNTERSUCHUNGEN																																																																														
B02 Wytap Nr Heat No Schmelze		B04 Zanieczyszczenia niemetaliczne Nonmetallic impurities Nichtmetallische Verunreinigungen		B05 Struktura Structure Struktur																																																																										
41297																																																																														
Powierzchnię i wymiary zbadano przez wydz. prod. w 100% - Surface and dimension tested by Dept. at 100% - Oberfläche und Abmessungen geprüft von Prod.Abt. zu 100%																																																																														
Deklarujemy, że wykonany wyrób jest zgodny z warunkami potwierdzone zamówienia. Wir bestätigen, dass der Auftrag gemäß der Auftragsbestätigungsbedingungen gefertigt ist.																																																																														
B01 Materiał oznaczono. Material marked. Das Material wurde gekennzeichnet. Das Material weist keine Radioaktivität. The material has not displayed any radiation.																																																																														
B01 Both forwards one belt with Steel grade. No heat. Hb. The radioactivity: < 100 Bq/kg.																																																																														
B15																																																																														
Z02 Kontrola jakości Control of Manufacture Fertigungskontrolle																																																																														
Z04																																																																														
Data: 2019-03-01																																																																														

SPÚ s.r.o. IČ: 02515890 pobočka Ostrava 703 00 Ostrava-Vítkovice Středulinského 966/26 Tel: 773 656 510 E-mail: zdenek.zlamal@spu-ostava.cz		ATEST OSVĚDČENÍ JAKOSTI Quality certification EN 10204.3.1	
Zákazník Customer		MSA a.s. Hlučinská 641 747 22 Dolní Benešov	
Číslo objednávky/zak. Order number		61-0002-20 30 μ 500 HV	
Číslo výkresu Drawing number		Odes. list č.: 122	
STEM		Čep DN 1000, č.v.: 7-2015-A30.BE Čep DN 800, č.v.: 7-2015961.BE Čep DN 200, č.v.: 7-2015-120.BE Čep DN 250, č.v.: 7-2015-152.BE Čep DN 150, č.v.: 7-2015-150.4E Čep DN 400, č.v.: 7-2015-153.BE	
Číslo VP		Tavba	
D2052C9		Heat number	
D2052D01		41297 18303062437	
D205257		823972 39816	
D205258		41297 ✓	
D205247		041728	
E201063		1810509545	
D205245		1810509545	
Číslo kusu Number of pieces		2 ks 16 ks 1 ks 2 ks 2 ks 2 ks 2 ks 2 ks	
TPH 28.52.10-MSA-05/05 ASTM B733			
Provádíme zkoušky		Test to be performed	
Kontrola Test	Metoda Method	Na dílech On parts	Test samples
Vizuální kontrola / visual inspection		standard	33
Tloušťka μ Thickness μ	Hmotnost Weight Dotykovým měřidlem Micro hardness FN	standard	30 μ
Tvrdost Hardness	Dotykovým měřidlem Micro hardness tester		500 HV
Přilnavost Adhesion	Zkouška probíjením Test drifting Test hlazením Burnishing test	standard	
Pórovitost Porosity	Ferroxyl test		
Koroze Corrosion	Solná mlha Salt fog		
Složení slitiny Composition alloy	% P (Ni = Vyvážený) % P (Ni = Balanced)		P ≥ 10,5 %
Bere na vědomí Note	Dodáno zákazníkovi Delivered to the customer		
Výstupní kontrola potvrzuje, že výrobky byly kontrolovány a odpovídají dodanému výkresu a technickým požadavkům zákazníka Quality control confirms that the product has been verified according to the supplied drawing and technical requirements of the customer			
Atest vyhotovil(a) Cert completed by	Kateřina Matějásková	Schváleno Approved by	Zdeněk Zlámal
Vydal Issued by	Speciální povrchové úpravy s.r.o. Středulinského 966/26 703 00 Ostrava-Vítkovice DIČ: CZ02515890	Datum Date	13.2.2020

A36

Продавец (Экспортер) Seller (Exporter) Изготовитель Manufacturer	 Сделано в России / Made in Russia АО "ВМК "Красный Октябрь" JSC "VMKKO" 400007 Россия, Волгоград, пр. Ленина, 110 Russia Volgograd, Lenin Avenue, 110	 СЕРТИФИКАТ КАЧЕСТВА 3.1 № INSPECTION CERTIFICATE 3.1 No. согласно EN10204:2003 according to EN10204:2003	1994-18b.
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 0036	JSC "VMKKO" Lenin, Av, 110, Volgograd, 400007, Russia Federation 13 0038- CPR-M -060-2018	EN 10025-2:2004 S355J2 (1.0577) Dangerous substance: No performance determined
Грузополучатель, адрес, страна Consignee, address, country		Заказ № Order No. 52132
		Контракт № Contract No. CH 756-50508689/140-16
		Баром № Barom No. C628MM32/AX116332.
		Стандарт Standard EN 10025, EN 10060
Количество мест: Number of packages: 2	Масса нетто, т (Mass net, t): 4,930 Масса брутто, т (Mass gross, t):	
Наименование товара Description of goods		1 - NORMALIZED

№ п/п Item No.	Номера плавки Melt No.	Марки Steel grade	№ спец. Spec.	Размеры (мм) / Dimensions (mm)			Масса нетто (т) / Mass net (t)
				толщ./диам. thickness, diameter	внутр./диам. width, inner	длина length	
1	1860949	S355J2+H	178-576	Φ330		3 500	4,930
Итого:							4,930

Массовая доля элементов (%) (по химической пробе) Chemical Composition (%) (according to ladle sample)														
C	Mn	Si	P	S	Cr	Ni	Cu	Mo	Al	Ti	V	Nb	As	Se
0.17	1.26	0.27	0.009	0.024	0.10	0.15	0.18	0.015	0.024	0.002	0.006	0.012	0.006	0.43

№ п/п Item No.	Механические свойства (на образцах) Mechanical characteristics (on sample)							Термообработка образцов Heat treatment of samples	Масса образца Test specimen	Твердость в сост. состоянии. Hardness in delivery	Запись / Guts	Годность пригоден. Not fitting
	временная прочность Rm	предел текучести Rp0.2	предел прочности Rp0.01	отношение ука-на elongation A50	отношение ука-на elongation A10	ука-на elongation A50	ука-на elongation A10					
1	530	350		27				ISO-V30°C				
	540	360		26				90-100-10 0 avg 99				
	transverse									217-217		
	longitudinal											
	longitudinal											

MSA
Hoffmann

№№ пп Item No.	Неметаллические включения (баллы) Non-metallic inclusions (points) ASTM E45 Method A										Микроструктура Microstructure	
	A		B		C		D		B+C+D			
	thin	thick	thin	thick	thin	thick	thin	thick	thin	thick		
1	2,0	1,5	1,5	0	0	0	1,0	0			GOOD	
	2,0	1,5	1,5	0	0	0	1,0	0				
	2,0	1,5	1,5	0	0	0	1,0	0				
	2,0	1,5	1,5	0	0	0	1,0	0				
	2,0	1,5	1,5	0	0	0	1,0	0				
	2,0	1,5	1,5	0	0	0	1,0	0				
№№ пп Item No.	Неметаллические включения Non-metallic inclusions DIN50602											

№№ пп Item No.	Коэффициент от вытекания Reduction ratio	Микроструктура Microstructure	Микропом огненность Microhom ogeneity	Степень поврежденности Banding degree (grade)	Карбид сети Carbide network	Обезуглеро- живание Decarburization	Идеальный диаметр Ideal Diameter	Контроль на анти-сульфидацию Anti-sulfide control
1	4,15							yes
УЗК Ultrasonic test								
1 - EN 10398 mb2 class								
Дополнительные требования / Additional requirements								
1 absent decarbonized layer turning of guaranteed								

Экологический контроль: свободно от ртути. Проверено на отсутствие радиоактивности. Ecological control: mercury free. Goods are non-radioactive.			
Маркировка Marking	1 Silver 355N.		
Примечание Note	Сталь не является мартеновской стареной. Steel is not <u>martensitic</u> old. Материал поставлен в соответствии с требованиями по качеству продукции, согласно указанному номеру контракта и спецификации. The materials supplied are in compliance with the quality requirements of the contract number and specifications noted. При переписке по вопросу качества ссылаться на № сертификата. While corresponding concerning the quality, refer to No. certificate.		
Certificate group JSC "VMKKO"		Дата Date	27 March 2018
Inspector -	Vasichkina O.I.	(Подпись) (Signature)	

Проверка сертификата качества:
www.vmkko.ru/en/



Checking the Quality Certificate:
www.vmkko.ru/en/

INSPECTION CERTIFICATE				CERT. TYPE	CMTR Nr.	SHEET				
LIST OF SUPPLIED PRODUCTS				ISO 10474	1902452/1	1/8				
				EN 10204	DATE 15/01/2020					
CUSTOMER : MSA.A.S.				ORDER No.: 5A053190 Date: 13/11/2019						
DESTINATION : MSA.A.S. HLUCINSKA 641 74722 - DOLNI BENESOV CZECH REPUBLIC				PROJECT No.:						
				JOB No.:						
LOT	OME ITEM	P.O. ITEM	Q.TY	Dimension	Drawing No.	Spec / Grade	Heat No.	Marking	Conc.	Cost.
L001	10	0010	30 No.	1.1/8" 8 UN x 130	ANSI B16.5	ASTM A 193 / A 193M B7	222773	Material Grade Trade Mark	BO	229
				8-0460-0368/005915						
L002	20	0020	20 No.	1.1/4" 8 UN x 155	ANSI B16.5	ASTM A 193 / A 193M B7	224233	Material Grade Trade Mark	BO	229
				8-0460-1418/005915						
L003	30	0030	20 No.	3/4" 10 UNC x 150	ANSI B16.5	ASTM A 193 / A 193M B16	181778	Material Grade Trade Mark	BO	
				8-0460-2347/005859						
L004	40	0040	40 No.	1/2" 13 UNC x 50	ANSI B16.5	ASTM A 193 / A 193M B7	2014522206	Material Grade Trade Mark	BO	229
				8-0460-3069/005915						
L005	50	0050	30 No.	1" 6 UNC x 115	ANSI B16.5	ASTM A 320 / A 320M L7M	178870	Material Grade Trade Mark	BO	
				8-0460-3213/005801						
L006	60	0060	50 No.	1.7/8" 8 UN x 205	ANSI B16.5	ASTM A 193 / A 193M B7	260673	Material Grade Trade Mark	BO	
				8-0460-3251/005915						
L007	70	0070	20 No.	5/8" 11 UNC x 50	ANSI B16.5	ASTM A 193 / A 193M B7	885817	Material Grade Trade Mark	BO	229
				8-0460-3348/005915						
L008	80	0080	80 No.	7/8" 5 UNC x 100	ANSI B16.5	ASTM A 193 / A 193M B7	3079652	Material Grade Trade Mark	BO	229
				8-0460-3388/005915						
L001	90	0090	100 No.	1.1/8" 8 UN x 115	ANSI B16.5	ASTM A 193 / A 193M B7	222773	Material Grade Trade Mark	BO	229
				8-0460-3368/005915						
L009	100	0100	30 No.	1.1/8" 8 UN x 115	ANSI B16.5	ASTM A 193 / A 193M B8M CL2	H3VT	Material Grade Trade Mark	ST	
				8-0460-339F/005915						
L006	110	0110	20 No.	1.7/8" 8 UN x 220	ANSI B16.5	ASTM A 193 / A 193M B7	260673	Material Grade Trade Mark	BO	
				8-0460-3561/005915						
L010	120	0120	50 No.	1/2" 13 UNC x 45	ANSI B16.5	ASTM A 193 / A 193M B7M	3079650	Material Grade Trade Mark	BO	
				8-0460-3796/005859						
L011	130	0130	170 No.	1.1/4" 8 UN x 230	ANSI B16.5	ASTM A 193 / A 193M B7	260673	Material Grade Trade Mark	BO	116
				8-0460-4042/005915						
L012	140	0140	60 No.	M24 x 3 x 130	DIN 976/B	ASTM A 193 / A 193M B7	2014533176	Material Grade Trade Mark	BO	116
				8-0460-5212/005915						
L013	150	0150	120 No.	2" 6 UN x 405	ANSI B16.5	ASTM A 193 / A 193M B7	11/74964	Material Grade Trade Mark	BO	116
				8-0460-705Z/005915						
L014	160	0160	20 No.	3/4" 10 UNC	ANSI B18.2.2-Tab.10	ASTM A 194 / A 194M GR.4	AK7648	Material Grade Trade Mark	BO	
				8-0602-0062/005859						
L015	170	0170	57 No.	7/8" 9 UNC	ANSI B18.2.2-Tab.10	ASTM A 194 / A 194M GR.2H	180002302	Material Grade Trade Mark	BO	229
				8-0602-012C/005920						
L016	170	0170	33 No.	7/8" 9 UNC	ANSI B18.2.2-Tab.10	ASTM A 194 / A 194M GR.2H	180001289	Material Grade Trade Mark	BO	229
				8-0602-012C/005920						
L017	180	0180	30 No.	1.1/8" 8 UN	ANSI B18.2.2-Tab.10	ASTM A 194 / A 194M GR.8M	772569	Material Grade Trade Mark	SO	
				8-0602-0148/005920						
L018	190	0190	67 No.	1.1/8" 8 UN	ANSI B18.2.2-Tab.10	ASTM A 194 / A 194M GR.2H	180001290	Material Grade Trade Mark	BO	229
				8-0602-014C/005920						
L019	190	0190	63 No.	1.1/8" 8 UN	ANSI B18.2.2-Tab.10	ASTM A 194 / A 194M GR.2H	18/0576	Material Grade Trade Mark	BO	229
				8-0602-014C/005920						
L020	200	0200	20 No.	1.1/4" 8 UN	ANSI B18.2.2-Tab.10	ASTM A 194 / A 194M GR.2H	AK0729	Material Grade Trade Mark	BO	229
				8-0602-015C/005920						
VISUAL / DIMENSIONAL EXAMINATION : Conforming MELT PROCESS : Electric Furnace										
OME Metallurgica Erbeso S.r.l. Via Milano, 15 22036 ERBA (CO) Italy Phone +39 031 641605 r.a. - Fax +39 031 645818 E-Mail: info.ome@ome.it - http://www.ome.it				ALL THE MATERIALS SUPPLIED HAVE BEEN MANUFACTURED, EXAMINED AND TESTED SATISFACTORILY, IN FULLY CONFORMITY WITH PURCHASE ORDER REQUIREMENTS AND APPLICABLE STANDARDS / SPECIFICATIONS. TEST PERFORMED BY QUALIFIED OPERATOR N° 00761 MATERIAL FREE FROM MERCURY OR RADIOACTIVITY CONTAMINATION				 		
F 8.2 - CMTR - 20										

INSPECTION CERTIFICATE				CERT. TYPE		CMTR. Nr.	SHEET			
LIST OF SUPPLIED PRODUCTS				ISO 10474	3.1	1602452/1	2/8			
CUSTOMER : MSA.A.S.				ORDER No.: 5A053190 Date: 13/11/2019						
DESTINATION : MSA.A.S. HLUCINSKA 641 74722 - DOLNI BENESOV CZECH REPUBLIC				PROJECT No.:						
				JOB No.:						
LOT	OME ITEM	P.O. ITEM	Q.TY	Dimension	Drawing No.	Spec / Grade	Heat No.	Marking	Cond.	Coat.
L021	210	0210	34 No.	2" 8 UN	ANSI B16.2.2-Tab.10	ASTMA 194 / A 194M GR.2H	240393	Material Grade Trade Mark	BO	116
				8-0602-141H/005920						
L022	210	0210	206 No.	2" 6 UN	ANSI B16.2.2-Tab.10	ASTMA 194 / A 194M GR.2H	1B0004982	Material Grade Trade Mark	BO	116
				8-0602-141H/005920						
L023	220	0220	120 No.	M24 x 3	DIN 934 (H=D)	ASTMA 194 / A 194M GR.2H	14/72426	Material Grade Trade Mark	BO	116
				8-0607-070Z/005920						
VISUAL / DIMENSIONAL EXAMINATION : Conforming						MELT PROCESS : Electric Furnace				
OME Metallurgica Erbesse S.r.l. Via Milano, 15 22036 ERBA (CO) Italy Phone +39 031 641605 r.a. • Fax +39 031 645618 E-Mail: info.ome@ome.it - http://www.ome.it				Statement ALL THE MATERIALS SUPPLIED HAVE BEEN MANUFACTURED, EXAMINED AND TESTED SATISFACTORILY IN FULLY CONFORMITY WITH PURCHASE ORDER REQUIREMENTS AND APPLICABLE STANDARDS / SPECIFICATIONS. TEST PERFORMED BY QUALIFIED OPERATOR N° 00761 MATERIAL FREE FROM MERCURY OR RADIOACTIVITY CONTAMINATION						
							F.B.2 - CMTR - 20			

INSPECTION CERTIFICATE				CERT. TYPE		CMTR No.		SHEET									
HEAT ANALYSIS				ISO 10474 EN 10204		1002452/1 DATE 15/01/2020		3/8									
CUSTOMER : MSA.A.S.				ORDER No.: 5A05319C Date: 13/11/2019													
DESTINATION : MSA.A.S. HLUCINSKA 641 74722 - DOLNI BENESOV CZECH REPUBLIC				PROJECT No.:													
				JOB No.:													
LOT	Heat No.	C	Mn	Si	P	S	Cr	Ni	Mo	V	Ti	Cu	W	Al	B	Nb	Co
		Zn	Pb	Sn	Be	O	N	H	Fe	Nb+Ta	Cb	Al+Ti	Cb+Ta	Se	Bi	Ca	Ng
L001	222773	0,427	0,800	0,240	0,009	0,002	1,060		0,160								
L002	224233	0,421	0,810	0,260	0,011	0,003	1,050		0,170								
L003	181778	0,380	0,640	0,320	0,012	0,003	0,970		0,510	0,260				0,004			
L004	2014522209	0,432	0,790	0,282	0,008	0,0035	1,010		0,206								
L005	178870	0,400	0,800	0,280	0,012	0,003	1,080		0,233								
L006	260673	0,392	0,785	0,235	0,014	0,005	1,016		0,176								
L007	BB5817	0,420	0,920	0,180	0,007	0,002	0,930		0,210								
L008	3079652	0,390	0,851	0,171	0,008	0,008	0,963		0,215								
L009	H3VT	0,015	1,516	0,342	0,029	0,021	16,980	10,540	2,050								
L010	3079690	0,405	0,838	0,169	0,007	0,007	0,958		0,216								
L011	260673	0,392	0,785	0,235	0,014	0,006	1,016		0,176								
L012	2014533178	0,437	0,785	0,283	0,009	0,0096	0,985		0,214								
L013	11/74964	0,380	0,790	0,240	0,013	0,022	0,980		0,180								
L014	AK7648	0,445	0,770	0,210	0,012	0,004			0,220								
L015	1B0002302	0,474	0,745	0,295	0,011	0,024											
L016	1B0001289	0,486	0,725	0,283	0,015	0,028											
L017	772969	0,019	1,770	0,340	0,030	0,027	16,630	10,120	2,080								
L018	1B0001290	0,483	0,684	0,262	0,014	0,032											
L019	18/70576	0,490	0,800	0,220	0,019	0,020											
L020	AK0729	0,470	0,660	0,220	0,007	0,003											
L021	240383	0,435	0,680	0,190	0,017	0,023											
OME Metallurgie Erbes S.r.l. Via Milano, 15 22030 ERBA (CO) Italy Phone +39 031 641606 r.a. - Fax +39 031 645618 E-Mail: info.ome@ome.it - http://www.ome.it				Statement ALL THE MATERIALS SUPPLIED HAVE BEEN MANUFACTURED, EXAMINED AND TESTED SATISFACTORILY IN FULLY CONFORMITY WITH PURCHASE ORDER REQUIREMENTS AND APPLICABLE STANDARDS / SPECIFICATIONS. TEST PERFORMED BY QUALIFIED OPERATOR N° 00781 MATERIAL FREE FROM MERCURY OR RADIOACTIVITY CONTAMINATION													
								F 8.2 - CMTR - 29									

INSPECTION CERTIFICATE				CERT. TYPE				CMTR Nr.				SHEET									
HEAT ANALYSIS				ISO 10474 EN 10204				3,1 DATE 16/01/2020				4/8									
CUSTOMER: MSAA.S.				ORDER No.: 5A053190 Date: 13/11/2019																	
DESTINATION: MSAA S.S. HLUCINSKA 641 74722 - DOLNI BENESOV CZECH REPUBLIC				PROJECT No.:																	
				JOB No.:																	
LOT	Heat No.	C	Mn	Si	P	S	Cr	Ni	Mo	V	Ti	Cu	W	Al	B	Nb	Co				
		Zn	Pb	Sn	Be	O	N	H	Fe	Nb+Ta	Co	Al+Ti	Co+Ta	Be	Bi	Ca	Mg				
L022	1B0004962	0,473	0,744	0,277	0,012	0,026															
L023	14/72426	0,460	0,760	0,200	0,016	0,030															
OME Metallurgica Erbase S.r.l. Via Milano, 15 22036 ERBA (CO) Italy Phone +39 031 641606 r.a. - Fax +39 031 645616 E-Mail: info.ome@ome.it - Http://www.ome.it							Statement ALL THE MATERIALS SUPPLIED HAVE BEEN MANUFACTURED, EXAMINED AND TESTED SATISFACTORILY IN FULLY CONFORMITY WITH PURCHASE ORDER REQUIREMENTS AND APPLICABLE STANDARDS / SPECIFICATIONS. TEST PERFORMED BY QUALIFIED OPERATOR N° 60761 MATERIAL FREE FROM MERCURY OR RADIOACTIVITY CONTAMINATION														
F 8.2 - CMTR - 29																					

INSPECTION CERTIFICATE						CERT. TYPE		CMTR Nr.		SHEET					
TENSILE TEST						ISO 10474 EN 10204		1902452/1 DATE 15/01/2020		5/8					
CUSTOMER : MSA.A.S.						ORDER No.: 5A053190 Date: 13/11/2019									
DESTINATION : MSA.A.S. HLUCINSKA 441 74722 - DOLNI BENESOV CZECH REPUBLIC						PROJECT No.: JOB No.:									
LOT	SPECIMEN				T °C	Measure Unit	REQUIRED VALUES				OBTAINED VALUES				
	NO.	DIA. mm	AREA mm²	L mm			MIN Rp 0.2	R		MIN E %	MIN R.A. %	Rp 0.2	R	E %	R.A. %
								MIN	MAX						
L001		12,5	122,66	50,00	Room	MPa	720	860		16	50	848	977	17,4	57,5
L002		12,5	122,66	50,00	Room	MPa	720	860		16	50	802	910	19,7	58,0
L003		12,5	122,66	50,00	Room	MPa	725	860		16	50	798	947	21,5	60,5
L004		8,75	60,10	35,00	Room	MPa	720	860		16	50	858	975	17,5	58,4
L005		12,5	122,66	50,00	Room	MPa	550	690		16	50	598	710	22,0	62,3
L006		12,5	122,66	50,00	Room	MPa	720	860		16	50	898	1001	22,4	60,7
L007		8,75	60,10	35,00	Room	MPa	720	860		16	50	803	910	20,3	60,0
L008		12,5	122,66	50,00	Room	MPa	720	860		16	50	806	925	19,0	59,7
L009		12,5	122,66	50,00	Room	MPa	450	665		25	45	472	672	45,5	75,2
L010		8,75	60,10	35,00	Room	MPa	550	690		18	50	582	709	27,5	66,5
L011		12,5	122,66	50,00	Room	MPa	720	860		16	50	855	942	23,3	60,1
L012		12,5	122,66	50,00	Room	MPa	720	860		16	50	801	919	19,2	61,0
L013		12,5	122,66	50,00	Room	MPa	720	860		16	50	825	917	17,0	63,3
OME Metallurgica Erbase S.r.l. Via Milano, 15 22038 ERBA (CO) Italy Phone +39 031 641605 r.a. - Fax +39 031 645618 E-Mail: info.ome@ome.it - http://www.ome.it						Statement ALL THE MATERIALS SUPPLIED HAVE BEEN MANUFACTURED, EXAMINED AND TESTED SATISFACTORILY IN FULLY CONFORMITY WITH PURCHASE ORDER REQUIREMENTS AND APPLICABLE STANDARDS / SPECIFICATIONS. TEST PERFORMED BY QUALIFIED OPERATOR N° 00761 MATERIAL FREE FROM MERCURY OR RADIO-ACTIVITY CONTAMINATION									

INSPECTION CERTIFICATE										CERT. TYPE		CMTR Nr.		SHEET									
IMPACT TEST										ISO 10474 EN 10204 3.1		1902452/1		6/8									
CUSTOMER : MSA A.S.										ORDER No.: 5A053190 Date: 13/11/2019													
DESTINATION : MSA A.S. HLUCINSKA 641 74722 - DOLNI BENESOV CZECH REPUBLIC										PROJECT No.:													
										JOB No.:													
LOT	SPECIMEN					MINIMUM REQUIRED VALUES					OBTAINED VALUES												
	NO.	IZOD	KV	ISOV	KCU	T °C	M.Unit	MIN.	AVE.	L.E.	ABSORBED ENERGY				LATERAL EXP.				SHEAR %				
											1	2	3	AVE.	1	2	3	60	70	80	90		
L003			X			-29	J	27			52	52	49	51									
L005			X			-73	J	20	27		48	44	41	44									
L010			X			-29	J	14			26	27	23	25									
L014			X			-101	J	20	27		33	32	33	33									
L014			X			-29	J	27			65	65	69	67									
OME Metallurgica Erbesee S.r.l. Via Milano, 15 22036 ERBA (CO) Italy Phone +39 031 641806 r.a. - Fax +39 031 645618 E-Mail: info.ome@ome.it - http://www.ome.it										Statement ALL THE MATERIALS SUPPLIED HAVE BEEN MANUFACTURED, EXAMINED AND TESTED SATISFACTORILY IN FULLY CONFORMITY WITH PURCHASE ORDER REQUIREMENTS AND APPLICABLE STANDARDS / SPECIFICATIONS. TEST PERFORMED BY QUALIFIED OPERATOR N° 00761 MATERIAL FREE FROM MERCURY OR RADIOACTIVITY CONTAMINATION													
																				F 8.2 - CMTR - 05			

INSPECTION CERTIFICATE										CERT. TYPE		CMTR Nr.		SHEET																									
HARDNESS TEST										ISO 10474 EN 10204 3.1		1902452/1 DATE 15/01/2020		7/8																									
CUSTOMER: MSA.A.S.										ORDER No.: 5A053190 Date: 13/11/2019																													
DESTINATION: MSA.A.S. HLUCINSKA 841 74722 - DOLNI BENESOV CZECH REPUBLIC										PROJECT No.:																													
										JOB No.:																													
LOT	NO. OF TEST	REQUIRED VALUES										OBTAINED VALUES																											
		AFTER HEAT TREAT. x 24h				ROOM TEMPERATURE						AFTER HEAT TREAT. x 24h				ROOM TEMPERATURE																							
		HB	HRB	T °C	HARD. MIN	HB	HRB	HRC	HV	HARDNESS		CONTR. QTY	HARDNESS		CONTR. QTY	HARDNESS		PL	CPL																				
										MIN	MAX		MIN	MAX		MIN	MAX		C	NC	C	NC																	
L001					X					321				1	295	300																							
L002					X					321				1	292	299																							
L003					X					321				1	287	293																							
L004					X					321				1	284	299																							
L005					X					235				1	216	219																							
5					X					235				100%	214	220																							
L006					X					321				1	307	312																							
L007					X					321				1	292	298																							
L008					X					321				1	294	301																							
L009					X					321				1	207	210																							
L010					X					235				1	218	222																							
L010					X					235				100%	218	223																							
L011					X					321				1	311	316																							
L012					X					321				1	290	295																							
L013					X					321				1	282	295																							
L014		X	590	94	X				248	327	1	98		1	271	278	X																						
L015		X	540	89	X				248	327	1	91		1	304	311	X																						
L016		X	540	89	X				248	327	1	96		1	270	278	X																						
L017					X				126	300				1	181	189	X																						
8		X	540	89	X				248	327	1	91		1	289	304	X																						
L019		X	540	89	X				248	327	1	95		1	285	301	X																						
L020		X	540	89	X				248	327	1	93		1	271	280	X																						
L021		X	540	79	X				212	327	1	84		1	289	294																							
L022		X	540	79	X				212	327	1	85		1	270	277																							
L023		X	540	89	X				248	327	1	91		1	298	303	X																						
										 CHELPI GROUP MSA A.S. Dolní Benšov																													
PL = Proof Load										CPL = Cone Proof Load										C = Conforming										NC = Not Conforming									
OME Metallurgica Erbece S.r.l. Via Milano, 15 22036 ERBA (CO) Italy Phone +39 031 641606 r.a. - Fax +39 031 645818 E-Mail: info.ome@ome.it - http://www.ome.it										Statement ALL THE MATERIALS SUPPLIED HAVE BEEN MANUFACTURED, EXAMINED AND TESTED SATISFACTORILY IN FULLY CONFORMITY WITH PURCHASE ORDER REQUIREMENTS AND APPLICABLE STANDARDS / SPECIFICATIONS. TEST PERFORMED BY QUALIFIED OPERATOR N° 03761 MATERIAL FREE FROM MERCURY OR RADIO-ACTIVITY CONTAMINATION																													
																				F 0.2 - CMTR - 07																			

INSPECTION CERTIFICATE		CERT. TYPE	CMTR Nr.	SHEET	
Declarations		ISO 10474 EN 10204 3.1	1902452/1 DATE 15/01/2020	8/8	
CUSTOMER :MSA A.S.		ORDER No.5A05318Q Date: 13/11/2019:			
DESTINATION :		PROJECT : No.:			
MSA A.S. HLUCINSKA 641 74722 - DOLNI BENEŠOV CZECH REPUBLIC		JOB No.:			
Conforming MACROETCH INSPECTION : CONFORMING ASTM A193-16 Ed. ASTM A320-17a Ed. ASTM A194-18 Ed. ASTM A194-16a Ed. (ONLY FOR Gr.4L) ASTM A194-4 MINIMUM TEMPERING TEMPERATURE : 595°C ASTM A194-2H MINIMUM TEMPERING TEMPERATURE : 455°C DECARBURIZATION TEST: CONFORMING EU DIR 2014/68/EU (PED) REQUIREMENTS : CONFORMING ELONGATION AFTER RUPTURE IS 14% MIN. MEASURED ON Lo=5,65Y _{So} * IMPACT TEST PERFORMED ON SUBSIZE SPECIMEN			Material Specification MSA/005850 - MSA/005801		
Coating 116 = HOT DIP GALVANIZED ACCORDING TO ASTM A 153 Cl.C 229 = OMEKOTE 3000 BLUE (PTFE)			Condition SO = SOLUTION TREATED BO = QUENCHED AND TEMPERED ST = SOLUTION TREATED / STRAIN HARDENED		
Generic Specification  MSA / s.p.a. Dolní Benešov 03.10					
OME Metallurgica Erbese S.r.l. Via Milano, 15 22035 ERBA (CO) Italy Phone +39 031 641605 r.a. - Fax +39 031 645618 E-Mail info.ome@ome.it - http://www.ome.it		Statement ALL THE MATERIALS SUPPLIED HAVE BEEN MANUFACTURED, EXAMINED AND TESTED SATISFACTORILY IN FULLY CONFORMITY WITH PURCHASE ORDER REQUIREMENTS AND APPLICABLE STANDARDS / SPECIFICATIONS. TEST PERFORMED BY QUALIFIED OPERATOR IN ACCORDANCE WITH MATERIAL FREE FROM MERCURY OR RADIO-ACTIVITY CONTAMINATION		Prepared  Approved  F 8.2 - CMTR - 30	

INSPECTION CERTIFICATE				CERT. TYPE		CMTR. Nr.	SHEET	ONE			
LIST OF SUPPLIED PRODUCTS				3.1		1902445/3	1/3				
CUSTOMER : MSA A.S.				ORDER No.: 5A051190 Date: 06/11/2019							
DESTINATION : MSA A.S. HLUCINSKA 641 74722 DOLNI BENEŠOV				PROJECT No.:							
				JOB No.:							
LOT	OME ITEM	P.O. ITEM	Q.TY	Dimension	Drawing No.	Spec / Grade	Heat No.	Marking	Cond.	Coat.	
L001	10	0010	50 No.	1 " 8 UNC x 120	ANSI B16.5	ASTMA 193 / A 193M B7M	3079649	Material Grade Trade Mark	BO		
				8-0460-0332/005859							
L002	20	0020	155 No.	1.1/8 " 8 UN x 130	ANSI B16.5	ASTMA 193 / A 193M B7M	3079649	Material Grade Trade Mark	BO		
				8-0460-0392/005859							
L003	30	0030	25 No.	1.1/4 " 8 UN x 155	ANSI B16.5	ASTMA 320 / A 320M L7M	260733	Material Grade Trade Mark	BO		
				8-0460-1413/005960							
L004	40	0040	10 No.	3/4 " 10 UNC x 125	ANSI B16.5	ASTMA 320 / A 320M L7	3065303	Material Grade Trade Mark	BO		
				8-0460-2760/005901							
L005	50	0050	50 No.	M16 x 2 x 105	DIN 976/B	ASTMA 193 / A 193M B7	BD4681	Material Grade Trade Mark	BO		
				8-0460-2471/005859							
L006	60	0060	30 No.	1.1/8 " 8 UN x 145	ANSI B16.5	ASTMA 193 / A 193M B7M	3079649	Material Grade Trade Mark	BO		
				8-0460-2662/005859							
L007	70	0070	85 No.	1.1/4 " 8 UN x 145	ANSI B16.5	ASTMA 320 / A 320M L7M	260733	Material Grade Trade Mark	BO		
				8-0460-2693/005960							
L008	80	0080	20 No.	5/8 " 11 UNC x 80	ANSI B16.5	ASTMA 193 / A 193M B7M	3079650	Material Grade Trade Mark	BO		
				8-0460-2932/005859							
L009	100	0100	40 No.	5/8 " 11 UNC x 70	ANSI B16.5	ASTMA 193 / A 193M B7M	3079652	Material Grade Trade Mark	BO		
				8-0460-3192/005859							
L010	120	0120	120 No.	1 " 8 UNC x 115	ANSI B16.5	ASTMA 193 / A 193M B7	3079649	Material Grade Trade Mark	BO		
				8-0460-3211/005915							
L011	150	0150	100 No.	M42 x 3 x 270	DIN 976/B	ASTMA 320 / A 320M L7M	BD4202	Material Grade Trade Mark	BO	132	
				8-0460-5467/005960							
L012	160	0160	50 No.	1 " 8 UNC x 125	ANSI B16.5	ASTMA 193 / A 193M B7	3079649	Material Grade Trade Mark	BO		
				8-0460-5621/005915							
L013	170	0170	90 No.	1 " 8 UNC	ANSI B16.2.2-Tab.10	ASTMA 194 / A 194M GR.2HM	1B0004681	Material Grade Trade Mark	BO		
				8-0602-0116/005859							
L014	180	0180	200 No.	1.1/8 " 8 UN	ANSI B16.2.2-Tab.10	ASTMA 194 / A 194M GR.2HM	1970576	Material Grade Trade Mark	BO		
				8-0602-0146/005859							
L015	190	0190	120 No.	1.1/4 " 8 UN	ANSI B16.2.2-Tab.10	ASTMA 194 / A 194M GR.7M	AJ1167	Material Grade Trade Mark	BO		
				8-0602-0157/005961							
L016	210	0210	60 No.	1/2 " 13 UNC	ANSI B16.2.2-Tab.10	ASTMA 194 / A 194M GR.2HM	1679154	Material Grade Trade Mark	BO		
				8-0602-0216/005859							
L017	230	0230	140 No.	1.7/8 " 8 UN	ANSI B16.2.2-Tab.10	ASTMA 194 / A 194M GR.2H	1B0002303	Material Grade Trade Mark	BO		
				8-0602-0482/005920							
L018	240	0240	150 No.	M42 x 3	DIN 934 (H=D)	ASTMA 194 / A 194M GR.7M	1376125	Material Grade Trade Mark	BO	132	
				8-0607-0281/005961							
L019	250	0250	80 No.	M16 x 2	DIN 934 (H=D)	ASTMA 194 / A 194M GR.2H	3080832	Material Grade Trade Mark	BO		
				8-0607-0605/005859							
L020	260	0260	270 No.	1.1/2 " 8 UN x 270	ANSI B16.5	ASTMA 193 / A 193M B7	260647	Material Grade Trade Mark	BO		
				8-0460-1661/005859							
L021	270	0270	130 No.	1.1/2 " 8 UN x 215	ANSI B16.5	ASTMA 193 / A 193M B7	260647	Material Grade Trade Mark	BO		
				8-0460-1711/005915							
L022	280	0280	10 No.	1/2 " 13 UNC x 65	ANSI B16.5	ASTMA 193 / A 193M B7	3079650	Material Grade Trade Mark	BO		
				8-0460-2761/005859							
VISUAL / DIMENSIONAL EXAMINATION : Conforming											
MELT PROCESS : Electric Furnace											
ONE Metallurgica Erbeso S.r.l. Via Milano, 15 22036 ERBA (CO) Italy Phone +39 031 641606 r.a. - Fax +39 031 641616 E-Mail: info.ome@oms.it - http://www.ome.it				MSA A.S. HLUCINSKA 641 74722 DOLNI BENEŠOV				Statement THE MATERIALS SUPPLIED HAVE BEEN MANUFACTURED, EXAMINED AND TESTED SATISFACTORILY IN FULLY CONFORMITY WITH PURCHASE ORDER REQUIREMENTS AND APPLICABLE STANDARDS / SPECIFICATIONS. TEST PERFORMED BY QUALIFIED OPERATOR N° 90761 MATERIAL FREE FROM MERCURY OR RADIOACTIVITY CONTAMINATION			

INSPECTION CERTIFICATE				CERT. TYPE		CMTR N°.	SHEET				
LIST OF SUPPLIED PRODUCTS				ISO 10474 EN 10204 3.1		1902445/3	2/8				
CUSTOMER : MSAA.S.				ORDER No.: 5A051190 Date: 08/11/2019							
DESTINATION : MSA.A.S. HLUCINSKA 641 74722 DOLNI BENEŠOV				PROJECT No.:							
				JOB No.:							
LOT	OME ITEM	P.O. ITEM	Q.TY	Dimension	Drawing No.	Spec / Grade	Heat No.	Marking	Cond.	Cost.	
L017	290	0290	570 No.	1.1/2" 8 UN x 240	ANSI B16.5 8-0460-5991/005859	ASTM A 193 / A 193M B7	260647	Material Grade Trade Mark	BO		
L019	300	0300	1980 No.	1.1/2" 8 UN	ANSI B16.2.2-Tab.10 8-0902-0265/005859	ASTM A 194 / A 194M GR.2H	1B0004982	Material Grade Trade Mark	BO		
L021	310	0310	180 No.	1.1/2" 8 UN	ANSI B16.2.2-Tab.10 8-0902-0265/005920	ASTM A 194 / A 194M GR.2H	1B0004982	Material Grade Trade Mark	BO		
VISUAL / DIMENSIONAL EXAMINATION : Conforming					MELT PROCESS : Electric Furnace						
OME Metallurgica Erbesa S.r.l. Via Milano, 15 22036 ERBA (CO) Italy Phone +39 031 641506 i.a. - Fax +39 031 645618 E-Mail: info.ome@ome.it - http://www.ome.it				Statement ALL THE MATERIALS SUPPLIED HAVE BEEN MANUFACTURED, EXAMINED AND TESTED SATISFACTORILY IN FULLY CONFORMITY WITH PURCHASE ORDER REQUIREMENTS AND APPLICABLE STANDARDS / SPECIFICATIONS. TEST PERFORMED BY QUALIFIED OPERATOR N° 00761 MATERIAL FREE FROM MERCURY OR RADIOACTIVITY CONTAMINATION				 		F 8.2 - CMTR - 20	

INSPECTION CERTIFICATE								CERT. TYPE		CMTR N°		SHEET							
HEAT ANALYSIS								ISO 16474 EN 10204		190246/3 DATE 23/01/2020		3/8							
CUSTOMER : MSA A.S.								ORDER No.: 5A051190 Date 08/11/2019											
DESTINATION : MSA A.S. HLUCINSKA 641 74722 DOLNI BENESOV								PROJECT No.:											
								JOB No.:											
LOT	Heat No.	C	Mn	Si	P	S	Cr	Ni	Mo	V	Ti	Cu	W	Al	B	Nb	Co		
		Zn	Pb	Sn	Be	O	N	H	Fe	Nb+Ta	Co	Al+Ti	Co+Ta	Se	Bi	Ca	Mg		
L001	3079649	0,418	0,837	0,223	0,005	0,001	1,032		0,214										
L002	3079649	0,418	0,837	0,223	0,005	0,001	1,032		0,214										
L003	260733	0,387	0,797	0,228	0,012	0,006	1,004		0,178										
L004	3085303	0,388	0,833	0,239	0,010	0,002	0,963		0,213										
L005	BD4681	0,395	0,790	0,190	0,008	0,004	0,930		0,170										
L006	3079650	0,405	0,838	0,169	0,007	0,007	0,958		0,216										
L007	3079652	0,390	0,851	0,171	0,008	0,008	0,953		0,215										
L008	3079649	0,418	0,837	0,223	0,005	0,001	1,032		0,214										
L009	BD4202	0,415	0,780	0,180	0,010	0,002	1,040		0,170										
L010	1B0004981	0,483	0,706	0,293	0,010	0,025													
L011	18/70576	0,490	0,800	0,220	0,019	0,020													
L012	AJ1167	0,410	0,850	0,230	0,007	0,014	1,080		0,200										
L013	16/79154	0,480	0,760	0,230	0,021	0,020													
L014	1B0002303	0,487	0,748	0,267	0,012	0,023													
L015	13/76125	0,400	0,770	0,260	0,023	0,012	1,000		0,150										
L016	3080832	0,475	0,751	0,295	0,010	0,025													
L017	260647	0,415	0,795	0,219	0,011	0,005	1,046		0,180										
L018	3079650	0,405	0,838	0,169	0,007	0,007	0,958		0,215										
L019	1B0004982	0,473	0,744	0,277	0,012	0,026													
L020	260647	0,415	0,795	0,219	0,011	0,005	1,046		0,180										
L021	1B0004982	0,473	0,744	0,277	0,012	0,026													
OME Metallurgica Erbesse S.r.l. Via Milano, 15 22030 ERBA (CO) Italy Phone +39 031 641606 r.a. - Fax +39 031 645618 E-Mail: info.ome@ome.it - http://www.ome.it								STATEMENT THE MATERIALS SUPPLIED HAVE BEEN MANUFACTURED, EXAMINED AND TESTED SATISFACTORILY IN FULLY CONFORMITY WITH PURCHASE ORDER REQUIREMENTS AND APPLICABLE STANDARDS / SPECIFICATIONS. TEST PERFORMED BY QUALIFIED OPERATOR N° 00761 MATERIAL FREE FROM MERCURY OR RADIO-ACTIVITY CONTAMINATION											
F.8.2 - CMTR - 29																			

INSPECTION CERTIFICATE					CERT. TYPE		CMTR Nr.		SHEET						
TENSILE TEST					ISO 10474 EN 10204 3.1		1802445/3 DATE 23/01/2020		4/8						
CUSTOMER : MSAA.S.					ORDER No.: 5A051190 Date: 08/11/2019										
DESTINATION : MSAA.S. HLUCINSKA 841 74722 DOLNI BENEŠOV					PROJECT No.:										
					JOB No.:										
LOT	SPECIMEN				T °C	Measure Unit	REQUIRED VALUES				OBTAINED VALUES				
	NO.	DIA. mm	AREA mm ²	L mm			MIN Rp 0.2	R MIN MAX		MIN E %	MIN R.A. %	Rp 0.2	R	E %	R.A. %
L001		12,5	122,65	50,00	Room	MPa	550	590		18	50	608	725	25,8	63,5
L002		12,5	122,65	50,00	Room	MPa	550	590		18	50	597	725	26,1	64,7
L003		12,5	122,65	50,00	Room	MPa	550	590		18	50	632	731	20,6	63,2
L004		12,5	122,65	50,00	Room	MPa	725	860		16	50	856	969	18,4	58,3
L005		8,75	60,10	35,00	Room	MPa	720	860		16	50	854	1039	20,6	55,9
L006		8,75	60,10	35,00	Room	MPa	550	590		18	50	613	725	24,4	62,0
L007		8,75	60,10	35,00	Room	MPa	550	590		18	50	671	708	26,5	67,4
L008		12,5	122,65	50,00	Room	MPa	720	860		16	50	846	960	18,2	58,1
L009		12,5	122,65	50,00	Room	MPa	550	590		18	50	632	748	25,0	62,7
L010		12,5	122,65	50,00	Room	MPa	720	860		16	50	878	964	23,3	64,3
L018		8,75	60,10	35,00	Room	MPa	720	860		16	50	818	935	20,9	60,4
L020		12,5	122,65	50,00	Room	MPa	720	860		16	50	799	905	21,4	59,7
OME Metallurgica Erbesse S.r.l. Via Milano, 16 22036 ERBA (CO) Italy Phone +39 031 641606 r.s. - Fax +39 031 645618 E-Mail: info.ome@ome.it - http://www.ome.it						Statement ALL THE MATERIALS SUPPLIED HAVE BEEN MANUFACTURED, EXAMINED AND TESTED SATISFACTORILY IN FULLY CONFORMITY WITH PURCHASE ORDER REQUIREMENTS AND APPLICABLE STANDARDS / SPECIFICATIONS. TEST PERFORMED BY QUALIFIED OPERATOR IP 30761 MATERIAL FREE FROM MERCURY OR RADIOACTIVITY CONTAMINATION									
												F 8.2 - CMTR - 05			

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[illegible]

INSPECTION CERTIFICATE										CERT. TYPE		CMTR N°.		SHEET									
HARDNESS TEST										ISO 10474 3.1 EN 10204		1002445/3 DATE 23/01/2020		6/8									
CUSTOMER : MSAA.S.										ORDER No.: 5AD5119D Date: 08/11/2019													
DESTINATION : MSAA.S. MLUCINSKA 641 74722 DOLNI BENESOV										PROJECT No.:													
										JOB No.:													
LOT	NO. OF TEST	REQUIRED VALUES										OBTAINED VALUES											
		AFTER HEAT TREAT. x 24h				ROOM TEMPERATURE						AFTER HEAT TREAT. x 24h				ROOM TEMPERATURE							
		HB	HRB	T °C	HARD. MIN	HB	HRB	HRC	HV	HARDNESS		CONTR.	HARDNESS		CONTR.	HARDNESS		PL		CPL			
										MIN	MAX		MIN	MAX		QTY	MIN	MAX	QTY	MIN	MAX	C	NC
L001					X					235				1	222	225							
L001					X					235				100%	221	230							
L002					X					235				1	218	226							
L002					X					235				100%	220	223							
L003					X					205	235			1	222	225							
3					X					205	235			100%	221	229							
L004					X					321				1	300	301							
L005					X					321				1	267	290							
L006					X					235				1	227	228							
L006					X					235				100%	225	230							
L007					X					235				1	227	228							
L007					X					235				100%	226	229							
L008					X					321				1	297	303							
L008					X					205	235			1	232	233							
L009					X					205	235			100%	230	235							
L010			X	540	84	X				159	235	1	95		1	215	218	X					
L010					X					159	235				100%	214	220						
L011			X	540	84	X				159	235	1	89		1	208	210	X					
L011					X					159	235				100%	206	214						
2			X	590	84	X				159	190	1	90		1	175	178	X					
L012					X					159	190				100%	170	179						
L013			X	540	84	X				159	235	1	89		1	221	229	X					
L013					X					159	235				100%	215	234						
L014			X	540	79	X				212	327	1	92		1	252	269						
L015			X	590	84	X				159	190	1	92		1	161	165						
L015					X					159	190				100%	160	169						
L016			X	540	89	X				248	327	1	93		1	260	268	X					
L017					X					321					1	300	305						
L018					X					321					1	290	281						
L019			X	540	89	X				248	327	2	94		2	255	263	X					
L020					X					321					1	285	293						
PL = Proof Load CPL = Cone Proof Load C = Conforming NC = Not Conforming																							
OME Metallurgica Erbesse S.r.l. Via Milano, 15 22036 ERBA (CO) Italy Phone +39 031 641606 r.a. - Fax +39 031 641606 E-Mail: info.ome@ome.it - http://www.ome.it										Statement ALL THE MATERIALS SUPPLIED HAVE BEEN MANUFACTURED, EXAMINED AND TESTED SATISFACTORILY IN FULLY CONFORMITY WITH PURCHASE ORDER REQUIREMENTS AND APPLICABLE STANDARDS / SPECIFICATIONS. TEST PERFORMED BY QUALIFIED OPERATOR V. BENEŠ MATERIAL FREE FROM MERCURY OR RADIOACTIVITY CONTAMINATION													
F 8.2 - CMTR - 07																							

INSPECTION CERTIFICATE		CERT. TYPE	CMTR Nr.	SHEET	
Declarations		ISO 10474 EN 10204 3.1	1902445/3 DATE 23/01/2020	8/8	
CUSTOMER MSA A.S.		ORDER No.5A051190 Date: 08/11/2019:			
DESTINATION: MSA A.S. HLUCINSKA 641 74722 DOLNI BENESOV		PROJECT: No.:			
		JOB No.:			
Conforming MACROETCH INSPECTION : CONFORMING ASTM A193-16 Ed. ASTM A320-17a Ed. ASTM A194-18 Ed. ASTM A194-2HM MINIMUM TEMPERING TEMPERATURE : 820°C ASTM A194-2H MINIMUM TEMPERING TEMPERATURE : 455°C ASTM A194-7M MINIMUM TEMPERING TEMPERATURE : 620°C DECARBURIZATION TEST: CONFORMING For Item(s) 0020,0180,0240,0190 100% HARDNESS ACC. ASTM E569 For L009 : stress-relieving operation conducted at 1150 °F (620 °C) minimum, after machining and rolling of the threads. FOR ITEM(S) 0030, 0070, 0150, 0190, 0240 : UT EXAMINATION CONFORMING: NO DEFECTS FOUND		Material Specification MSA/005859 MSA/005960 MSA/005801 MSA/005961 EU DIR 2014/68/EU (PED) REQUIREMENTS : CONFORMING ELONGATION AFTER RUPTURE IS 14% MIN. MEASURED ON L=5,65xS _o KV IMPACT TEST AT -50°C / MINIMUM REQUIRED VALUES 30 J/Cm2 * IMPACT TEST PERFORMED ON SUBSIZE SPECIMEN L003 OBTAINED VALUES : 75-81-78 / Ave. 78 J/Cm2 L009 OBTAINED VALUES : 74-74-71 / Ave. 73 J/Cm2 L012 OBTAINED VALUES : 81-81-79 / Ave. 80 J/Cm2 L015 OBTAINED VALUES : 81-79-77 / Ave. 79 J/Cm2			
Coating 132 = ZINC PLATED ACCORDING TO ASTM B 833 (YELLOW)		Condition BO = QUENCHED AND TEMPERED			
Generic Specification  MSA CHELPIPE GROUP MSA, a.s. Dolní Benešov					
OME Metallurgica Erbose S.r.l. Via Milano, 15 22036 ERBA (CO) Italy Phone +39 031 641606 r.a. - Fax +39 031 645618 E-Mail: info.ome@ome.it - http://www.ome.it		Statement ALL THE MATERIALS SUPPLIED HAVE BEEN MANUFACTURED, EXAMINED AND TESTED SATISFACTORILY IN FULLY CONFORMITY WITH PURCHASE ORDER REQUIREMENTS AND APPLICABLE STANDARDS / SPECIFICATIONS. TEST PERFORMED BY QUALIFIED OPERATOR N° 00761 MATERIAL FREE FROM MERCURY OR RADIO-ACTIVITY CONTAMINATION		Prepared 	Approved  F.B.2 - CMTR - 30

Č.ext.obj.:

190602627

Číslo položky:

1

Číslo zákazky výrobcu:

FE 211977/1/1 292D075

Číslo dopravného prostriedku:

PE267CM PE023YD

Číslo ložného listu:

3001301

Výrobok:

Rúry oceľové bezošvé, valcované za tepla - rúry pre tlakové účely

Zákazník/Prijemca:

Van Leeuwen Pipe and Tube, s.r.o.

Tuřanka 115

62700 Brno

CZECH REPUBLIC

Vonkajší priemer: **33.400 mm**
Hrúbka steny: **4.550 mm**
Dĺžka: **6000.000 mm [-0 +100] mm**
Počet kusov: **128**
Celková dĺžka: **774.00 m**
Celková hmotnosť: **2552.00 kg**

Materiál:

6 ASME SA-333/SA-333M Ed.2017, 6 ASTM A 333/A 333M -16

Stav dodania:

Normalizačné tvárnenie

Technické predpisy:

**ASME SA-333/SA-333M Ed.2017, ASME SA-999/SA-999M Ed.2017, ASTM A 333/A 333M -16,
ASTM A 999/A 999M -17, ASME B36.10M :2018**

Číslo tavby	Počet kusov	Dĺžka [m]	Hmotnosť [kg]	Druh tavenia
93028	128	774	2552	E

E = elektrická oblúčková pec

Druh ocele:

úplne uhludnená oceľ

Úprava povrchu:

Bez úpravy povrchu (neolejované)

Chemické zloženie:

Číslo tavby	Predpis	C [%]	Mn [%]	Si [%]	P [%]	S [%]	Cu [%]	Cr [%]	Ni [%]	Al [%]	Mo [%]	Ti [%]	V [%]	Nb [%]
		min.	0.29	0.10							0.12		0.080	0.020
		max.	0.24	1.35	0.025	0.025	0.40	0.30	0.40					
93028		0.16	0.51	0.23	0.013	0.005	0.19	0.06	0.07	0.024	0.01	0.001	0.007	0.001

Miesto v Podbrezovej

Dátum **08.07.2019**

Závodný znalec

Ing. Vojtas Miroslav

sna

Železiarne Podbrezová s.r.o., Kolárova 15, 970 81 Podbrezová, Slovak Republic

Phone: +421 48 645 1011, Fax: +421 48 645 1012, www.steeltube.sk

CIN 31 562 141, VAT No SK2020458704

Bank account: Slovenská sporiteľňa a.s., IBAN SK66 0900 0000 0000 7990 0046 SWIFT (BIC) CIBASKBX

Registered in Register of Business Names in the District Court Banská Bystrica, Section S2, Entry No. 69/5



Číslo tavby	min. max.	N [%]
93028		0.0090

Skúška ťahom : 20 °C

Číslo tavby		Medza klzu	Pevnosť v ťahu	Ťažnosť
		ReH [MPa]	Rm [MPa]	2" [%]
C. Nr	Predpis:	240	415	*
	min. max.	---	---	---
1	93028	392	492	34.4
2	93028	390	491	35.0
3	93028	395	496	34.0
4	93028	391	491	35.4
5	93028	394	495	34.6
6	93028	390	491	35.6

* Ťažnosť : min. 1.87*s+15

Skúška rázom v ohybe Charpy:

C. Nr	Číslo tavby	Predpis min.-max. [J]	Jednotlivé hodnoty [J]	Priemerná hodnota [J]	Teplota skúšania [°C]
1	93028	KV 7 - ---	38, 40, 43	40	-53

Skúška stlačením vyhovela.

Skúška vírivými prúdmi vyhovela ASME SA-999/E309 100 % Priemer vývrtu 1.40 mm

Skúška vírivými prúdmi vyhovela ASTM A 999/E 309 100 % Priemer vývrtu 1.40 mm

Rádioizotopická aktivita je max. 100 Bq/kg.

Všetky výrobky vyhovujú vyššie uvedeným normám a požiadavkám v objednávke.

Vizuálna kontrola a rozmery vyhoveli (100 %).

Miesto v Podbrezovej

Dátum 08.07.2019

Závodný znalec

Ing. Vojtas Miroslav

SNA

Železárne Podbrezová a.s. Kolkárova 35 476 81 Podbrezová Slovenská Republika
Phone +421 48 645 1031 Fax +421 48 645 3032 www.steeltime.sk
CTN 31 562 141 VAT No SK2020458704
Bank account Slovenská sporiteľňa, a.s. IBAN SK64 0900 0000 0000 7990 0086 SWIFT (BIC) GIBASKE33
Registered in Register of Business Names in the District Court Bratislava Section Sa Entry No 619/S



