



Page 1 of 2  
Certificate No. OSL2350159/1  
First Date of Inspection 18 October 2023  
Final Date of Inspection 18 October 2023  
Office Oslo

## Certificate for Machinery Equipment

### Valves

This is to certify that the undersigned Surveyor to LLOYD'S REGISTER did at the request of the below client, attend the testing and examination of the product(s) described below in accordance with the relevant Rules and Regulations for the Classification of Ships and found it/them satisfactory.

### General information

Customer	Jotron Skipper AS
Purchase Order No	124061
Manufacturer	Jotron Skipper AS
Intended for	Warehouse
Customer Work Order No	124061
Date of issue	19 October 2023
Quantity	1 out of 2 Batch

### Particulars

Description	5 off ETNST-LR Transducer tanks
Size	Hight: 281 mm, Diameter: 219 mm
Valve body material	316/316L
Test pressure body	NA
Test pressure seat	NA
Design pressure	NA
Set pressure if applicable	NA

### Identification Marks On Product

I.D number	OSL2350159
Surveyors initials	NA
Date of inspection	NA

### Remarks

*No remarks raised*

Stein Vangen  
Lloyd's Register EMEA  
A subsidiary of Lloyd's Register Group Limited



Page 2 of 2  
Certificate No. OSL2350159/1  
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Description	Manufacturer Designation	Serial Number	IMO Number
Standard tanks		N142SGK8	0

# PICKING LIST

**SKIPPER**

SKI-NO:PWO/118326



Printed: 16.10.2023 - 09:46

Operation number  
**100**



Operation  
**Tank approval**

Manufacturing area  
**PRODUCTION**

Remaining quantity  
**5 stk**

Note

**ETNST-LR**

Stockloc / Details	Assignment	Quantity	Product
<b>For operation number 100</b>			
<b>1-PALL-09</b> 1-PALL-09	<b>SSA/130646-1</b> 28 stk	<b>5 stk</b>	<b>ETNST</b> Tank, steel with approval DNV, TB-2002
<b>3-PRINT</b> 3-PRINT	<b>SSA/123544-1</b> 6 stk	<b>2 stk</b>	<b>ZZA-01127</b> Metallised polyester label on roll
<b>3-PRINT</b> 3-PRINT	<b>SSA/126430-1</b> 546.5 stk	<b>3 stk</b>	<b>ZZA-01127</b> Metallised polyester label on roll

## Additional parts

Product	Stockloc	Quantity
<b>TA-LR</b> Tank approval from LR		<b>5 stk</b>



## SAMSVARSERKLÆRING

Leverandør / produsent:  
Asen Dreierverksted AS

Sendt dato:  
Ski 12/09-23

SKIPPER bestillings nr:	SKIPPER varenummer:	Revisjon:	Antall levert:
106317	TB-2002	01	24

Stål produsentens Heat / Charge nr:

Batch nr (år-uke-løpenummer):

*Eks på batch nr: **13353***

1. Gland CH-276262

23361

2. Topp lokk CH-T17533

Hvis samme varenummer blir levert mer enn en gang i uken, skal løpenummer endres fra 1 til 2 o.s.v.

3. Tønne /Rør CH-45454K/1

4. Inner ring CH-478089

Produsenten/leverandøren erklærer herved at produktet er laget i henhold til SKIPPERs seneste godkjente tegning, og i samsvar med SKIPPERs bestilling.

***Dette skjemaet skal følge med varene som blir levert til SKIPPER, og evt. skannes og sendes til SKIPPER sammen med materialsertifikat.***

Produktet er målt, kontrollert og godkjent av:

Stempel / Sign:

A handwritten signature in blue ink, appearing to read "André Eil", is written over a horizontal line.

The logo for Asen Dreierverksted AS features a stylized gear icon to the left of the text "ASEN DREIERVERKSTED AS".



# AASEN DREIERVERKSTED A.S

HAUGENVEIEN 4 - 1400 SKI

TLF: 64 94 67 87

FAX: 64 94 51 11

Jotron Skipper AS

Postboks 151, Manglerud

0612 OSLO

[www.aasendv.no](http://www.aasendv.no)

[post@aaasendv.no](mailto:post@aaasendv.no)

Foretaksreg.: NO 817 694 942 MVA

telefon

kontakttype

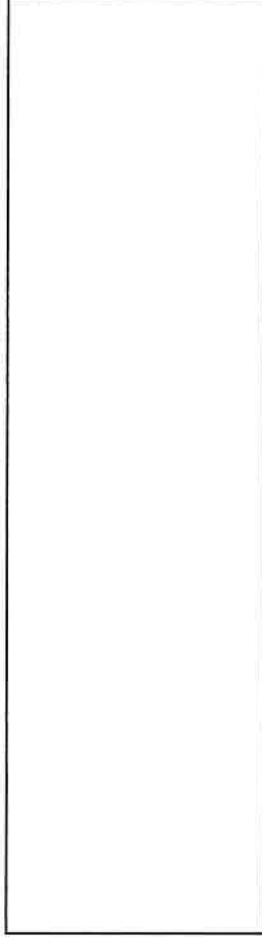
epost [invoice@skipper.no](mailto:invoice@skipper.no)

## Følgeseddel.nr

10487

Dato

tirsdag 12. september 2023



postboks

Antall	Best.nr.	Tegningsnr.	Tittel	Art.nr.	Ch.nr.	Matkval.	Stk.pris	Pris
2	106317		Europall med karm				kr 625,00	1 250,00
90 24	106317	TB-2002 rev.01	Tank Standard , steel		276262,T1753	S355	kr 3 672,00	110 160,00

Pris eks Mva

111 410,00



**ACCIAIERIE BERTOLI SAFAU**  
ABSOLUTE STEEL QUALITY

**ACCIAIERIE BERTOLI SAFAU SpA**  
Via Buttrio n.28 - Frazione Carnazzo - 33050 Pozzuolo del Friuli (UD)  
Tel. +39 0432 613211 - Fax +39 0432 613209 - www.absacciai.it

## CERTIFICATO DI COLLAUDO

Inspection Certificate 3.1/Certificat de reception 3.1/  
Abnahmeprüfzeugnis 3.1

N. 337185 / 1  
Data 11.07.2022  
COLATA N. 276262  
Heat-Code-Schmelze  
Pag. 1 / 2

**CLIENTE** STENA STAL AB  
Customer-Client-Besteller  
**PROFILO** HOT ROLLED ROUND BARS , 70 MM -  
Shape-Section-Profil  
**ACCIAIO** S355J2+AR / ST52.3  
Steel-Acier-Stahl

**ORDINE** 7279025  
Order-Commande-Bestellung  
**STATO DI FORNITURA** UNTREATED  
Supply-Condition-Etat de livraison  
**COMESSA/POS** 1086989/70  
Sales-Order-Form  
**MATERIALE CLIENTE** 216066  
Customer Material Code

**CAPITOLATO ABS:** ABS  
Technical Specification:  
**CAPITOLATO DI ANALISI:** EN10025-2/DIN17100 (ASQ) REV.0 2022.03  
Material Specification:  
**CAPITOLATO DI FORNITURA:**  
Technical Delivery Requirements:

### COMPOSIZIONE CHIMICA DI COLATA %

CAST ANALYSIS % - COMPOSITION CHIMIQUE DE COULEE % - SCHMELZE CHEMISCHE ANALYSE %

	C	Mn	Si	P	S	Cr	Ni	Mo	Al (T)	Cu	Sn	Ti
Min	0,160	0,60	0,15		0,020				0,015			
Max	0,200	1,35	0,30	0,025	0,035	0,29	0,42	0,11	0,050	0,55	0,030	0,0200
Colata/Heat	0,166	1,17	0,20	0,015	0,024	0,16	0,18	0,05	0,015	0,29	0,012	0,0021
	B (T)	V	Nb	As	Ca	Sb	Co	Pb	O/ppm	H/ppm	N/ppm	C EO. LONG FORMULA
Min												
Max	0,0008	0,080	0,020	0,020	0,0020	0,050	0,100	0,1000	20,00	2,00	120	0,450
Colata/Heat	0,0001	0,004	0,001	0,006	0,0002	0,001	0,011	0,0001	11,00	0,90	71	0,435

### CARATT. MECCANICHE

MECHANICAL PROPERTIES - CARACTERISTIQUES MECANIQUE - MECHANISCHE EIGENSCHAFTEN

TENSILE/IMPACT TEST ON PRODUCT

TRATTAMENTO TERMICO HEAT TREATMENT

### TRAZIONE TENSILE TEST

	R LONG.	REH	A%5D LONG.									
Min	470Mpa	325Mpa	20%									
Max	630Mpa											
Colata/Heat	516Mpa	328Mpa	26,5%									

### RESILIENZE IMPACT TEST

	KV -20°C Long	KV -20°C Long	KV -20°C Long	KV 0°C Long	KV 0°C Long	KV 0°C Long						
Min	27J	27J	27J									
Max												
Colata/Heat	63J	70J	51J	94J	105J	89J						

### DUREZZE HARDNESS

	ON SURFACE	SURFACE HARDNESS					
Min							
Max	999HBW	238HB					
Colata/Heat	158HBW	158HB					

IMPACT TEST ACC. TO EN ISO 148-1

TENSILE TEST ACC. TO EN ISO 6892-1

### INCLUSIONI NON METALLICHE

NON METALLIC INCLUSION - INCLUSIONS NON METALLIQUES - PRUFUNG NICHTMETALLISCHE EINSCHLUSSE

	Tipo A Type A	Tipo B Type B	Tipo C Type C	Tipo D Type D
Fine Thin	2	1	0	1
Grosso Heavy	1,5	0,5	0	0,5

MICROINCLUSIONS : METHOD A

MICROINCLUSIONS: STANDARD ISO 4967/ASTM E45

### GRANO

GRAIN - GRAIN - KORNGROSSE

C GRAIN : STANDARD EN ISO 643/ASTM E45

C GRAIN: METHOD MC QUAD



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N. 337185 / 1  
Data 11.07.2022  
COLATA N. 276262  
Heat-Contée-Schmelze  
Pag. 2 / 2

TEMPERATURE AUSTENITIC GRAIN 920 °C

AUSTENITIC GRAIN SIZE 8

### NOTE

INTERNAL DEFECT METHOD UT 100%

INTERNAL DEFECTS EN10308 CL.4/SEP1920 CL.C

ANTIMIX 100 %

R/R = 15

TEST CERTIFICATE ISSUED ACCORDING TO: EN 10204/3.1

FINE GRAIN STEEL .

ELECTRIC ARC FURNACE STEEL .

VACUUM DEGASSED STEEL .

COUNTRY OF ORIGIN : ITALY

FULLY KILLED .

- Material free from lead, mercury, cadmium and hexavalent chromium (dir. 2000/53/CE - dir. 2011/65/UE as amended)

- Material with radioactivity not exceeding 0,1Bq/g (d.lgs. 230/1995 as amended)

### CONTROLLO QUALITA'

QUALITY CONTROL - CONTROLE DE QUALITE - QUALITÄTSSTÜBE

Company with a management system certified by IGQ to  
ISO 9001 and IATF 16949

Verif.:Giovanna Rojatti



**TŘINECKÉ ŽELEZÁŘNY**  
**MORAVIA STEEL**

A02 Art der Prüfbescheinigung / Type of inspection document

**Abnahmeprüfzeugnis 3.1 - Inspection certificate 3.1, EN 10204:2004**

A01/A05 Herstellerwerk / Manufacturer  
Issued by

TŘINECKÉ ŽELEZÁŘNY, a.s.,  
Průmyslová 1000, Staré Město, 739 61 Třinec, Czech Republic  
VZ - Sochorová válcovna, 272 01 Kladno - Dříň, Czech Republic

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A03 Bescheinigungsnummer / Document No.

2023/01/008279-CAN

A07 Kundenbestellnummer / Purchaser's order No.

7265101

A06 Empfänger / Consignee

Stena Stal AB

A10 Kontraktnummer / Contract No.

0041668501

Fabrikgatan 14

A08 Werksauftragsnummer / Manufacturer's order No.

7000507359/000010

331 35 Värnamo

Sweden

B01, B09-B11 Spezifikation der Produkt / Masse / Toleranz Product description / Dimensions / Toleranze	B02, B04 Stahlbezeichnung / Lieferzustand Steel designation / Deliv. state	B03 Materialnorm Classification standard	B03 Massnorm Dimensional standard
HOT ROLLED ROUND STEEL BARS  200 mm + 2,500 - 2,500 6,000 m +200 -0 Straightness 0,200%	S355J2 +N	EN 10025-2:2019 Material Spec. S355J2 (+N) / 12.03.2014 Rev.2	EN 10060

A11 Wagen Nr. Waggon No.	A13 Lieferschein Nr. Delivery note	B07 Schmelze Heat No.	B08 Ringen / Stück Coils / Pieces	B08 Krbd Crbd	B13 Gewicht (kg) Weight (kgs)
ZS312JT ZSWAH62	23/01/004375/01 20.01.2023	T17533	6	0	9175

B07, B14, C70 Schmelze / Herstellungsjahr/ Stahlherstellung Heat No. / Year of production/ Steelmaking process	C71-C92 Chemische Zusammensetzung-Chemical composition [%]									
T17533/2022 BOF-cc blooms	C	Mn	Si	P	S	Cr	Ni	Cu	Mo	Al
	0.18	1.27	0.378	0.018	0.004	0.07	0.04	0.02	0.010	0.026
	Sn	V	Ti	N	H	CEV				
	0.003	0.004	0.0018	0.0083	1.30 ppm	0.41				

Mechanische Werte-Mechanical values									
B07 Schmelze Heat No.	B05 Probezustand Test state	C11 Streckgrenze Yield point Re[MPa]	C12 Zugfestigkeit Tensile strength Rm [MPa]	C13 Bruchdehnung Elongation A5 [%]	C14 Brucheinschn. Contraction Z [%]	B05 Probezustand Test state	C03 Prüftemperatur Test temperature	C40, C42 Schlagarbeit Energy of impact KV [J] / KCV [J/cm <sup>2</sup> ]	
T17533	+N	382	524	31,8	67,1	+N	- 20 °C	147,0	117,0
								140,0	





**TŘINECKÉ ŽELEZÁŘNY**  
**MORAVIA STEEL**

A02 Art der Prüfbescheinigung / Type of inspection document

**Abnahmeprüfzeugnis 3.1 - Inspection certificate 3.1, EN 10204:2004**

A01/A05 Herstellerwerk / Manufacturer  
Issued by

**TŘINECKÉ ŽELEZÁŘNY, a.s.,**  
**Průmyslová 1000, Staré Město, 739 61 Třinec, Czech Republic**  
**VZ - Sochorová válcovna, 272 01 Kladno - Dřín, Czech Republic**

A03 Bescheinigungsnummer / Document No.

**2023/01/008279-CAN**

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B07  
Schmelze  
Heat No.

D56  
Stampfproben  
Heading tests  
(EN 10263-1)

D57  
Entkohlen  
Decarburization  
(max. / mm)

C54  
Reinheitsgrad  
Micropurity  
(DIN 50602)

C57  
Korngröße  
Grain size

C30  
Härte HB  
Hardness HB

C93  
Vakuumdegasung  
Vacuum degassing

T17533

yes

B07  
Schmelze  
Heat No.

D53  
Verwechseleinprüfung 100%  
Sparking test 100%

D02  
US Prüfung  
US test

D54  
Oberflächenfehler  
Surface defects

T17533

O.K.

EN 10308 class 2

1 %

B07  
Schmelze  
Heat No.

D61  
Umformungsgrad  
Reduction ratio

T17533

4, 2

Z04



D01

Die Kontrolle der Oberfläche, Form und Abmessung entspricht der Bestellung.  
Control of surface, shape and dimension corresponds to the order.

D05

Unsere Erzeugnisse sind frei von schädlichen Bestandteilen, welche zu toxischen Emissionen führen. Die Produkte sind ebenso frei von Radioaktivität und sonstigen Verunreinigungen, welche Erdboden, Luft und Wasser belasten könnten.

Products which do not cause harmful emission of toxic gasses, dangerous particles or radiation to the indoor environment nor contamination of the outdoor environment (air, soil, or water)

Die Radioisotopische Aktivität max. 100 Bq/kg wurde eingehalten.

Radio - isotopic activity was controlled in ladle sample, it was no higher than 100 Bq/kg.

Z01

Die obengenannten Erzeugnisse entsprechen den Bestimmungsvorschriften.

Products conform with the prescription of order.

A04 Herstellerzeichen / Manufacturer's logo



Z03

Die elektronische Version dieses Dokuments ist mittels elektronischer Unterschrift entsprechend der Anordnung (EU) Nr. 910/2014 geschützt.

Electronical version of this document is protected by the electronical signature according to Regulation (EU) No. 910/2014.

Z02

Der Werksachverständige -Expert :  
Soňa Čaniga,



Kladno: 20.01.2023

Der Sachbearbeiter der Qualitätskontrolle für Freigabe und Atteste, unabhängiger berechtigter Vertreter  
Officer of Quality Inspection of Releasing and Attesting, independent authorized agent

A02 **Inspection certificate "3.1" (EN 10 204)**

A03 Document No.: **71769/22**

Page: 1/1

A07	Customer's Order (P.O.) No./Item No.: <b>71277433</b>	A08	Manufacturer's Works Order No.: <b>57179/0/22</b>														
A11	Supplier's Order No.: <b>3151018211</b>	A10	Advice - Note No.: <b>8150085440</b>														
B08, B12/13	Quantity delivered: <table border="1"> <tr> <td>pcs</td> <td>mtrs</td> <td>kg</td> </tr> <tr> <td>bdls</td> <td>feet</td> <td>lbs</td> </tr> <tr> <td><b>8</b></td> <td><b>51,838</b></td> <td><b>5596</b></td> </tr> </table>	pcs	mtrs	kg	bdls	feet	lbs	<b>8</b>	<b>51,838</b>	<b>5596</b>	A06	Customer / Consignee:  <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p><b>Salzgitter Mannesmann Stahlhandel GMBH</b>  <b>SCHWANNSTR. 12</b>  <b>40476 DUESSELDORF</b>  <b>Germany</b></p> </div>					
pcs	mtrs	kg															
bdls	feet	lbs															
<b>8</b>	<b>51,838</b>	<b>5596</b>															
B09-11	Dimensions: <b>219,1 x 22,20 mm</b>																
B02	Steel designation: <b>S355J2H E355N P355N St 52.0</b>																
B01, B03, B04	Product, conditions and terms of delivery: <b>Nahtlose Stahlrohre - Seamless steel tubes,</b> <b>EN 10220/2002, DIN 2448/81, DIN 1629/84, EN 10210-1/06,2/19 (CE), EN 10297-1/03,</b> <b>EN 10216-3/13 TC1 - AD-2000Merkblatt W4/2013, PED 2014/68/EU (TÜV NORD).</b> <b>Normalglühender Zustand - Normalized.</b>																
A04, B06	Marking: Manufacturer's mark, mill inspector's stamp  <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="font-size: 2em; font-weight: bold;">LO</div> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div>																
C71-92	Heat chemical analysis (%)												C70	Steel made by basic oxygen process, fully killed, strand cast.			
B07	Heat No.:	C	MN	SI	P	S	CU	NI	CR	ALT	N	MO	V	TI	NB	CEQ	
	45454K	0,13	1,23	0,330	0,012	0,005	0,14	0,04	0,06	0,033	0,0078	0,016	0,063	0,002	0,003	0,38	
Z99																	
B07	Test results: Heat No.    Specimen No.		MPa C11 Yield Point		MPa C12 Tensile Strength		% (5d) C13 Elongation		C40 43 Impact test T-10-27J / -20°C				C30 32 Hardness				
C04	Requirements:    P355N S355J2H E355N S52.0		min. 345 min. 345 min. 345 min. 345		490 - 630 470 - 630 min. 490 500 - 650		min. 22 min. 22 min. 20 min. 21										
	45454K/1		392		526		30,1		Ø            min				203    200    202    208				
Z99																	
D01	Visual and dimensional inspection with satisfactory results							X	D51 Hydrostatic test - min. test pressure								
C50	Flattening test (EN ISO 8492) - satisfactory								D02 The pipes tested on tightness by NDT								
C51	Expanding test (EN ISO 8493) - satisfactory								flux - leakage in acc. to SEP 1925-01-80, EN ISO 10893-1/11								
C52	Bending test (EN ISO 8491) - satisfactory								Rotomat DS - typ 6.720								
C53	Ring expanding test (EN ISO 8495) - satisfactory								D03 Nondestructive Electromagnetic Testing								
C54	Ring tensile test (EN ISO 8496) - satisfactory							X									
<p>The manufacturer has an established and certified management system according to ISO 9001:2015, ISO 14001:2015, ISO 50001:2011, ISO 45001:2018.</p> <p>Inspection certificate EN 10204-3.1 acc. to AD 2000-Guldeline W4 or W10; letter of agreement by TÜV NORD Systems, TÜV-file 4320118/01</p> <p>Abnahmeprüfzeugnis EN 10204-3.1 gemäß AD 2000-Merkblatt W4 oder W10; Zustimmungsschreiben der TÜV NORD Systems. TÜV-Az.: 4320118/01</p> <p>QA System has been subjected to a specific assessment acc. to directive 2014/68/EU, annex I, point 4.3 and AD 2000-Mbl. W0 by TÜV NORD Systems GmbH &amp; Co. KG. Welding process, personnel for welding and NDT are approved acc. to PED 2014/68/EU.</p> <p>Das QS-System wurde gemäß Richtlinie 2014/68/EU, Anhang I, Punkt 4.3 und AD 2000-Mbl W0 durch die TÜV NORD Systems GmbH &amp; Co. KG. zertifiziert.</p> <p>Schweißverfahren, Personal für Schweißen und zerstörungsfreie Prüfung sind nach PED 2014/68/EU zugelassen.</p> <p>LO a.s. and seamless tube materials approved as per VdTÜV-Werkstoffblatt 352/2 and 354/2.</p> <p>LO a.s. und Materials für nahtlose Rohre genehmigt nach VdTÜV-Werkstoffblatt 352/2 und 354/2.</p>																	
Z01	All pipes conform to the above mentioned standards and ordering requirements and agreements.																

Z02 Date of issue **25.4.2022/JN**

Tel: +420 595683644

A01 Liberty Ostrava a.s.  
A05 QA Department  
Vratimovská 689/117  
719 00 Ostrava-Kunčice  
Czech Republic



**Liberty Ostrava a.s.**  
Vratimovská 689/117, 719 00 Ostrava - Kunčice  
**QA - WORKS INSPECTOR**  
**IDENTIFICATION No. 4**

  
**Bc. Petr Pastucha**

Work's Inspector  
202 Validation

S8



**ACCIAIERIE BERTOLI SAFAU SpA**  
Via Buttrio n.28 - Frazione Cargnacco - 33050 Pozzuolo del Friuli (UD)  
Tel. +39 0432 613211 - Fax +39 0432 613209 - www.absacciai.it

## CERTIFICATO DI COLLAUDO

Inspection Certificate 3.1/Certificat de reception 3.1/  
Abnahmeprüfzeugnis 3.1

N. 359723 / 1  
Data 15.03.2023  
COLATA N. 478089  
Heat-Contac-Schmelze  
Pag. 1 / 2

CLIENTE Customer-Client-Besteller	STENA STAL AB	ORDINE Order-Commande-Bestellung	7297018
PROFILO Shape-Section-Profil	HOT ROLLED ROUND BARS , 190 MM -	STATO DI FORNITURA SupplyCondition-Etat de livraison	UNTREATED
ACCIAIO Steel-Acier-Stahl	S355J2+AR / ST52.3	COMESSA/POS Sales Order-Pos.	1091170/40
CAPITOLATO ABS: Technical Specification:	ABS	MATERIALE CLIENTE Customer Material Code	215396
CAPITOLATO DI ANALISI: Material Specification:	EN10025-2/DIN17100 (ASQ) REV.0 2022.03		
CAPITOLATO DI FORNITURA: Technical Delivery Requirements:			

### COMPOSIZIONE CHIMICA DI COLATA %

CAST ANALYSIS % - COMPOSITION CHIMIQUE DE COULEE % - SCHMELZE CHEMISCHE ANALYSE %

	C	Mn	Si	P	S	Cr	Ni	Mo	Al (T)	Cu	Sn	Ti
Min	0,160	0,60	0,15		0,020				0,015			
Max	0,200	1,35	0,30	0,025	0,035	0,29	0,42	0,11	0,050	0,55	0,030	0,0200
Colata/Heat	0,167	1,16	0,15	0,012	0,030	0,17	0,11	0,05	0,020	0,15	0,008	0,0018
	B (T)	V	Nb	As	Ca	Sb	Co	Pb	O/ppm	H/ppm	N/ppm	C EQ. LONG FORMULA
Min												
Max	0,0008	0,080	0,020	0,020	0,0020	0,050	0,100	0,1000	20,00	2,00	120	0,450
Colata/Heat	0,0001	0,003	0,003	0,004	0,0009	0,001	0,008	0,0001	11,00	0,80	73	0,422

### CARATT. MECCANICHE

MECHANICAL PROPERTIES - CARACTERISTIQUES MECANIQUE - MECHANISCHE EIGENSCHAFTER

TENSILE/IMPACT TEST ON PRODUCT	TRATTAMENTO TERMICO HEAT TREATMENT
--------------------------------	------------------------------------

#### TRAZIONE

TENSILE TEST

	R LONG.	REH	A%SD LONG.									
Min	450Mpa	285Mpa	17%									
Max	600Mpa											
Colata/Heat	509Mpa	333Mpa	28,1%									

#### RESILIENZE

IMPACT TEST

	KV -20°C Long	KV -20°C Long	KV -20°C Long	KV 0°C Long	KV 0°C Long	KV 0°C Long						
Min	27J	27J	27J									
Max												
Colata/Heat	35J	35J	37J	70J	72J	73J						

#### DUREZZE

HARDNESS

	ON SURFACE	SURFACE HARDNESS				
Min						
Max	999HBW	238HB				
Colata/Heat	143HBW	143HB				

IMPACT TEST: ACC. TO EN ISO 148-1

TENSILE TEST: ACC. TO EN ISO 6892-1

### INCLUSIONI NON METALLICHE

NON METALLIC INCLUSION - INCLUSIONS NON METALLIQUES - PRUFUNG NICHTMETALLISCHE EINSCHLUSSE

	Tipo A Type A	Tipo B Type B	Tipo C Type C	Tipo D Type D
Fine Thin	2,5	1	0	1
Grosso Heavy	1,5	0	0	0,5

MICROINCLUSIONS : METHOD A

MICROINCLUSIONS: STANDARD ISO 4967/ASTM E45

### GRANO

GRAIN - GRAIN - KORNGROSSE

AUSTENITIC GRAIN : STANDARD EN ISO 643/ASTM E45

AUSTENITIC GRAIN: METHOD MC QUAIID



ACCIAIERIE BERTOLI SAFAU  
ABSOLUTE STEEL QUALITY

ACCIAIERIE BERTOLI SAFAU SpA  
Via Buttrio n.28 - Frazione Cagnacco - 33050 Pozzuolo del Friuli (UD)  
Tel. +39 0432 613211 - Fax +39 0432 613209 - www.absacciai.it

## CERTIFICATO DI COLLAUDO

Inspection Certificate 3.1/Certificat de reception 3.1/  
Abnahmeprüfzeugnis 3.1

N. 359723 / 1  
Data 15.03.2023  
COLATA N. 478089  
Heat-Contrec-Schmelze  
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TEMPERATURE AUSTENITIC GRAIN 920 °C

AUSTENITIC GRAIN SIZE 8

### NOTE

INTERNAL DEFECT METHOD UT 100%

INTERNAL DEFECTS EN10308 CL.4/SEP1920 CL.C

ANTIMIX 100 %

TEST CERTIFICATE ISSUED ACCORDING TO: EN 10204/3.1

VACUUM DEGASSED STEEL .

ELECTRIC ARC FURNACE STEEL .

COUNTRY OF ORIGIN : ITALY

FULLY KILLED .

FINE GRAIN STEEL .

- Material free from lead, mercury, cadmium and hexavalent chromium (dir. 2000/53/CE - dir. 2011/65/UE as amended)
- Material with radioactivity not exceeding 0,1Bq/g (d.lgs. 230/1995 as amended)

### CONTROLLO QUALITA'

QUALITY CONTROL - CONTROLE DE QUALITE - QUALITÄTSSTEILE

Company with a management system certified by IGQ to  
ISO 9001 and IATF 16949

Verif.: Omar Tonetti