

A02/Z03

A06

PROCESSKONTROLL ITEMS AB  
STORA HÖGA INDUSTRIOMRÅDE  
VALLENVÄGEN 5  
444 60 STORA HÖGA  
SWEDEN

Customer References		A07
765253	Customer order	
	2024-03-22	
SEPROCESSK 9002757		

Alleima References			A08
Order No.	Subs No.	Dispatch note	
607806	726988	1563707	
Suppl. No			
0010099150			

Material Description		B01/B04
Metallurgical process	Origin	C70
Electric Arc Furnace+AOD	CZ	

Steel/material designations		B02

Technical Requirements		B03
Cover Sheet		
Please see appendix for results.		

Extent of delivery							B07-B13
lt	Product designation	Heat	Lot	Pcs	Kg	m	
1	3R60-9.53-2.11	0.390 kg/	570343	0002133480	133	300,0	798
	m			<b>Total</b>	<b>133</b>	<b>300,0</b>	<b>798</b>
	9.53 x 2.11						
The material is manufactured according to a Quality system, approved and registered to ISO 9001:2015.							

Quality assurance - Quality assurance - Helen Jämtemyr / QA-manager		A05/Z02



<b>Type of inspection document :</b> Inspection certificate acc. to EN 10204 / 3.1	A02	<b>Internal order No.:</b> 10083172 - 20	A08
<b>Purchaser :</b> ALLEIMA TUBE AB JARNVERKSLEDEN 8/CU NIKLAS PALMBLAD PHN; 4626265510 SE-811 81 SANDVIKEN SWEDEN	A06	<b>Purchase order No. :</b> 140003-4 STD <b>Purchaser's reference :</b> 140003-4 STD <b>Project Id. :</b> 4003771	A07
<b>Product :</b> Seamless cold finished tube	B01/B04	<b>Steel designation :</b> 3R60 / 3R60	B02
<b>Dimension (OD x WT) :</b> 9,53 x 2,11AW mm	B09/B10	<b>Melting process :</b> AOD	C70
<b>Technical requirements :</b> ASME SA213/SA213M-2023 ASTM A213/A213M-2022 ASTM A269/A269M-2015a (Reap.2019) EN 10216-5 TC1 2021 EN 10305-1 (Only Tolerances-Table 5) AD 2000 W2 Einbaurohre - 2022 AD 2000 W10 - 2019 NACE MR0175-2021/ISO 15156-3:2020, NACE MR0103/ISO 17945-1:2015 Alleima SPEC S-08921 PED 2014/68/EU			B03
<b>Supplementary information :</b> Manufacturing of stainless steel tubes in grade 3R60 / TP316/316L / UNS S31603 / 1.4435 from steel origin: Alleima Tube AB, Sweden. The qualified pre-material supplier is mentioned in the section "Extent of material delivery". Tube length 6000 mm (-0/+5 mm)			B14
The products, covered by this certificate, comply with specification and requirements of the order.			Z01
<b>Originator of the document :</b> QA - AC	A05/Z02	<b>Inspector's stamp:</b>	Z03

**Chemical composition (Heat analysis)**

Heat	C [%]	Si [%]	Mn [%]	P [%]	S [%]
570343	max 0.030 0,015	max 1.000 0,370	max 2.000 1,660	max 0.040 0,030	max 0.015 0,005

Heat	Cr [%]	Ni [%]	Mo [%]	N [%]	Co [%]
570343	17.000-18.000 17,260	12.500-14.000 13,090	2.500-3.000 2,640	max 0.100 0,047	info 0,110

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Heat	Ti [%] info
570343	<0,003

**Product check analysis**

Heat	Lot	C [%] max 0.030	Si [%] max 1.000	Mn [%] max 2.000	P [%] max 0.040	S [%] max 0.015
570343	2133480-11	0,017	0,380	1,710	0,030	0,002

Heat	Lot	Cr [%] 17.000-18.000	Ni [%] 12.500-14.000	Mo [%] 2.500-3.000	N [%] max 0.100
570343	2133480-11	17,500	12,860	2,630	0,060

**Extent of material delivery**

Heat	Lot	Hollow supp.	No. of HTcycles <sup>1)</sup>	Pieces	Total length [m]	Total weight [kg] <sup>2)</sup>
570343	2133480-11	ALLEIMA SE	1	595	3 570.000	1 392.300

Note : <sup>1)</sup> Number of heat treatment cycles performed on the tubes.

<sup>2)</sup> Weight quantity is theoretically calculated, it might differ compared to shipping documents.

Chomutov, date : 2.5.2024

Type of inspection document :

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Inspection certificate acc. to EN 10204 / 3.1

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**Flaring test in acc. with ASTM A 1016**

Heat	Lot	ST	Test result [pass/fail]
			pass
570343	2133480-11		pass
570343	2133480-11		pass

**Flaring test in acc. with EN 10216-5**

Heat	Lot	ST	Test result [pass/fail]
			pass
570343	2133480-11		pass

**Flattening test in acc. with ASTM A 1016**

Heat	Lot	ST	Test result [pass/fail]
			pass
570343	2133480-11		pass
570343	2133480-11		pass

**Hardness test (HRB/HRC) in acc. with E18/S-08921/NACE**

Heat	Lot	ST	Hardness [HRB]	Hardness $\leq$ 22HRC [yes/no]
			max 80,000	yes
570343	2133480-11		70,000	yes
570343	2133480-11		67,000	yes

**Intergranular corrosion testing in acc. with ASTM A262E**

Heat	Lot	ST	Test result [pass/fail]
			pass
570343	2133480-11		pass

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**Intergranular corrosion testing in acc. with EN ISO 3651-2/A**

Heat	Lot	ST	Test result [pass/fail]
570343	2133480-11		pass

**Longitudinal tensile test in acc. with A370 / EN ISO 6892-1**

Heat	Lot	ST	Rp0,2 [MPa]	Rm [MPa]	A2" [%]	A5 [%]	Rp1,0 [MPa]
570343	2133480-11		min 220,000 246,800	515,000-690,000 537,800	min 35,000 65,400	min 40,000 67,000	min 250,000 275,200

**Microstructure evaluation and Grain size WI-3815/ASTM E112**

The structure is free from grain boundary chromium carbide precipitations.

Heat	Lot	ST	G.B.Cr.Carbides [No/Yes]	Grain size [(G)]
570343	2133480-11		No	5,000-14,000 5,000

**Dimensional check**

Test results comply with specified criteria.

**HT - Final heat treatment of straight tubes**

Bright annealing at 1150°C with min. 0,25 minute holding time.  
Quenched by forced cooled inert gas.

**Inside cleanliness check**

Test results comply with specified criteria.

**NDT - Eddy current flaw detection in acc. E426/EN ISO 10893-1**

Test results comply with specified criteria.

**NDT - Visual inspection**

Test results comply with specified criteria.

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**PMI - 100% positive material identification**

Test results comply with specified criteria.

**Statement**

The raw material is free from radioactive contamination.

**Statement**

Material free from mercury and asbestos contamination.

**Statement**

The material have been manufactured within the scope of certified Quality Management System maintained in accordance with EN ISO 9001:2015.

**Straightness check**

Test results comply with specified criteria.