

Type of inspection document : Inspection certificate acc. to EN 10204 / 3.1		A02	Internal order No.: 10060666 - 21		A08
Purchaser : ALLEIMA BENELUX B.V. . AMUNDSENWEG 4 5928 LT VENLO THE NETHERLANDS		A06	Purchase order No. : 800774 Purchaser's reference : 800774 Project Id. : 4003408		A07
Product : Seamless cold finished tube		B01/B04	Steel designation : 254SMO / 254SMO		B02
Dimension (OD x WT) : 12,00 x 1,00AW mm		B09/B10	Melting process : AOD		C70
Technical requirements : ASME SA-213-2023 ASTM A213-2022 ASTM A269-2015a(Reap.2019) EN 10216-5 TC1 - 2021 NORSOK M650/M630,MDS R18, QTR/Type6Mo/INDUKCE/2022 EN 10305-1 (Only Tolerances - Table 5) PED 2014/68/EU ALLEIMA SPEC S-08921 Avesta KFS 993E NACE MR0175-2021/ISO 15156-3:2020, NACE MR0103/ISO 17945-1:2015					B03
Supplementary information : Manufacturing of stainless steel tubes in grade 254 SMO / UNS S31254 / 1.4547 from steel origin: Alleima Tube AB, Sweden The qualified pre-material supplier is mentioned in the section "Extent of material delivery". Tube lenght 6000 mm (-0/+5 mm)					B14
The products, covered by this certificate, comply with specification and requirements of the order.					Z01
Originator of the document : QA - AC		A05/Z02	Inspector's stamp:		Z03

Chemical composition (Heat analysis)

Heat	C [%]	Si [%]	Mn [%]	P [%]	S [%]
568695	max 0.020 0,011	max 0.700 0,460	max 1.000 0,530	max 0.030 0,021	max 0.010 <0,001

Heat	Cr [%]	Ni [%]	Mo [%]	Cu [%]	N [%]
568695	19.500-20.500 20,030	17.500-18.500 17,960	6.000-6.500 6,060	0.500-1.000 0,510	0.180-0.220 0,202

Type of inspection document :

A02

Inspection certificate acc. to EN 10204 / 3.1

Internal order No.:

A08

10060666 - 21

PRE**Heat****[-]**

min 40,000

568695

43,2

Product check analysis

The PRE number is min. 40 for each individual reading.

PRE = [%Cr] + 3.3 [%Mo] + 16 [%N]

Heat	Lot	C [%] max 0,020	Si [%] max 0,700	Mn [%] max 1,000	P [%] max 0,030	S [%] max 0,010
568695	2114472-11	0,016	0,450	0,540	0,018	<0,001

Heat	Lot	Cr [%] 19,500-20,500	Ni [%] 17,500-18,500	Mo [%] 6,000-6,500	Cu [%] 0,500-1,000	N [%] 0,180-0,220
568695	2114472-11	20,060	17,840	6,020	0,520	0,212

Extent of material delivery

Heat	Lot	Hollow supp.	No. of HTcycles ¹⁾	Pieces	Total length [m]	Total weight [kg] ²⁾
568695	2114472-11	ALLEIMA SE	1	500	3 000.000	831.000

Note : ¹⁾ Number of heat treatment cycles performed on the tubes.²⁾ Weight quantity is theoretically calculated, it might differ compared to shipping documents.

Chomutov, date : 27.11.2023

Type of inspection document :

A02

Inspection certificate acc. to EN 10204 / 3.1

Internal order No.:

A08

10060666 - 21

Flaring test in acc. with ASTM A 1016

Heat	Lot	ST	Test result [pass/fail]
			pass
568695	2114472-11		pass
568695	2114472-11		pass

Flaring test in acc. with EN 10216-5

Heat	Lot	ST	Test result [pass/fail]
			pass
568695	2114472-11		pass

Flattening test in acc. with ASTM A 1016

Heat	Lot	ST	Test result [pass/fail]
			pass
568695	2114472-11		pass
568695	2114472-11		pass

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

Heat	Lot	ST	Hardness [HRB]	Hardness ≤ 35 HRC [yes/no]
			max 90,000	yes
568695	2114472-11		88,000	yes
568695	2114472-11		88,000	yes

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

Heat	Lot	ST	Rp0,2 [MPa]	Rm [MPa]	A2" [%]	A5 [%]	Rp1,0 [MPa]
			min 310,000	675,000-850,000	min 35,000	min 35,000	min 340,000
568695	2114472-11		410,400	742,200	49,400	53,100	439,800

Type of inspection document :

A02

Inspection certificate acc. to EN 10204 / 3.1

Internal order No.:

A08

10060666 - 21

Microstructure evaluation and Grain size E112/KFS 993E 5.2 ab

Heat	Lot	ST	Microstructure [pass/fail]	Grain size [(G)]
			pass	3,000-14,000
568695	2114472-11		pass	6,000

Pitting corrosion test (50°C/24hours) in acc. G48A/NORSOK M630 MD

Heat	Lot	ST	Weight loss [g/m2]	Pitting [No/Yes]
			max 1,000	No
568695	2114472-11		0,000	No

Dimensional check

Test results comply with specified criteria.

HT - Final heat treatment of straight tubes

Bright annealing at 1200°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. ASTM E426

Test results comply with specified criteria.

NDT - Visual inspection

Test results comply with specified criteria.

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.

Manufacturer's works

A01

Type of inspection document :

A02

Inspection certificate acc. to EN 10204 / 3.1

Internal order No.:

A08

10060666 - 21

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.