

Type of inspection document : Inspection certificate acc. to EN 10204 / 3.1		A02	Internal order No.: 50008657 - 10		A08
Purchaser : ALLEIMA BENELUX B.V. . AMUNDSENWEG 4 5928 LT Venlo THE NETHERLANDS		A06	Purchase order No. : Purchaser's reference : Project Id. : 3000190		A07
Product : Seamless cold finished tube		B01/B04	Steel designation : 2RK65 / 2RK65		B02
Dimension (OD x WT) : 12,70 x 1,24AW mm		B09/B10	Melting process : AOD		C70
Technical requirements : ASME SA/A213 AW 2023 ASTM A213-2024 ASTM A269-2022 EN 10216-5 TC1 2021 ASTM A1016/A999 PED 2014/68/EC EN ISO 3651-2C EN 10305-1(Only tolerances-Table 5) NACE MR0175-2021/ISO 15156-3:2020 NACE MR0103/ISO 17945:2015 Alleima Spec.S-08921					B03
Supplementary information : Manufacturing of stainless steel tubes in grade 2RK65 / UNS N08904 / EN 1.4539 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 [%]
570284	max 0.020 0,008	max 0.700 0,460	max 2.000 1,680	max 0.030 0,020	max 0.010 <0,001

Heat	Cr [%]	Ni [%]	Mo [%]	Cu [%]	N [%]
570284	19.000-21.000 19,670	24.000-26.000 24,340	4.000-5.000 4,090	1.200-2.000 1,350	max 0.100 0,055

Type of inspection document :

A02

Inspection certificate acc. to EN 10204 / 3.1

Internal order No.:

A08

50008657 - 10

Product check analysis

Heat	Lot	C [%]	Si [%]	Mn [%]	P [%]	S [%]
		max 0.020	max 0.700	max 2.000	max 0.030	max 0.010
570284	2155388-11	0,010	0,430	1,680	0,021	0,001

Heat	Lot	Cr [%]	Ni [%]	Mo [%]	Cu [%]	N [%]
		19.000-21.000	24.000-26.000	4.000-5.000	1.200-2.000	max 0.100
570284	2155388-11	19,820	24,070	4,090	1,300	0,057

Extent of material delivery

Heat	Lot	Hollow supp.	No. of HTcycles ¹⁾	Pieces	Total length [m]	Total weight [kg] ²⁾
570284	2155380-11	ALLEIMA SE	1	444	2 664.000	956.376
570284	2155388-11	ALLEIMA SE	1	443	2 658.000	954.222
570284	2155393-11	ALLEIMA SE	1	164	984.000	353.256

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 : 12.11.2024

Type of inspection document :

A02

Inspection certificate acc. to EN 10204 / 3.1

Internal order No.:

A08

50008657 - 10

Flaring test in acc. with ASTM A 1016

Heat	Lot	ST	Test result [pass/fail]
			pass
570284	2155380-11		pass
570284	2155380-11		pass
570284	2155388-11		pass
570284	2155388-11		pass
570284	2155393-11		pass
570284	2155393-11		pass

Flaring test in acc. with EN 10216-5

Heat	Lot	ST	Test result [pass/fail]
			pass
570284	2155380-11		pass
570284	2155388-11		pass
570284	2155393-11		pass

Flattening test in acc. with ASTM A 1016

Heat	Lot	ST	Test result [pass/fail]
			pass
570284	2155380-11		pass
570284	2155380-11		pass
570284	2155388-11		pass
570284	2155388-11		pass
570284	2155393-11		pass
570284	2155393-11		pass

Type of inspection document :

A02

Internal order No.:

A08

Inspection certificate acc. to EN 10204 / 3.1

50008657 - 10

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

Approved with
deviations!

Heat	Lot	SC	ST	Hardness [HRB]	Hardness ≤35HRC [yes/no]
				max 80,000	yes
570284	2155380-11	1)		81,000	yes
570284	2155380-11	2)		81,000	yes
570284	2155380-11	3)		81,000	yes
570284	2155380-11	4)		81,000	yes
570284	2155380-11	5)		81,000	yes
570284	2155380-11	6)		81,000	yes
570284	2155388-11	7)		81,000	yes
570284	2155388-11			80,000	yes
570284	2155388-11	8)		80,000	yes
570284	2155388-11	9)		81,000	yes
570284	2155388-11	10)		81,000	yes
570284	2155388-11	11)		81,000	yes
570284	2155393-11	12)		84,000	yes
570284	2155393-11	13)		84,000	yes
570284	2155393-11	14)		84,000	yes
570284	2155393-11	15)		84,000	yes
570284	2155393-11	16)		82,000	yes
570284	2155393-11	17)		84,000	yes

SC (sample comment): 1)Tube No. 21 failed; 2)Tube No. 22 failed; 3)Retest failed; 4)Retest failed; 5)Retest failed; 6)Retest failed;
7)Tube No. 21 failed; 8)Retest OK; 9)Retest failed; 10)Retest failed; 11)Retest failed; 12)Tube No. 21 failed; 13)Tube No. 22 failed;
14)Retest failed; 15)Retest failed; 16)Retest failed; 17)Retest failed;

Intergranular corrosion testing in acc. with ASTM A262E

Heat	Lot	SC	ST	Test result [pass/fail]
				pass
570284	2155380-11			pass
570284	2155388-11			pass
570284	2155393-11			pass

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

Heat	Lot	SC	ST	Test result [pass/fail]
				pass
570284	2155380-11			pass
570284	2155388-11			pass
570284	2155393-11			pass

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

Heat	Lot	SC	ST	Rp0,2 [MPa]	Rm [MPa]	A2" [%]	A5 [%]	Rp1,0 [MPa]
				min 230,000	520,000-700,000	min 35,000	min 35,000	min 250,000
570284	2155380-11			318,100	614,900	43,000	44,200	347,400
570284	2155388-11			318,400	614,300	44,000	47,500	347,000
570284	2155393-11			341,600	628,600	40,000	42,500	368,800

Type of inspection document :

A02

Inspection certificate acc. to EN 10204 / 3.1

Internal order No.:

A08

50008657 - 10

Microstructure evaluation and Grain size WI-3815/ASTM E112

Heat	Lot	ST	G.B.Cr.Carbides	Grain size
			[No/Yes]	[(G)]
			No	4.000-14.000
570284	2155380-11		No	5,000
570284	2155388-11		No	6,000
570284	2155393-11		No	6,000

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.

Hydrostatic Test of straight tubes in acc. ASTM A1016

Test results comply with specified criteria.

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.

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.

Manufacturer's works

A01

Type of inspection document :

A02

Inspection certificate acc. to EN 10204 / 3.1

Internal order No.:

A08

50008657 - 10

Straightness check

Test results comply with specified criteria.

		DEVIATION DISPOSITION REQUEST		ACZ REQUEST No: DDR 11-24	
MANUFACTURER ALLEIMA CZ		PURCHASER ALLEIMA BENELUX B.V.		PAGE 1 / 1	
PROJECT: 3000328/3000190 - 2RK65 H&I - ALLEIMA BENELUX B.V.					
ACZ ORDER: 50009903-10 / 50008657-10		PURCHASER ORDER No.: 50009903/50008657		PRODUCT 2RK65 Seamless HI tubes	
SIZE <i>OD x WT(mm)</i> 12.70 x 1.24 AW		GRADE 2RK65		Lot No : DO 50008657 lot 2155380-11 444 pcs/2664 m lot 2155388-11 443 pcs/2658 m lot 2155393-11 164 pcs/984 m DO 50009903 lot 2155377-11 142 pcs/852 m lot 2155376-11 385 pcs/2310 m	
SPECIFICATION: Alleima S-08921-v.7.0 ACZ QCP: C_18_SPEC154					
DESCRIPTION OF DEVIATION AND PROPOSED ACTION: The ACZ did not meet hardness requirement max. 80 HRB for the lot specified above as it is specified by applied Alleima's specification S-08921 for 2RK65 grade. Reported results: lot 2155380-11: 81 HRB for all original tests and re-tests in double quantity, lot 2155388-11: 80 - 81 HRB for original tests and re-tests in double quantity, lot 2155393-11: 82 - 84 HRB for original tests and re-tests in double quantity, lot 2155377-11: 76 - 87 HRB for original tests and re-tests in double quantity, lot 2155376-11: 81 - 87 HRB for original tests and re-tests in double quantity, However, all the hardness test results meet acceptance criteria max. 90 HRB in accordance with requirements of applicable industrial standards, i.e., ASTM A213-22, ASME SA213-21, ASTM A269-15a(reap19), EN10216-5 TC1-21 and specifications NACE MR0175/ISO 15156-3:2015, NACE MR0103/ISO 17945-1:2015. Based on that, ACZ kindly ask you to accept the deviation for that lots and allow us to release them as "Accepted with deviation". NCR: NCR 48-24 and NCR 49-24					
REQUESTED BY: QA MANAGER DATE <u>11.11.2024</u> Datum <u>11.11.2024</u> NAME <u>Jméno Lukáš Dědek</u> Jméno <u>Lukáš Dědek</u> SIGNATURE:  Podpis _____					
CUSTOMER REPRESENTATIVE's DECISION Rozhodnutí zákazníka: Approved for the Molinek order Approved with comment: NOT APPROVED: APPROVED: Schváleno: ☐ APPROVED WITH COMMENT: Schváleno s poznámkou: ☒ NOT APPROVED: Neschváleno: ☐ DATE <u>2024-11-12</u> Datum _____ NAME <u>Thomas Arvidsson</u> Jméno _____ SIGN  Podpis _____					