

Type of inspection document : Inspection certificate acc. to EN 10204 / 3.1	A02	Internal order No.: 10066228 - 62	A08
Purchaser : ALLEIMA BENELUX B.V. . AMUNDSENWEG 4 5928 LT VENLO THE NETHERLANDS	A06	Purchase order No. : 800781 Purchaser's reference : 800781 Project Id. : 4003480	A07
Product : Seamless cold finished tube Dimension (OD x WT) : 12,70 x 1,24AW mm	B01/B04 B09/B10	Steel designation : 2RK65 / 2RK65 Melting process : AOD	B02 C70
Technical requirements : ASME SA-213-2023 ASTM A213-2022 ASTM A269-2015a(Reap.2019) EN 10216-5 TC1 2021 EN 10305-1 (Only Tolerances-Table 5) PED 2014/68/EU Alleima Spec.S-08921 NACE MR0175-2021/ISO 15156-3:2020 NACE MR0103/ISO 17945:2016			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 [%]
568174	max 0.020 0,011	max 0.700 0,420	max 2.000 1,600	max 0.030 0,021	max 0.010 <0,001

Heat	Cr [%]	Ni [%]	Mo [%]	Cu [%]	N [%]
568174	19.000-21.000 20,220	24.000-26.000 24,950	4.000-5.000 4,200	1.200-2.000 1,390	max 0.100 0,053

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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
568174	2108232-11	0,015	0,390	1,630	0,022	<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
568174	2108232-11	20,290	24,880	4,140	1,360	0,046

Extent of material delivery

Heat	Lot	Hollow supp.	No. of HTcycles ¹⁾	Pieces	Total length [m]	Total weight [kg] ²⁾
568174	2108232-11	ALLEIMA SE	1	371	2 226.000	799.134

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 : 12.10.2023

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Flaring test in acc. with ASTM A 1016

Heat	Lot	ST	Test result [pass/fail]
			pass
568174	2108232-11		pass
568174	2108232-11		pass

Flaring test in acc. with EN 10216-5

Heat	Lot	ST	Test result [pass/fail]
			pass
568174	2108232-11		pass

Flattening test in acc. with ASTM A 1016

Heat	Lot	ST	Test result [pass/fail]
			pass
568174	2108232-11		pass
568174	2108232-11		pass

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

Heat	Lot	ST	Hardness [HRB]	Hardness ≤ 35 HRC [yes/no]
			max 80,000	yes
568174	2108232-11		80,000	yes
568174	2108232-11		80,000	yes

Intergranular corrosion testing in acc. with ASTM A262E

Heat	Lot	ST	Test result [pass/fail]
			pass
568174	2108232-11		pass

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

Heat	Lot	ST	Test result [pass/fail]
			pass
568174	2108232-11		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]
			min 230,000	520,000-700,000	min 35,000	min 35,000	min 250,000
568174	2108232-11		298,600	601,000	49,400	52,200	323,100

Microstructure evaluation and Grain size WI-3815/ASTM E112

Heat	Lot	ST	G.B.Cr.Carbides [No/Yes]	Grain size [(G)]
			No	4,000-14,000
568174	2108232-11		No	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. ASTM E426

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.