

Type of inspection document : Inspection certificate acc. to EN 10204 / 3.1	A02	Internal order No.: 10050759 - 100	A08
Purchaser : ALLEIMA BENELUX B.V. . AMUNDSENWEG 4 5928 LT VENLO THE NETHERLANDS	A06	Purchase order No. : 800745 Purchaser's reference : 800745 Project Id. : 4003215	A07
Product : Seamless cold finished tube	B01/B04	Steel designation : 3R60 / 3R60	B02
Dimension (OD x WT) : 6,35 x 1,24AW mm	B09/B10	Melting process : AOD	C70
Technical requirements : ASME SA213/SA213M-2021 ASTM A213/A213M-2022 ASTM A269/A269M-2015a (Reap.2019) EN 10216-5 TC1 2021 EN 10305-1 (Only Tolerances-Table 5) PED 2014/68/EU Alleima SPEC S-08921 AD 2000 W2 Einbaurohre - 2016 AD 2000 W10 - 2019			B03
Supplementary information : Manufacturing of stainless steel tubes in grade 3R60 / TP316L / 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 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 [%]
567403	max 0.030 0,019	max 1.000 0,400	max 2.000 1,630	max 0.040 0,029	max 0.015 0,010

Heat	Cr [%]	Ni [%]	Mo [%]	N [%]
567403	17.000-18.000 17,560	12.500-14.000 13,170	2.500-3.000 2,630	max 0.100 0,042

Type of inspection document :

A02

Inspection certificate acc. to EN 10204 / 3.1

Internal order No.:

A08

10050759 - 100

Product check analysis

Heat	Lot	C [%]	Si [%]	Mn [%]	P [%]	S [%]
		max 0.030	max 1.000	max 2.000	max 0.040	max 0.015
567403	2087690-11	0,018	0,400	1,660	0,025	0,011

Heat	Lot	Cr [%]	Ni [%]	Mo [%]	N [%]
		17.000-18.000	12.500-14.000	2.500-3.000	max 0.100
567403	2087690-11	17,850	12,990	2,510	0,054

Extent of material delivery

Heat	Lot	Hollow supp.	No. of HTcycles ¹⁾	Pieces	Total length [m]	Total weight [kg] ²⁾
567403	2087689-11	ALLEIMA SE	1	1 128	6 768.000	1 069.344
567403	2087690-11	ALLEIMA SE	1	1 052	6 312.000	997.296

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 : 27.2.2023

Type of inspection document :

A02

Inspection certificate acc. to EN 10204 / 3.1

Internal order No.:

A08

10050759 - 100

Flaring test in acc. with ASTM A 1016

Heat	Lot	ST	Test result [pass/fail]
			pass
567403	2087689-11		pass
567403	2087689-11		pass
567403	2087690-11		pass
567403	2087690-11		pass

Flaring test in acc. with EN 10216-5

Heat	Lot	ST	Test result [pass/fail]
			pass
567403	2087689-11		pass
567403	2087690-11		pass

Flattening test in acc. with ASTM A 1016

Heat	Lot	ST	Test result [pass/fail]
			pass
567403	2087689-11		pass
567403	2087689-11		pass
567403	2087690-11		pass
567403	2087690-11		pass

Hardness test (HRB) in acc. with ASTM E18 / 7-2-1261

Heat	Lot	ST	Hardness [HRB]
			max 80,000
567403	2087689-11		76,000
567403	2087689-11		76,000
567403	2087690-11		76,000
567403	2087690-11		78,000

Intergranular corrosion testing in acc. with ASTM A262E

Heat	Lot	ST	Test result [pass/fail]
			pass
567403	2087689-11		pass
567403	2087690-11		pass

Type of inspection document :

A02

Inspection certificate acc. to EN 10204 / 3.1

Internal order No.:

A08

10050759 - 100

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

Heat	Lot	ST	Test result [pass/fail]
			pass
567403	2087689-11		pass
567403	2087690-11		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 220,000	515,000-690,000	min 35,000	min 40,000	min 250,000
567403	2087689-11		287,500	582,100	52,600	61,800	321,500
567403	2087690-11		290,100	585,400	52,100	53,100	323,400

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)]
			No	5,000-14,000
567403	2087689-11		No	6,000
567403	2087690-11		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.

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.

Type of inspection document :

A02

Inspection certificate acc. to EN 10204 / 3.1

Internal order No.:

A08

10050759 - 100

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.