

Subject: Aluminium tube.

Further specifications are to be found in the quality assurance agreements, inspection instructions and packaging specifications.

Index	Date
00	05.02.2016
01	29.07.2019

1. Scope and purpose

Technical specification for aluminium tube.

2. Materials, technical data

Ingot quality:

TS EN 573-3 Aluminium and aluminium alloys-Chemical composition and form of wrought products-Part 3: Chemical composition

Dimensional stability:

DIN EN 13957 Aluminium and aluminium alloys
Extruded round, coiled tube for general applications

Pipe quality:

DIN EN 755-3 Aluminium and aluminium alloys;
Extruded rod/bar, tube and profiles;
Mechanical properties;
Material condition according to DIN EN 515 (H112)

AL-Pipe DIN EN 13957

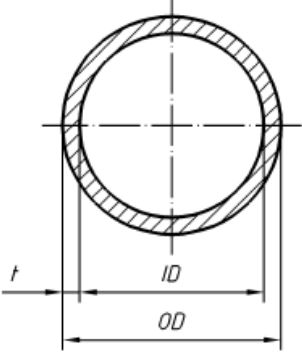

Alu DIN EN 755-3 EN AW-1070A H112; (AL 99,7)

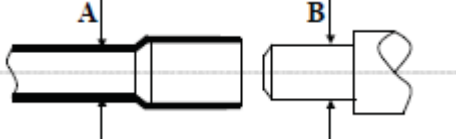
Alu DIN EN 755-3 EN AW-1080A H112; (AL 99,8)

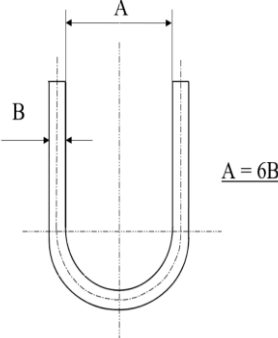
In addition, the quality-related requirements specified in the order and/or in the delivery specifications are to be fulfilled.

3. Characteristics, qualities and tests

Guler Metal A.S guarantees the characteristics, qualities and testing methods in the table below as it is delivered.

Characteristics/qualities	Tolerances/acceptance criteria	Control frequency
Tube Dimensions	 <p>Guler Metal's OD tolerance: $\pm 0,05\text{mm}$ Guler Metal's wall thickness tolerance: $\pm 0,05\text{mm}$ All other tolerances according to DIN EN 13957</p>	Each coil= 1 qty
Mechanical Values	0,2% yield point Rp0,2: 40-48 Mpa (N/mm ²) $\varnothing 45$ Mpa (N/mm ²) should be achieved. Elongation A50% : 31-42 % $\varnothing 38\%$ should be achieved. All other mechanical properties according to DIN EN 755-3	Each party= 5 qty
Hardness Test	Brinell Hardness Test EN ISO 6506 -1 18HB - 29 HB 	Each coil= 1 qty
Inner Cleanliness	according to DIN 8964 part 1 and 2, - 50% - water mass ≤ 250 ppm - Internal cleanness (C1, C2, C3 - value) - 50 % C1: for solid, washable residues ≤ 30 mg/m ² internal surface C2: for soluble, washable residues ≤ 20 mg/m ² internal surface free of weld spatter in case of longitudinally welded tubes C3: for solid, not washable residues ≤ 50 mg/m ² internal surface - Coil with drying air (dew point < -30 °C) filled with excess pressure	Each party= 5 qty

Characteristics/qualities	Tolerances/acceptance criteria	Control frequency																																				
Tube suitable for refrigerant	R134a and R600a R404a and R290 (DIN 8960)																																					
Oiling	Free of mineral oil Cold weld not permitted - In production must be used a oil-wiper with adequate stripping force - Quantity of oil 0,5-1,5 g / 50 m	Each party= 1 qty for corrosion test																																				
External Surface	Ra < 3,2 µm Rz < 20 µm	Each coil= 1 qty																																				
Tube filling	Dew point (< -30°C) filled with excess pressure.	Each coil= 1 qty																																				
Chemical composition	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Si</td> <td>Fe</td> <td>Cu</td> <td>Mn</td> <td>Mg</td> </tr> <tr> <td>0,15</td> <td>0,25</td> <td>0,03</td> <td>0,03</td> <td>0,03</td> </tr> <tr> <td>Zn</td> <td>Ti</td> <td>Each</td> <td>Total</td> <td>Al. Min</td> </tr> <tr> <td>0,03</td> <td>0,03</td> <td>0,03</td> <td>0,1</td> <td>99,7</td> </tr> </table> <p>According to TS EN 573-3</p>	Si	Fe	Cu	Mn	Mg	0,15	0,25	0,03	0,03	0,03	Zn	Ti	Each	Total	Al. Min	0,03	0,03	0,03	0,1	99,7	Each party= 1 qty																
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Characteristics/qualities	Tolerances/acceptance criteria	Control frequency
Bend test	<p>The finished tube shall stand bending on a centreline radius equal to sixties the tube outside diameter without cracking or developing other flaw.</p> 	Each party= 5 qty
Leakage Test	<p>Eddy Current 20 Bar \pm1 (Should be between 19bar-21bar) Nitrogen gas</p>	Continue Each coil= 1 qty
Weight of coil	<p>Minimum: 50kgs. Maximum: 150kgs.</p>	
Dimensions of coil	<p>Inner Diameter: 150mm Outer Diameter: min.750mm- max.1050mm Height: min.300mm- max.510mm</p>	
Winding	Coiled in horizontal arrays in one flat	
Packaging	See item 8.	

4. Signification of the characteristics and qualities

Item 3 can be changed according to customer demands. The customer must provide technical delivery specification.

5. Documentation

Batch-related documentation of the inspection and testing carried out is done. The following items are sent to the customer by shipment or e-mail.

- Chemical composition
- Physical, mechanical properties
- Qualities and dimensions according to item 3
- Special characteristics and treatments.




6. Occupational safety and environmental protection

The products must contain no more than the permissible concentration of substances that are subject to a ban on use. The products must not contain components that are hazardous to health, a nuisance and/or environmentally harmful.


7. Marking (label)

The delivered products must be marked per packing unit.

Label for each coil

	SEMI-FINISHED SURVEY CARD (YARI MAMÜL TAKİP KARTI)	 TESTED
DATE (TARİH) :		Cont. Date :
MACHINE (MAKİNE) :	SHIFT (VARDİYA) :	Pressure :
MODEL :	MOLD (KALIP) :	Hour :
PARTY NO (PARTİ NO) :	COIL NO (RULO NO) :	FN14.01/05.02.2016
QUANTITY (MİKTAR) :		 TESTED
OPERATOR :		DATE :
FN09.01/05.02.2016		TIME :
		TESTED BY :
		APPLIED PRESSURE :
		THE PRESSURE AFTER TEST :
		FN09.01/05.02.2016

Label for each pallet

	MÜŞTERİ / CUSTOMER:		
PALET NO / PALLET NO:	MALZEME / MATERIAL:	MALZEME PARTİSİ / MATERIAL PARTY:	
ÜRÜN / PRODUCT:	ÖLÇÜ / DIMENSIONS:	AĞIRLIK / WEIGHT:	
COIL TUBES			
MÜŞTERİ KODU / CUSTOMER CODE:	SEVK TARİHİ / SHIPPING DATE:		
FN21.01/05.02.2016			

8. Packaging

Min. 3 coils stacked on

Max. 6 coils stacked on



9. Standards

The following standards are referred to in this technical delivery specification:

DIN 8960

DIN 8964-1

DIN 8964-2

DIN EN 515

DIN EN 573-3

DIN EN 755-2

DIN EN 755-3

DIN EN 13957

EN ISO 6506 -1

DIN EN 13957

Other standards may also apply.