

# LWC

QUALITY: THE SILMET LIFE STYLE.

## LWC COPPER TUBE

**All Silmet Level Wound Coils for industrial use and ACR are produced in compliance with international standards and with the specific requirements of customers.**

Particular attention is paid to dimensional uniformity, uniformity of the physical state, the absence of faults and internal cleanliness.

The length, weight, number of faults present, dimensions and all references aimed at guaranteeing the traceability of the product with regard to laboratory tests carried out in compliance with stringent sampling and control plans implemented during production, are highlighted for each individual coil.

The internal cleanliness of the tubes is considerably above the limit of 0.038 g/m<sup>2</sup>.

The Silmet Quality System is certified in compliance with the ISO 9001:2015 standard; the Quality Service is assigned to highly qualified, constantly updated personnel whose functions are independent from production departments; they use the most sophisticated laboratory and production control equipment.

All phases of the production process, starting from acceptance of raw materials, are subject to very severe sampling and control plans aimed at guaranteeing that the end products achieve very high quality standards.

Silmet S.p.A. has been manufacturing copper tubes for usage in water and gas tubes in sanitary and heating applications and in the industrial sectors since 1973. Over recent years, thanks to its excellent conductivity, machinability, resistance to corrosion and user-friendliness, the copper tube has made a name for itself as the ideal product for air-conditioning/refrigeration equipment, for the heating industry and for the production of heat exchangers.

Silmet has always been aware of the needs of the market and is constantly up-to-date technologically.

With all these things in mind, in order to help its customers with the growing trend in production automation and to be able to satisfy their requirements, Silmet is equipped with cutting-edge Level Wound Coils production plants.

SILMET PRODUCTS



**COPPER CHEMICAL/PHYSICAL/TECHNOLOGICAL PROPERTIES**

Symbol	Cu
Atomic number	29
Atomic weight	2.6625
Crystalline structure	cubic with faces centred with the side of the cube 3.6078 Å
smelting temperature	1083° C
Boiling temperature	2595° C
Volumic mass (density) at 20° C	8.94 g/cm <sup>3</sup>
Coefficient of linear thermal expansion at 20° C	0.0000165 · K <sup>-1</sup>
Solidification shrinkage	4.92%
Specific heat at 20° C	385 J/kg K
Latent smelting heat	205 kj/kg
Thermal conductivity at 20° C	391 W/m K
Electric resistivity at 20° C annealed physical state	0.017241 Ω mm <sup>2</sup> /m
Electric resistivity temperature coefficient at 20° C	0.00393 · K <sup>-1</sup>
Alloy for the production of LWC	Cu-DHP or CW024A (Cu = 99.90% min. - P = 0.015 ÷ 0.040%)

**TOLERANCES ON OUTSIDE DIAMETER**

nominal outside diameter mm		tolerances on nominal diameter				
over	up to and included	tolerances on mean nominal outside diameter		applicable to any diameter including deviation from circular form		
EN 12449						
3	6	± 0,06 mm		± 0,30 mm		
6	10	± 0,06 mm		± 0,50 mm		
10	20	± 0,08 mm		± 0,70 mm		
20	30	± 0,12 mm		± 0,90 mm		
EN 12451						
6	14	-		0 -0.12		
14	26	-		0 -0.20		
EN 12735-2						
		tolerances on mean nominal outside diameter				
		con spessore < 0,4 mm		con spessore > 0,4 mm		
6	13	± 0,04 mm		± 0,04 mm		
13	16	± 0,05 mm		± 0,04 mm		
16	28	-		± 0,05 mm		
EN 12735-2 nominal wall thickness		maximum deviation from circular form				
over	up to	for Ø from 6 up to 9,8	Ø over 9,8 up to 13	Ø over 13 up to 16	Ø over 16 up to 22	Ø over 22 up to 67
-	0,41	4,00%	5,00%	7,00%	by agreement between the purchaser and the supplier	
0,41	0,7	3,50%	4,00%	6,00%		
0,7	-	3,00%	3,50%	5,00%		

## MECHANICAL PROPERTIES

material condition EN 12449	hickness <i>t</i> mm max.	tensile strength Rm N/mm <sup>2</sup> min.	0,2% proof strength Rp0,2 N/mm <sup>2</sup>		elongation A % min.	average grain size $\mu$ m		hardness			
			min.	max.		min.	max.	HV		HB	
								min.	max.	min.	max.
R200	20	200	-	110	40	-	-	-	-	-	-
H040	20	-	-	-	-	-	-	40	65	35	60
EN 12451											
R220	20	220	-	-	40	15	50	-	-	-	-
EN 12735-2											
Y040	-	220	40	90	40	15	40	-	-	-	-
Y035	> 0,6 mm	210	35	80	40	30	60	-	-	-	-

## TOLERANCES ON WALL THICKNESS

nominal outside diameter mm		tolerances on nominal wall thickness <i>t</i>								
over	up to and included	<i>t</i> from 0.3 mm up to an included 1 mm				<i>t</i> over 1 mm up to and included 3 mm				
EN 12449										
3	28	± 15%				± 13%				
EN 12451										
all diameters		all wall thicknesses ± 10%								
EN 12735-2										
tolerances	nominal outside diameter		nominal wall thickness <i>e</i>							
	<i>d</i>		from 0,25 up to and iclude 0,3	over 0,3 up to and iclude 0,35	over 0,35 up to and iclude 0,4	over 0,4 up to and iclude 0,5	over 0,5 up to and iclude 0,63	over 0,63 up to and iclude 0,8	over 0,8 up to and iclude 1,5	over 1,5 up to and iclude 3
	over	up to and included								
maximum permissible deviation at any point <sup>a</sup>	6	133	± 0,025	± 0,03	± 0,03	± 0,04	± 0,05	± 0,06	± 8% <sup>b</sup>	± 15% <sup>b</sup>
tolerances on mean wall thickness	6	9,52	± 0,01	± 0,01	± 0,01	± 0,015	± 0,02	± 0,02	-	-
	9,52	13	-	± 0,01	± 0,01	± 0,015	± 0,02	± 0,02	-	-
	13	16	-	-	± 0,01	± 0,015	± 0,02	± 0,02	-	-
	16	22	-	-	-	-	-	± 0,02	± 0,05	-
	22	40	-	-	-	-	-	± 0,02	± 0,05	-

**a** including deviation from concentricity

**b** value in percentage of nominal thickness