

**1) SUBJECT :**

This specification is to define the characteristics and tests to be met by flat sections delivered as Cupro aluminium bar, in hardened state and with round edges.

References :

Symbol : CuAl8 ou CuAl9

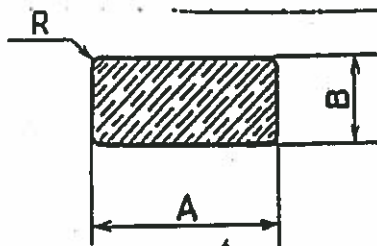
**2) FIELD OF APPLICATION :**

This specification is applicable to flat sections made in Cupro aluminium in hardened state used for bars of rotor cage for AC asynchronous machines.

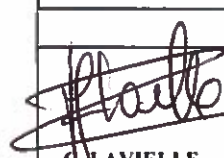
**3) GENERAL FEATURES :**

Batch : batch means the number of bars needed to manufacture one machine.

Destructive tests must be performed on additional bars.

TEST Nber	TEST	Units	Values	Test Description
1	<div>Tolerances on width and thickness</div> <div></div> <div>A = w : width B = t : thickness</div>	mm	<div><div>3&lt;w or t≤6</div><div>0,00 -0,08</div></div> <div><div>6&lt;w or t≤10</div><div>0,00 -0,11</div></div> <div><div>10&lt;w or t≤18</div><div>0,00 -0,14</div></div> <div><div>18&lt;w or t≤30</div><div>0,00 -0,17</div></div> <div><div>30&lt;w or t≤50</div><div>0,00 -0,20</div></div> <div><div>50&lt;w or t≤80</div><div>0,00 -0,37</div></div>	
2	<div>Tolerances on radius of round edge</div> <div>t≤6 R=1.2 t&gt;6 R=1.6</div>	%	<div>+ 20 + 0</div>	

REVISION b : version English

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TEST Nber	TEST	Units	Values	Test description
3 (a)	Tolerance on nominal value of the bar length	mm	+ 2 0	
	Tolerance on bar length around the mean value <i>for one batch</i>	mm	±0.1	
4	Tolerance on straightness - Max. deflection on total length - Locally	mm/m %	1 0,1	
5	Tensile test Tensile strength Rm Yield strength at Rp 0,2 Elongation	N/mm <sup>2</sup> N/mm <sup>2</sup> %	≥ 490 ≥ 300 ≥ 25	EN ISO 6892-1
6	Brinell hardness	HB	140 - 180	EN ISO 6506-1a3
7	Aluminium content	%	≤ 8.50	
	Other elements (Fe + Pb, etc) Copper content		≤ 0,30 rest	
8	Resistivity @ 20°C - Mean resistivity around the nominal value - Tolerance on resistivity around the mean value <i>for one batch</i>	μΩ.cm	12,3 ± 7% ± 5%	Sygmatest process (for example)
9	Aspect	The CuAl8-9 will have a smooth and clean aspect on all four sides. There will be free from straw, bubbles, pitting, cracks and free of all traces of oxide, sulfide, etc....  Extremities must be free from burrs and cut perpendicularly to the bar length axis.		

(a) If process does not allow to reach the required tolerances, extra length must be provided to perform a cut to right length by machining.

#### 4) SAMPLES FOR TESTS :

4-1) TESTS n° 1 – 2 & 3

Collecting 5 % of pieces from the delivered batch.

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**4-2) TEST n° 4**

Collecting 2 % of pieces with a minimum of 2 pieces *for each* delivered *batch*.

If deviation is  $\geq \pm 0.2$  comparing to the mean value, control must be performed on all the pieces of the batch.

**4-3) TEST n° 5**

Collecting 1 bar, in delivery condition (extra piece for tests 5 and 7).

**4-4) TEST n° 6**

Collecting 3 bars *per batch* in delivery condition.

**4-5) TEST n° 7**

Collecting 1 bar in delivery condition (extra piece for tests 5 and 7).

**4-6) TEST n° 8**

Collecting 20% of bars in delivery condition.

If deviation is  $> 3\%$  comparing to the mean value, control must be performed on all the pieces of the batch (see note her below).

**4-7) TEST n° 9**

Collecting 20% of bars in delivery condition. In case of any doubt, 100% of the bars must be controlled.

**NOTE :**

**Each batch** must include a number of bars equal to the number of slots for one machine and will be characterized by:

- Length in tolerance  $\pm 0,1$  for all the bars
- Deviation on resistivity of  $\pm 5\%$  around the mean value for the batch

**5) CONDITIONS FOR ACCEPTANCE OR REJECTION OF THE PRODUCT :**


The supplier is required to issue an **official report** that will track all results of tests that must comply with the criterias of § 3 of the specification.

J.E. has the right to reject all or part of a supply if the latter does not meet the requirements of this specification.

In case of rejection of all or part of the delivery, the supplier will replace the refused products, in the same terms of the order.

J.E. can still reject after having accepted upon delivery, due to the presence of hidden defects in the product. These would be detected during implementation of the product.

Any trace of repairs aimed to hide defects is justification for rejection

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