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HRC tube 3103 alloy

1. Scope

This technical sheet is related to aluminium tube coiled and calibrated through a certain section reduction.

The main applications of this product are automotive fluid management products, heat exchangers, radiators, evaporators for air conditioning.

1. Chemical composition

| % in weight | | | | | | | | | | | | |
|----------------------|-----|------|------|------|------|------|------|----|------|-------|-------|------|
| Norm | [%] | Si | Fe | Cu | Mn | Mg | Cr | Ni | Zn | Ti | Altri | Al |
| EN 573-3 | min | - | - | - | 0,9 | - | - | - | - | - | - | Rest |
| | max | 0,50 | 0,7 | 0,1 | 1,5 | 0,30 | 0,10 | - | 0,20 | 0,10* | 0,05 | |
| GRUPPORECO PT0021 | min | - | 0,10 | - | 0,95 | - | - | - | - | - | - | Rest |
| | max | 0,10 | 0,20 | 0,01 | 1,05 | 0,03 | 0,03 | - | 0,07 | 0,03 | 0,05 | |

*: Zr+Ti

2. Mechanical characteristics

| Main mechanical characteristics | | | | | | | |
|---------------------------------|----------------|----------------------|----------------------|----------------------|----------------------|----------------|----------|
| Norm | Physical state | Rm | | Rp _{0,2} | | A ₅ | Hardness |
| | | min | max | min | max | [%] | HB |
| | | [N/mm ²] | [N/mm ²] | [N/mm ²] | [N/mm ²] | | |
| HRC | H112 HRC | 95 | 115 | 80 | 95 | 35/45 | 30 |
| Reco standard tube | H 112 | 95 | 110 | 55 | 80 | 40/48 | 28/30 |
| EN 755-2 | O, H112 | 95 | 135 | 35 | - | 25 | 28 |

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3. Dimensional characteristics

| Dimensional tolerances | | | |
|------------------------|----------------------|------------------|----------|
| Diameters range | Extruded tube (H112) | Drawn tube (H14) | HRC tube |
| 2 - 10 mm | +/-0.08 | +/-0.04 | +/-0.05 |
| 10 - 18 mm | +/-0.10 | +/-0.05 | +/-0.05 |
| 18 - 30 mm | +/-0.13 | +/-0.05 | +/-0.05 |

4. Surface characteristics

| Main values of surface roughness | | | |
|----------------------------------|----------------|-----------|-----------|
| References | Physical state | RT Micron | Ra Micron |
| HRC | H112 HRC | Max. 6 | Max. 0.5 |
| Reco standard tube | H 112 | 6 / 12.5 | 0.5 / 1.6 |
| Automotive request | O, H112 | Max 12.5 | Max. 1.6 |

5. Corrosion resistance characteristics

| Main corrosion resistance values | | |
|----------------------------------|----------------|--|
| Reference | Physical state | Swaat chamber resistance hours ASTM G85 - part A3 |
| HRC | H112 HRC | 1100 – 1600 (*) |
| Direct press extrusion tube | H 112 | Min. 700 |
| Indirect press extrusion tube | H 112 | 300 - 700 |
| Europe automotive request | H112 | Min. 500 |

(*) Internal test

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7. Main technical characteristics

HRC tube joins the extruded tube base characteristics (H112) with some important improvements.

The main features of the H112 physical state remain unchanged as to bear any mechanical deformations.

Due to the different disposition of the cortical and subcortical grains, the product presents a high corrosion resistance according to the swaat method, a greater dimensional constancy and a low roughness value either in RT/R_Y max or RA.

It also presents a greater RP02 value, at the same traction resistance and percentage of elongation.