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The right aluminium alloy for technical insulation

Greater strength with the same workability: a comparison of EN AW 3005 and EN AW 3003

EN AW 3003 vs. EN AW 3005

EN AW 3005 is the clear choice for industrial insulation. Like EN AW 3003, this alloy belongs to the aluminium-manganese family and offers excellent workability. Its magnesium content of 0.2 – 0.6 % ensures significantly greater strength, whilst maintaining virtually the same formability and corrosion resistance. This means greater resistance to denting and impact, or thinner sheets whilst maintaining the same load-bearing capacity.

Criterion	EN AW 3003 (H14/H24)	EN AW 3005 (H14/H24)
Strength (H14/H24)	Good · Rm 145–195 MPa	Higher · Rm 170–215 MPa
Formability	Very good	Very good
Corrosion resistance	Very good	Very good
Dent and impact resistance	Good	Very good
Material efficiency	Standard	Thinner sheets are possible
Range of applications	General sheet metal working, tanks, heat exchangers	Technical insulation sheathing (robust all-rounder)

What's in the alloys and how they work

With a comparable manganese content, the additional magnesium in EN AW 3005 provides greater strength without compromising the alloy's good workability.

Alloying element	Effect on aluminium	Contained in EN AW 3003	Contained in EN AW 3005
Manganese (Mn)	↑ Strength ↑ Corrosion resistance	Yes, 1.0 - 1.5 %	Yes, 1.0 – 1.5 %
Magnesium (Mg)	↑ Strength	No	Yes, 0.2 – 0.6 %
Silicon (Si)	Accompanying element	Max. 0.6 %	Yes, 0.6 %
Copper (Cu)	↑ Strength	Yes, 0.05 - 0.20 %	Yes, 0.3 %
Zinc (Zn)	Accompanying element	Max. 0.1 %	Max. 0.25 %
Chromium (Cr)	↑Corrosion resistance · promotes grain refinement	No	Max. 0.1 %

Chemical composition in accordance with EN 573-3. Strength values for the H14 condition in accordance with EN 485-2; dependent on the sheet thickness.

Tacke + Lindemann GmbH
Beratgerstraße 31 - 33 | 44149 Dortmund | Tel.: +49 (0)231 17777 - 0 | metall@tacke-lindemann.de | www.tacke-lindemann.de

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