MATERIAL DATA SHEET

EN AW-2007 recycled continuous-cast 70 mm rod, as-cast (CC BY experimental)

Measured composition, hardness and tensile properties for recycled EN AW-2007 continuous-cast rod ingots.

Field	Value
Material ID	mdpi-en-aw-2007-recycled-continuous-cast-70mm-as-cast
Category	Metal
Condition	as-cast recycled EN AW-2007 continuous-cast rod ingot | continuous-cast rod-shaped ingot
Unit system	Common SI
Unit contract	Material properties stored in SI engineering units.
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Source and Validity

Field	Value
Quality	Experimental screening
Design release allowed	No
Source family	Experimental screening dataset
Confidence	Reference-grade
License	Open
Source note	Condition-specific base-material values from a CC BY 4.0 peer-reviewed article.
Citation	Grazyna Mrowka-Nowotnik, Grzegorz Boczkal, and Andrzej Nowotnik, Effect of Continuous Casting and Heat Treatment Parameters on the Microstructure and Mechanical Properties of Recycled EN AW-2007 Alloy, Materials 2024, 17, 3447, https://doi.org/10.3390/ma17143447.
Valid temperature	Mechanical-test temperature is not reported.
Valid pressure	Pressure dependence is not represented.
Valid phase / condition	as-cast recycled EN AW-2007 continuous-cast rod ingot
Uncertainty	One recycled industrial melt and continuous-casting campaign. Exact measured chemistry, casting geometry and as-cast test semantics are retained. Values are experimental, not wrought-product minima or design allowables.
Last reviewed	2026-08-03
Reviewer	scripts/import_mdpi_open_aluminum_public.py
Review status	Checked
Review scope	Checked article CC BY notice, DOI and PDF hash, exact alloy/temper, source geometry, table values, and reported or measured rather than specified-minimum semantics.

Field	Value
Notes	One recycled industrial melt and continuous-casting campaign. Exact measured chemistry, casting geometry and as-cast test semantics are retained. Values are experimental, not wrought-product minima or design allowables.
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Attribution	Grazyna Mrowka-Nowotnik

Material Condition

Field	Value
Condition	as-cast recycled EN AW-2007 continuous-cast rod ingot
Temper	as-cast; no wrought temper claimed
Heat treatment	none after casting for this card
Product form	continuous-cast rod-shaped ingot
Thickness / diameter range	70 mm ingot diameter x 5000 mm length; 10 mm tensile-specimen diameter
Test direction	tensile direction relative to casting axis not explicitly stated
Processing route	approximately 250 kg EN AW-2007 scrap/chips, resistance-furnace melted, argon refined and four-strand continuous cast
Temperature range	Mechanical-test temperature is not reported.
Notes	One recycled industrial melt and continuous-casting campaign. Exact measured chemistry, casting geometry and as-cast test semantics are retained. Values are experimental, not wrought-product minima or design allowables.

Properties

Mechanical

Property	Value	Unit	Type	Applies to
Brinell hardness	84.0	HB	Experimental Measured Screening	recycled EN AW-2007, industrial four-strand continuous-cast 70 mm diameter rod ingots; 10 mm diameter tensile specimens; as-cast condition
Ultimate tensile strength	286.8	MPa	Experimental Measured Screening	recycled EN AW-2007, industrial four-strand continuous-cast 70 mm diameter rod ingots; 10 mm diameter tensile specimens; as-cast condition
Tensile yield strength	160.0	MPa	Experimental Measured Screening	recycled EN AW-2007, industrial four-strand continuous-cast 70 mm diameter rod ingots; 10 mm diameter tensile specimens; as-cast condition
Elongation A5	8.2	%	Experimental Measured Screening	recycled EN AW-2007, industrial four-strand continuous-cast 70 mm diameter rod ingots; 10 mm diameter tensile specimens; as-cast condition

Composition

Property	Value	Unit	Type	Applies to
Silicon mass fraction	0.76	wt.%	Experimental Measured Composition Reference	recycled EN AW-2007, industrial four-strand continuous-cast 70 mm diameter rod ingots; 10 mm diameter tensile specimens; as-cast condition
Iron mass fraction	0.45	wt.%	Experimental Measured Composition Reference	recycled EN AW-2007, industrial four-strand continuous-cast 70 mm diameter rod ingots; 10 mm diameter tensile specimens; as-cast condition
Copper mass fraction	3.43	wt.%	Experimental Measured Composition Reference	recycled EN AW-2007, industrial four-strand continuous-cast 70 mm diameter rod ingots; 10 mm diameter tensile specimens; as-cast condition
Manganese mass fraction	0.64	wt.%	Experimental Measured Composition Reference	recycled EN AW-2007, industrial four-strand continuous-cast 70 mm diameter rod ingots; 10 mm diameter tensile specimens; as-cast condition
Magnesium mass fraction	0.7	wt.%	Experimental Measured Composition Reference	recycled EN AW-2007, industrial four-strand continuous-cast 70 mm diameter rod ingots; 10 mm diameter tensile specimens; as-cast condition
Chromium mass fraction	0.023	wt.%	Experimental Measured Composition Reference	recycled EN AW-2007, industrial four-strand continuous-cast 70 mm diameter rod ingots; 10 mm diameter tensile specimens; as-cast condition
Nickel mass fraction	0.008	wt.%	Experimental Measured Composition Reference	recycled EN AW-2007, industrial four-strand continuous-cast 70 mm diameter rod ingots; 10 mm diameter tensile specimens; as-cast condition
Zinc mass fraction	0.2	wt.%	Experimental Measured Composition Reference	recycled EN AW-2007, industrial four-strand continuous-cast 70 mm diameter rod ingots; 10 mm diameter tensile specimens; as-cast condition

Property	Value	Unit	Type	Applies to
Lead mass fraction	0.53	wt.%	Experimental Measured Composition Reference	recycled EN AW-2007, industrial four-strand continuous-cast 70 mm diameter rod ingots; 10 mm diameter tensile specimens; as-cast condition
Titanium mass fraction	0.027	wt.%	Experimental Measured Composition Reference	recycled EN AW-2007, industrial four-strand continuous-cast 70 mm diameter rod ingots; 10 mm diameter tensile specimens; as-cast condition

Engineering note: seed solid-material values are reference values only. Verify against the project material specification or supplier data sheet before release.