MATERIAL DATA SHEET

EN AW-2007 recycled continuous-cast rod, T4 500 degC/6 h plus 9 h natural age (CC BY)

Measured tensile strength, 0.2% proof strength and A5 for recycled EN AW-2007 after the article's best strength-ductility T4 schedule.

Field	Value
Material ID	mdpi-en-aw-2007-recycled-continuous-cast-t4-500c-6h-age9h
Category	Metal
Condition	recycled EN AW-2007 continuous-cast rod, article-designated T4 condition after 9 h natural ageing | heat-treated 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	recycled EN AW-2007 continuous-cast rod, article-designated T4 condition after 9 h natural ageing
Uncertainty	One recycled industrial continuous-cast heat and one explicitly reported T4 schedule. Table 4 values and stated measurement errors are retained. No EN minimum, generic T4 value or design allowable is claimed.
Last reviewed	2026-08-03
Reviewer	scripts/import_mdpi_open_aluminum_public.py
Review status	Checked

Field	Value
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.
Notes	One recycled industrial continuous-cast heat and one explicitly reported T4 schedule. Table 4 values and stated measurement errors are retained. No EN minimum, generic T4 value or design allowable is claimed.
License ID	CC-BY-4.0
License URL	https://creativecommons.org/licenses/by/4.0/
Attribution	Grazyna Mrowka-Nowotnik

Material Condition

Field	Value
Condition	recycled EN AW-2007 continuous-cast rod, article-designated T4 condition after 9 h natural ageing
Temper	T4 as designated by the article
Heat treatment	500 degC solution treatment for 6 h; water quench at about 15-20 degC; natural age at about 25 degC for 9 h
Product form	heat-treated continuous-cast rod-shaped ingot
Thickness / diameter range	70 mm source-ingot diameter; 10 mm tensile-specimen diameter
Test direction	tensile direction relative to casting axis not explicitly stated
Processing route	recycled scrap/chips, industrial continuous casting, solution treatment, water quench and natural ageing
Temperature range	Mechanical-test temperature is not reported.
Notes	One recycled industrial continuous-cast heat and one explicitly reported T4 schedule. Table 4 values and stated measurement errors are retained. No EN minimum, generic T4 value or design allowable is claimed.

Properties

Mechanical

Property	Value	Unit	Type	Applies to
Tensile yield strength	240.5	MPa	Experimental Measured Screening	same recycled EN AW-2007 continuous-cast 70 mm rod; solution treated at 500 degC for 6 h, water quenched at about 15-20 degC, naturally aged at about 25 degC for 9 h; 10 mm tensile specimen
Ultimate tensile strength	435.0	MPa	Experimental Measured Screening	same recycled EN AW-2007 continuous-cast 70 mm rod; solution treated at 500 degC for 6 h, water quenched at about 15-20 degC, naturally aged at about 25 degC for 9 h; 10 mm tensile specimen
Elongation A5	18.1	%	Experimental Measured Screening	same recycled EN AW-2007 continuous-cast 70 mm rod; solution treated at 500 degC for 6 h, water quenched at about 15-20 degC, naturally aged at about 25 degC for 9 h; 10 mm tensile specimen

Composition

Property	Value	Unit	Type	Applies to
Silicon mass fraction	0.76	wt.%	Experimental Measured Composition Reference	same recycled EN AW-2007 continuous-cast 70 mm rod; solution treated at 500 degC for 6 h, water quenched at about 15-20 degC, naturally aged at about 25 degC for 9 h; 10 mm tensile specimen
Iron mass fraction	0.45	wt.%	Experimental Measured Composition Reference	same recycled EN AW-2007 continuous-cast 70 mm rod; solution treated at 500 degC for 6 h, water quenched at about 15-20 degC, naturally aged at about 25 degC for 9 h; 10 mm tensile specimen
Copper mass fraction	3.43	wt.%	Experimental Measured Composition Reference	same recycled EN AW-2007 continuous-cast 70 mm rod; solution treated at 500 degC for 6 h, water quenched at about 15-20 degC, naturally aged at about 25 degC for 9 h; 10 mm tensile specimen
Manganese mass fraction	0.64	wt.%	Experimental Measured Composition Reference	same recycled EN AW-2007 continuous-cast 70 mm rod; solution treated at 500 degC for 6 h, water quenched at about 15-20 degC, naturally aged at about 25 degC for 9 h; 10 mm tensile specimen
Magnesium mass fraction	0.7	wt.%	Experimental Measured Composition Reference	same recycled EN AW-2007 continuous-cast 70 mm rod; solution treated at 500 degC for 6 h, water quenched at about 15-20 degC, naturally aged at about 25 degC for 9 h; 10 mm tensile specimen
Chromium mass fraction	0.023	wt.%	Experimental Measured Composition Reference	same recycled EN AW-2007 continuous-cast 70 mm rod; solution treated at 500 degC for 6 h, water quenched at about 15-20 degC, naturally aged at about 25 degC for 9 h; 10 mm tensile specimen
Nickel mass fraction	0.008	wt.%	Experimental Measured Composition Reference	same recycled EN AW-2007 continuous-cast 70 mm rod; solution treated at 500 degC for 6 h, water quenched at about 15-20 degC, naturally aged at about 25 degC for 9 h; 10 mm tensile specimen

Property	Value	Unit	Type	Applies to
Zinc mass fraction	0.2	wt.%	Experimental Measured Composition Reference	same recycled EN AW-2007 continuous-cast 70 mm rod; solution treated at 500 degC for 6 h, water quenched at about 15-20 degC, naturally aged at about 25 degC for 9 h; 10 mm tensile specimen
Lead mass fraction	0.53	wt.%	Experimental Measured Composition Reference	same recycled EN AW-2007 continuous-cast 70 mm rod; solution treated at 500 degC for 6 h, water quenched at about 15-20 degC, naturally aged at about 25 degC for 9 h; 10 mm tensile specimen
Titanium mass fraction	0.027	wt.%	Experimental Measured Composition Reference	same recycled EN AW-2007 continuous-cast 70 mm rod; solution treated at 500 degC for 6 h, water quenched at about 15-20 degC, naturally aged at about 25 degC for 9 h; 10 mm tensile specimen

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