MATERIAL DATA SHEET

AA3004 cast condition A3, compression reference (CC BY experimental)

Room- and elevated-temperature compression yield strength for laboratory AA3004 after 375 degC for 48 h.

Field	Value
Material ID	mdpi-aa3004-cast-a3-compression
Category	Metal
Condition	laboratory permanent-mold cast AA3004, condition A3 | laboratory permanent-mold cast ingot; machined compression specimen
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	G. S. Wang, K. Liu, and S. L. Wang, Evolution of Elevated-Temperature Strength and Creep Resistance during Multi-Step Heat Treatments in Al-Mn-Mg Alloy, Materials 2018, 11, 1158, https://doi.org/10.3390/ma11071158.
Valid temperature	20 ... 300 degC (Compression yield was measured at room temperature and 300 degC only; do not interpolate without validation.)
Valid pressure	Pressure dependence is not represented.
Valid phase / condition	laboratory permanent-mold cast AA3004, condition A3
Uncertainty	Experimental AA3004 compression data for one laboratory cast heat and condition A3; three-test mean and stated standard deviation. Not a wrought-product tensile minimum or EN temper.
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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	Experimental AA3004 compression data for one laboratory cast heat and condition A3; three-test mean and stated standard deviation. Not a wrought-product tensile minimum or EN temper.
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Attribution	G. S. Wang

Material Condition

Field	Value
Condition	laboratory permanent-mold cast AA3004, condition A3
Temper	experimental heat-treatment code A3; no registered temper claimed
Heat treatment	375 degC for 48 h; direct water quench to room temperature
Product form	laboratory permanent-mold cast ingot; machined compression specimen
Thickness / diameter range	cast ingot 30 x 40 x 80 mm; specimen 10 mm diameter x 15 mm long
Test direction	compression direction not stated
Processing route	laboratory melt from commercial-purity feedstock, permanent-mold cast, heat treated and water quenched
Temperature range	20 ... 300 degC
Notes	Experimental AA3004 compression data for one laboratory cast heat and condition A3; three-test mean and stated standard deviation. Not a wrought-product tensile minimum or EN temper.

Properties

Physical

Property	Value	Unit	Type	Applies to
Electrical conductivity	37.8	% IACS	Experimental Measured Screening	laboratory AA3004 permanent-mold casting (Al-1.2Mn-1.1Mg-0.6Fe-0.25Si wt.%), 10 mm diameter x 15 mm compression specimen; three-test mean; strain rate 10^-3 1/s; condition A3, 375 degC for 48 h, followed by direct water quench to room temperature

Mechanical

Property	Value	Unit	Type	Applies to
Compression yield strength at room temperature	107.9	MPa	Experimental Measured Screening	laboratory AA3004 permanent-mold casting (Al-1 .2Mn-1.1Mg-0.6Fe-0.25Si wt.%), 10 mm diameter x 15 mm compression specimen; three-test mean; strain rate 10^-3 1/s; condition A3, 375 degC for 48 h, followed by direct water quench to room temperature
Compression yield strength at 300 degC	78.3	MPa	Experimental Measured Screening	laboratory AA3004 permanent-mold casting (Al-1 .2Mn-1.1Mg-0.6Fe-0.25Si wt.%), 10 mm diameter x 15 mm compression specimen; three-test mean; strain rate 10^-3 1/s; condition A3, 375 degC for 48 h, followed by direct water quench to room temperature

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