MATERIAL DATA SHEET

Aluminum 5456-O (NASA historical physical reference)

Historical room-temperature physical and thermal reference values for annealed 5456 aluminum from the public-use NASA handbook.

Field	Value
Material ID	nasa-5456-o-physical-reference
Category	Metal
Condition	5456-O annealed alloy physical-property reference | wrought alloy; exact form not specified for these physical values
Unit system	Common SI
Unit contract	Material properties stored in SI engineering units.
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Source and Validity

Field	Value
Quality	Catalog record
Design release allowed	No
Source family	Government materials handbook
Confidence	Reference-grade
License	Open
Source note	Named historical alloy reference transcribed from an official public-use NASA handbook.
Citation	NASA-CR-123827, Materials Data Handbook: Aluminum Alloy 5456, 1972, NASA Technical Reports Server record 19720022807; property locations: PDF page 70 (handbook page 61), Chapter 9; https://ntrs.nasa.gov/citations/19720022807. NTRS marks the document 'Work of the US Gov. Public Use Permitted.'
Valid temperature	20 ... 100 degC (Temperature is stated per property.)
Valid pressure	Pressure dependence is not represented by these solid reference values.
Valid phase / condition	5456-O annealed alloy physical-property reference
Uncertainty	Historical reference data transcribed with the stated property semantics and SI conversions. Confirm against the official PDF, a current procurement specification, the actual product form and thickness, and a material test report before engineering use.
Last reviewed	2026-08-01
Reviewer	scripts/import_nasa_public_metals.py
Review status	Checked
Review scope	Checked official NTRS public-use status, report identity and PDF hash, cited tables, minimum/nominal semantics, condition text, and SI conversions. No claim of current specification validity or design release is made.

Field	Value
Notes	Historical reference only; not a current supplier certificate or procurement allowable.
License ID	US-GOV-PUBLIC-USE
License URL	https://ntrs.nasa.gov/citations/19720022807
Attribution	National Aeronautics and Space Administration

Material Condition

Field	Value
Condition	5456-O annealed alloy physical-property reference
Temper	O
Heat treatment	annealed
Product form	wrought alloy; exact form not specified for these physical values
Thickness / diameter range	not specified
Test direction	not applicable or not specified
Processing route	wrought aluminum alloy
Temperature range	20 ... 100 degC
Notes	Historical reference data transcribed with the stated property semantics and SI conversions. Confirm against the official PDF, a current procurement specification, the actual product form and thickness, and a material test report before engineering use.

Properties

Physical

Property	Value	Unit	Type	Applies to
Density	2650	kg/m^3	Nominal	5456 alloy at 20 degC.

Thermal

Property	Value	Unit	Type	Applies to
Thermal conductivity	117.152	W/m/K	Nominal	At 25 degC; converted from 0.28 cal/cm/s/degC.
Mean coefficient of thermal expansion	2.39e-05	1/K	Nominal	Average from 20 to 100 degC.
Specific heat capacity	962.32	J/kg/K	Nominal	At 100 degC; converted from 0.23 cal/g/degC.

Electrical

Property	Value	Unit	Type	Applies to
Electrical resistivity	5.9e-08	ohm*m	Nominal	O temper at 20 degC; converted from 5.9 microohm-cm.

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