MATERIAL DATA SHEET

Alclad 2024-T42 sheet, 1.6-6.3 mm (MIL-HDBK-5H)

Historical public-release 2024 alloy reference preserving T42 clad, clad flat sheet, material direction, and thickness scope.

Field	Value
Material ID	milhdbk-2024-t42-clad-sheet-1-6-6-3-mm
Category	Metal
Condition	2024-T42 clad; clad flat sheet; 0.063-0.249 in (1.60-6.32 mm) | clad flat sheet
Unit system	Common SI
Unit contract	Material properties stored in SI engineering units.
Generated	2026-11-15 23:02

Source and Validity

Field	Value
Quality	Catalog record
Design release allowed	No
Source family	Government materials handbook
Confidence	Reference-grade
License	Open
Source note	Independent transcription from an official public-release U.S. government handbook.
Citation	U.S. Department of Defense, MIL-HDBK-5H, Metallic Materials and Elements for Aerospace Vehicle Structures, 1 December 1998, Table 3.2.3.0(e3), PDF page(s) 372 (handbook page(s) 3-76); official DLA document record https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=53876. The official PDF carries Distribution Statement A: Approved for public release; distribution is unlimited.
Valid temperature	21 ... 21 degC (Room-temperature historical handbook values. Applicability is limited to the exact alloy, temper/condition, product form, size band, material axis, statistical basis, and specification identified by the cited table.)
Valid pressure	Pressure dependence is not represented by these solid-material reference values.
Valid phase / condition	2024-T42 clad; clad flat sheet; 0.063-0.249 in (1.60-6.32 mm)
Uncertainty	Values are historical handbook table transcriptions with explicit SI conversion. They are not a substitute for a current material specification, supplier certificate, drawing allowable, or project approval.
Last reviewed	2026-08-02
Reviewer	scripts/import_milhdbk5h_public_metals.py
Review status	Checked

Field	Value
Review scope	Checked official DLA document identity, Distribution Statement A, PDF hash, table/page location, alloy/condition/form/size scope, basis semantics, and SI conversions.
Notes	Historical reference only; design release is explicitly disabled.
License ID	US-DOD-DISTRIBUTION-STATEMENT-A
License URL	https://www.dodcui.mil/Distribution-Statements/
Attribution	U.S. Department of Defense

Material Condition

Field	Value
Condition	2024-T42 clad; clad flat sheet; 0.063-0.249 in (1.60-6.32 mm)
Temper	T42 clad
Heat treatment	2024-T42 clad heat-treatment condition; verify the applicable procurement specification
Product form	clad flat sheet
Thickness / diameter range	0.063-0.249 in (1.60-6.32 mm)
Test direction	L and LT material axes; lower tabulated values retained where bands are combined
Processing route	wrought heat-treatable aluminum alloy
Temperature range	21 ... 21 degC
Notes	Room-temperature historical handbook values. Applicability is limited to the exact alloy, temper/condition, product form, size band, material axis, statistical basis, and specification identified by the cited table. Historical reference only; confirm the current procurement specification and material test report.

Properties

Physical

Property	Value	Unit	Type	Applies to
Density	2768	kg/m^3	Historical Nominal	2024-T42 clad; clad flat sheet; 0.063-0.249 in (1.60-6.32 mm); A-basis table band 0.063-0.249 in

Mechanical

Property	Value	Unit	Type	Applies to
Ultimate tensile strength, L	413.685	MPa	Historical Public Release Table Value	2024-T42 clad; clad flat sheet; 0.063-0.249 in (1.60-6.32 mm); A-basis table band 0.063-0.249 in; L direction
Tensile yield strength, L	248.211	MPa	Historical Public Release Table Value	2024-T42 clad; clad flat sheet; 0.063-0.249 in (1.60-6.32 mm); A-basis table band 0.063-0.249 in; L direction
Ultimate tensile strength, LT	413.685	MPa	Historical Public Release Table Value	2024-T42 clad; clad flat sheet; 0.063-0.249 in (1.60-6.32 mm); A-basis table band 0.063-0.249 in; LT direction
Tensile yield strength, LT	248.211	MPa	Historical Public Release Table Value	2024-T42 clad; clad flat sheet; 0.063-0.249 in (1.60-6.32 mm); A-basis table band 0.063-0.249 in; LT direction
Compressive yield strength, L	275.79	MPa	Historical Public Release Table Value	2024-T42 clad; clad flat sheet; 0.063-0.249 in (1.60-6.32 mm); A-basis table band 0.063-0.249 in; L direction
Compressive yield strength, LT	268.896	MPa	Historical Public Release Table Value	2024-T42 clad; clad flat sheet; 0.063-0.249 in (1.60-6.32 mm); A-basis table band 0.063-0.249 in; LT direction
Ultimate shear strength	248.211	MPa	Historical Public Release Table Value	2024-T42 clad; clad flat sheet; 0.063-0.249 in (1.60-6.32 mm); A-basis table band 0.063-0.249 in
Elongation, LT	15	%	Historical Public Release Table Value	2024-T42 clad; clad flat sheet; 0.063-0.249 in (1.60-6.32 mm); A-basis table band 0.063-0.249 in; LT direction
Young's modulus	72.395	GPa	Historical Nominal	2024-T42 clad; clad flat sheet; 0.063-0.249 in (1.60-6.32 mm); A-basis table band 0.063-0.249 in
Compression modulus	73.774	GPa	Historical Nominal	2024-T42 clad; clad flat sheet; 0.063-0.249 in (1.60-6.32 mm); A-basis table band 0.063-0.249 in

Property	Value	Unit	Type	Applies to
Poisson's ratio	0.33	-	Historical Nominal	2024-T42 clad; clad flat sheet; 0.063-0.249 in (1.60-6.32 mm); A-basis table band 0.063-0.249 in
Shear modulus	27.22	GPa	Derived	Calculated from Young's modulus / (2 * (1 + Poisson's ratio)).

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