MATERIAL DATA SHEET

Aluminum-lithium 2090-T83 sheet, 1.016-6.3 mm (MIL-HDBK-5H)

Historical public-release S-basis aluminum-lithium sheet reference.

Field	Value
Material ID	milhdbk-2090-t83-sheet-1-016-6-3-mm
Category	Metal
Condition	2090-T83; sheet; 1.016-6.3 mm | sheet
Unit system	Common SI
Unit contract	Material properties stored in SI engineering units.
Generated	2026-11-15 23:15

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 3.2.5.0(b), PDF page(s) 449 (handbook page(s) 3-153); 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	2090-T83; sheet; 1.016-6.3 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Notes	Historical reference only; design release is explicitly disabled.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	2090-T83; sheet; 1.016-6.3 mm
Temper	T83
Heat treatment	solution heat treated, cold worked and artificially aged
Product form	sheet
Thickness / diameter range	0.040-0.248 in (1.016-6.3 mm), within the 0.040-0.249 in table bands
Test direction	L and LT; lower listed value across applicable columns
Processing route	wrought heat-treatable aluminum-copper-lithium sheet
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	2602	kg/m^3	Historical Nominal	2090-T83; sheet; 1.016-6.3 mm; lower S-basis value across 0.040-0.249 in

Mechanical

Property	Value	Unit	Type	Applies to
Ultimate tensile strength, L	517.107	MPa	Historical Public Release Table Value	2090-T83; sheet; 1.016-6.3 mm; lower S-basis value across 0.040-0.249 in; L direction
Tensile yield strength, L	482.633	MPa	Historical Public Release Table Value	2090-T83; sheet; 1.016-6.3 mm; lower S-basis value across 0.040-0.249 in; L direction
Ultimate tensile strength, LT	503.317	MPa	Historical Public Release Table Value	2090-T83; sheet; 1.016-6.3 mm; lower S-basis value across 0.040-0.249 in; LT direction
Tensile yield strength, LT	455.054	MPa	Historical Public Release Table Value	2090-T83; sheet; 1.016-6.3 mm; lower S-basis value across 0.040-0.249 in; LT direction
Compressive yield strength, L	434.37	MPa	Historical Public Release Table Value	2090-T83; sheet; 1.016-6.3 mm; lower S-basis value across 0.040-0.249 in; L direction
Compressive yield strength, LT	489.528	MPa	Historical Public Release Table Value	2090-T83; sheet; 1.016-6.3 mm; lower S-basis value across 0.040-0.249 in; LT direction
Ultimate shear strength	255.106	MPa	Historical Public Release Table Value	2090-T83; sheet; 1.016-6.3 mm; lower S-basis value across 0.040-0.249 in
Elongation, L	3	%	Historical Public Release Table Value	2090-T83; sheet; 1.016-6.3 mm; lower S-basis value across 0.040-0.249 in; L direction
Elongation, LT	5	%	Historical Public Release Table Value	2090-T83; sheet; 1.016-6.3 mm; lower S-basis value across 0.040-0.249 in; LT direction
Ramberg-Osgood exponent, tension L	14	-	Historical Public Release Table Value	2090-T83; sheet; 1.016-6.3 mm; lower S-basis value across 0.040-0.249 in; L direction; typical room-temperature curve; sheet thickness 0.040-0.249 in

Property	Value	Unit	Type	Applies to
Ramberg-Osgood exponent, tension LT	12	-	Historical Public Release Table Value	2090-T83; sheet; 1.016-6.3 mm; lower S-basis value across 0.040-0.249 in; LT direction; typical room-temperature curve; sheet thickness 0.040-0.249 in
Ramberg-Osgood exponent, compression L	20	-	Historical Public Release Table Value	2090-T83; sheet; 1.016-6.3 mm; lower S-basis value across 0.040-0.249 in; L direction; typical room-temperature curve; sheet thickness 0.040-0.249 in
Ramberg-Osgood exponent, compression LT	19	-	Historical Public Release Table Value	2090-T83; sheet; 1.016-6.3 mm; lower S-basis value across 0.040-0.249 in; LT direction; typical room-temperature curve; sheet thickness 0.040-0.249 in
Young's modulus	79.29	GPa	Historical Nominal	2090-T83; sheet; 1.016-6.3 mm; lower S-basis value across 0.040-0.249 in
Compression modulus	81.358	GPa	Historical Nominal	2090-T83; sheet; 1.016-6.3 mm; lower S-basis value across 0.040-0.249 in
Shear modulus	29.647	GPa	Historical Nominal	2090-T83; sheet; 1.016-6.3 mm; lower S-basis value across 0.040-0.249 in
Poisson's ratio	0.34	-	Historical Nominal	2090-T83; sheet; 1.016-6.3 mm; lower S-basis value across 0.040-0.249 in

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