MATERIAL DATA SHEET

Aluminum 7050-T7651 plate, 6.35-50 mm (MIL-HDBK-5H)

Historical public-release T7651 plate reference through 50 mm.

Field	Value
Material ID	milhdbk-7050-t7651-plate-6-35-50-mm
Category	Metal
Condition	7050-T7651; plate; 6.35-50 mm | plate
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	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 3.7.3.0(b3), PDF page(s) 606 (handbook page(s) 3-310); 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	7050-T7651; plate; 6.35-50 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
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.

Field	Value
Notes	Historical reference only; design release is explicitly disabled.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	7050-T7651; plate; 6.35-50 mm
Temper	T7651
Heat treatment	solution heat treated, stress relieved by stretching and overaged to T76 condition
Product form	plate
Thickness / diameter range	0.250-1.969 in (6.35-50 mm), within the 0.250-2.000 in table columns
Test direction	L, LT and ST where available; lower listed value across applicable thickness columns
Processing route	wrought heat-treatable aluminum-zinc plate
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	2823	kg/m^3	Historical Nominal	7050-T7651; plate; 6.35-50 mm; lower S/A-basis value across 0.250-2.000 in

Mechanical

Property	Value	Unit	Type	Applies to
Ultimate tensile strength, L	524.002	MPa	Historical Public Release Table Value	7050-T7651; plate; 6.35-50 mm; lower S/A-basis value across 0.250-2.000 in; L direction
Tensile yield strength, L	455.054	MPa	Historical Public Release Table Value	7050-T7651; plate; 6.35-50 mm; lower S/A-basis value across 0.250-2.000 in; L direction
Ultimate tensile strength, LT	517.107	MPa	Historical Public Release Table Value	7050-T7651; plate; 6.35-50 mm; lower S/A-basis value across 0.250-2.000 in; LT direction
Tensile yield strength, LT	448.159	MPa	Historical Public Release Table Value	7050-T7651; plate; 6.35-50 mm; lower S/A-basis value across 0.250-2.000 in; LT direction
Compressive yield strength, L	441.264	MPa	Historical Public Release Table Value	7050-T7651; plate; 6.35-50 mm; lower S/A-basis value across 0.250-2.000 in; L direction
Compressive yield strength, LT	468.843	MPa	Historical Public Release Table Value	7050-T7651; plate; 6.35-50 mm; lower S/A-basis value across 0.250-2.000 in; LT direction
Ultimate shear strength	296.475	MPa	Historical Public Release Table Value	7050-T7651; plate; 6.35-50 mm; lower S/A-basis value across 0.250-2.000 in
Elongation, L	9	%	Historical Public Release Table Value	7050-T7651; plate; 6.35-50 mm; lower S/A-basis value across 0.250-2.000 in; L direction
Elongation, LT	8	%	Historical Public Release Table Value	7050-T7651; plate; 6.35-50 mm; lower S/A-basis value across 0.250-2.000 in; LT direction
Ultimate tensile strength, ST	496.423	MPa	Historical Public Release Table Value	7050-T7651; plate; 6.35-50 mm; lower S/A-basis value across 0.250-2.000 in; ST direction; applies from 1.501 through 2.000 in
Tensile yield strength, ST	406.791	MPa	Historical Public Release Table Value	7050-T7651; plate; 6.35-50 mm; lower S/A-basis value across 0.250-2.000 in; ST direction; applies from 1.501 through 2.000 in

Property	Value	Unit	Type	Applies to
Compressive yield strength, ST	461.949	MPa	Historical Public Release Table Value	7050-T7651; plate; 6.35-50 mm; lower S/A-basis value across 0.250-2.000 in; ST direction; applies from 1.501 through 2.000 in
Elongation, ST	1.5	%	Historical Public Release Table Value	7050-T7651; plate; 6.35-50 mm; lower S/A-basis value across 0.250-2.000 in; ST direction; applies from 1.501 through 2.000 in
Young's modulus	71.016	GPa	Historical Nominal	7050-T7651; plate; 6.35-50 mm; lower S/A-basis value across 0.250-2.000 in
Compression modulus	74.463	GPa	Historical Nominal	7050-T7651; plate; 6.35-50 mm; lower S/A-basis value across 0.250-2.000 in
Shear modulus	27.579	GPa	Historical Nominal	7050-T7651; plate; 6.35-50 mm; lower S/A-basis value across 0.250-2.000 in
Poisson's ratio	0.33	-	Historical Nominal	7050-T7651; plate; 6.35-50 mm; lower S/A-basis value across 0.250-2.000 in

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