MATERIAL DATA SHEET

Ti-6Al-4V annealed extrusion, <=50.8 mm (MIL-HDBK-5H)

Historical public-release A-basis annealed-extrusion reference.

Field	Value
Material ID	milhdbk-ti64-annealed-extrusion-50-8-mm
Category	Metal
Condition	Ti-6Al-4V; annealed; extrusion; <=50.8 mm | extrusion
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 5.4.1.0(e), PDF page(s) 919 (handbook page(s) 5-59); 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	Ti-6Al-4V; annealed; extrusion; <=50.8 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Notes	Historical reference only; design release is explicitly disabled.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	Ti-6Al-4V; annealed; extrusion; <=50.8 mm
Temper	annealed
Heat treatment	annealed per AMS 4935
Product form	extrusion
Thickness / diameter range	<=2.000 in (50.8 mm)
Test direction	L and LT, subject to the source-table transverse-dimension footnote
Processing route	wrought alpha-beta titanium-alloy extrusion
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	4429	kg/m^3	Historical Nominal	Ti-6Al-4V; annealed; extrusion; <=50.8 mm; A-basis strengths; S-basis flagged values and elongation; <=2.000 in

Mechanical

Property	Value	Unit	Type	Applies to
Ultimate tensile strength, L	896.318	MPa	Historical Public Release Table Value	Ti-6Al-4V; annealed; extrusion; <=50.8 mm; A-basis strengths; S-basis flagged values and elongation; <=2.000 in; L direction
Tensile yield strength, L	827.371	MPa	Historical Public Release Table Value	Ti-6Al-4V; annealed; extrusion; <=50.8 mm; A-basis strengths; S-basis flagged values and elongation; <=2.000 in; L direction
Ultimate tensile strength, LT	896.318	MPa	Historical Public Release Table Value	Ti-6Al-4V; annealed; extrusion; <=50.8 mm; A-basis strengths; S-basis flagged values and elongation; <=2.000 in; LT direction
Tensile yield strength, LT	827.371	MPa	Historical Public Release Table Value	Ti-6Al-4V; annealed; extrusion; <=50.8 mm; A-basis strengths; S-basis flagged values and elongation; <=2.000 in; LT direction
Compressive yield strength, L	882.529	MPa	Historical Public Release Table Value	Ti-6Al-4V; annealed; extrusion; <=50.8 mm; A-basis strengths; S-basis flagged values and elongation; <=2.000 in; L direction
Compressive yield strength, LT	889.424	MPa	Historical Public Release Table Value	Ti-6Al-4V; annealed; extrusion; <=50.8 mm; A-basis strengths; S-basis flagged values and elongation; <=2.000 in; LT direction
Ultimate shear strength	572.265	MPa	Historical Public Release Table Value	Ti-6Al-4V; annealed; extrusion; <=50.8 mm; A-basis strengths; S-basis flagged values and elongation; <=2.000 in
Elongation, L	10	%	Historical Public Release Table Value	Ti-6Al-4V; annealed; extrusion; <=50.8 mm; A-basis strengths; S-basis flagged values and elongation; <=2.000 in; L direction

Property	Value	Unit	Type	Applies to
Elongation, LT	8	%	Historical Public Release Table Value	Ti-6Al-4V; annealed; extrusion; <=50.8 mm; A-basis strengths; S-basis flagged values and elongation; <=2.000 in; LT direction
Young's modulus	116.521	GPa	Historical Nominal	Ti-6Al-4V; annealed; extrusion; <=50.8 mm; A-basis strengths; S-basis flagged values and elongation; <=2.000 in
Compression modulus	118.59	GPa	Historical Nominal	Ti-6Al-4V; annealed; extrusion; <=50.8 mm; A-basis strengths; S-basis flagged values and elongation; <=2.000 in
Shear modulus	42.747	GPa	Historical Nominal	Ti-6Al-4V; annealed; extrusion; <=50.8 mm; A-basis strengths; S-basis flagged values and elongation; <=2.000 in
Poisson's ratio	0.31	-	Historical Nominal	Ti-6Al-4V; annealed; extrusion; <=50.8 mm; A-basis strengths; S-basis flagged values and elongation; <=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.