MATERIAL DATA SHEET

Aluminum 5052-H38 sheet/plate (MIL-HDBK-5H)

Historical public-release S-basis 5052-H38 sheet/plate reference.

Field	Value
Material ID	milhdbk-5052-h38-sheet-plate
Category	Metal
Condition	5052-H38; sheet/plate; 0.006-0.128 in (0.152-3.251 mm) | sheet and plate
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 3.5.1.0(b1) and (b2), PDF page(s) 505-506 (handbook page(s) 3-209 to 3-210); 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	5052-H38; sheet/plate; 0.006-0.128 in (0.152-3.251 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Notes	Historical reference only; design release is explicitly disabled.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	5052-H38; sheet/plate; 0.006-0.128 in (0.152-3.251 mm)
Temper	H38
Heat treatment	strain hardened to H38
Product form	sheet and plate
Thickness / diameter range	0.006-0.128 in (0.152-3.251 mm)
Test direction	L and LT where listed; elongation L
Processing route	wrought non-heat-treatable aluminum-magnesium sheet/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	2685	kg/m^3	Historical Nominal	5052-H38; sheet/plate; 0.006-0.128 in (0.152-3.251 mm); Static values are from Table 3.5.1.0(b1); elongation is the lowest listed longitudinal value over this card's Table 3.5.1.0(b2) thickness range.

Mechanical

Property	Value	Unit	Type	Applies to
Ultimate tensile strength, L	268.896	MPa	Historical Public Release Table Value	5052-H38; sheet/plate; 0.006-0.128 in (0.152-3.251 mm); Static values are from Table 3.5.1.0(b1); elongation is the lowest listed longitudinal value over this card's Table 3.5.1.0(b2) thickness range.; L direction
Tensile yield strength, L	220.632	MPa	Historical Public Release Table Value	5052-H38; sheet/plate; 0.006-0.128 in (0.152-3.251 mm); Static values are from Table 3.5.1.0(b1); elongation is the lowest listed longitudinal value over this card's Table 3.5.1.0(b2) thickness range.; L direction
Ultimate tensile strength, LT	268.896	MPa	Historical Public Release Table Value	5052-H38; sheet/plate; 0.006-0.128 in (0.152-3.251 mm); Static values are from Table 3.5.1.0(b1); elongation is the lowest listed longitudinal value over this card's Table 3.5.1.0(b2) thickness range.; LT direction
Tensile yield strength, LT	220.632	MPa	Historical Public Release Table Value	5052-H38; sheet/plate; 0.006-0.128 in (0.152-3.251 mm); Static values are from Table 3.5.1.0(b1); elongation is the lowest listed longitudinal value over this card's Table 3.5.1.0(b2) thickness range.; LT direction
Ultimate shear strength	158.579	MPa	Historical Public Release Table Value	5052-H38; sheet/plate; 0.006-0.128 in (0.152-3.251 mm); Static values are from Table 3.5.1.0(b1); elongation is the lowest listed longitudinal value over this card's Table 3.5.1.0(b2) thickness range.
Elongation, L	2	%	Historical Public Release Table Value	5052-H38; sheet/plate; 0.006-0.128 in (0.152-3.251 mm); Static values are from Table 3.5.1.0(b1); elongation is the lowest listed longitudinal value over this card's Table 3.5.1.0(b2) thickness range.; L direction

Property	Value	Unit	Type	Applies to
Young's modulus	69.637	GPa	Historical Nominal	5052-H38; sheet/plate; 0.006-0.128 in (0.152-3.251 mm); Static values are from Table 3.5.1.0(b1); elongation is the lowest listed longitudinal value over this card's Table 3.5.1.0(b2) thickness range.
Compression modulus	70.327	GPa	Historical Nominal	5052-H38; sheet/plate; 0.006-0.128 in (0.152-3.251 mm); Static values are from Table 3.5.1.0(b1); elongation is the lowest listed longitudinal value over this card's Table 3.5.1.0(b2) thickness range.
Shear modulus	26.545	GPa	Historical Nominal	5052-H38; sheet/plate; 0.006-0.128 in (0.152-3.251 mm); Static values are from Table 3.5.1.0(b1); elongation is the lowest listed longitudinal value over this card's Table 3.5.1.0(b2) thickness range.
Poisson's ratio	0.33	-	Historical Nominal	5052-H38; sheet/plate; 0.006-0.128 in (0.152-3.251 mm); Static values are from Table 3.5.1.0(b1); elongation is the lowest listed longitudinal value over this card's Table 3.5.1.0(b2) thickness range.

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