MATERIAL DATA SHEET

AISI 4340 quenched-and-tempered bar, 260 ksi class, <=43 mm (MIL-HDBK-5H)

Historical public-release S-basis AISI 4340 bar reference at the 260 ksi ultimate-strength class.

Field	Value
Material ID	milhdbk-aisi4340-260ksi-qt-bar-43-mm
Category	Metal
Condition	AISI 4340; quenched and tempered to 260 ksi Ftu class; bar; <=43.18 mm equivalent-round diameter | bar
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 2.3.1.0(f), PDF page(s) 76 (handbook page(s) 2-22); 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	AISI 4340; quenched and tempered to 260 ksi Ftu class; bar; <=43.18 mm equivalent-round diameter
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

Field	Value
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.
Notes	Historical reference only; design release is explicitly disabled.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	AISI 4340; quenched and tempered to 260 ksi Ftu class; bar; <=43.18 mm equivalent-round diameter
Temper	260 ksi ultimate-strength class
Heat treatment	quenched and tempered; the required 260 ksi ultimate strength must be substantiated by adequate quality-control testing
Product form	bar
Thickness / diameter range	<=1.7 in (43.18 mm) equivalent-round diameter; Table 2.3.0.2 permits larger diameters only for specified faster quench routes
Test direction	longitudinal
Processing route	AMS 6414 bar; quenched and tempered
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	7833	kg/m^3	Historical Nominal	AISI 4340; quenched and tempered to 260 ksi Ftu class; bar; <=43.18 mm equivalent-round diameter; AISI 4340 column only. Table 2.3.0.2 limits the conservative equivalent-round diameter to 1.7 in for the 260 ksi class; larger diameters depend on the documented quench route.

Mechanical

Property	Value	Unit	Type	Applies to
Ultimate tensile strength, L	1792.637	MPa	Historical Public Release Table Value	AISI 4340; quenched and tempered to 260 ksi Ftu class; bar; <=43.18 mm equivalent-round diameter; AISI 4340 column only. Table 2.3.0.2 limits the conservative equivalent-round diameter to 1.7 in for the 260 ksi class; larger diameters depend on the documented quench route.; L direction
Tensile yield strength, L	1496.162	MPa	Historical Public Release Table Value	AISI 4340; quenched and tempered to 260 ksi Ftu class; bar; <=43.18 mm equivalent-round diameter; AISI 4340 column only. Table 2.3.0.2 limits the conservative equivalent-round diameter to 1.7 in for the 260 ksi class; larger diameters depend on the documented quench route.; L direction
Compressive yield strength, L	1620.268	MPa	Historical Public Release Table Value	AISI 4340; quenched and tempered to 260 ksi Ftu class; bar; <=43.18 mm equivalent-round diameter; AISI 4340 column only. Table 2.3.0.2 limits the conservative equivalent-round diameter to 1.7 in for the 260 ksi class; larger diameters depend on the documented quench route.; L direction
Ultimate shear strength	1075.582	MPa	Historical Public Release Table Value	AISI 4340; quenched and tempered to 260 ksi Ftu class; bar; <=43.18 mm equivalent-round diameter; AISI 4340 column only. Table 2.3.0.2 limits the conservative equivalent-round diameter to 1.7 in for the 260 ksi class; larger diameters depend on the documented quench route.

Property	Value	Unit	Type	Applies to
Elongation, L	10	%	Historical Public Release Table Value	AISI 4340; quenched and tempered to 260 ksi Ftu class; bar; <=43.18 mm equivalent-round diameter; AISI 4340 column only. Table 2.3.0.2 limits the conservative equivalent-round diameter to 1.7 in for the 260 ksi class; larger diameters depend on the documented quench route.; L direction
Young's modulus	199.948	GPa	Historical Nominal	AISI 4340; quenched and tempered to 260 ksi Ftu class; bar; <=43.18 mm equivalent-round diameter; AISI 4340 column only. Table 2.3.0.2 limits the conservative equivalent-round diameter to 1.7 in for the 260 ksi class; larger diameters depend on the documented quench route.
Compression modulus	199.948	GPa	Historical Nominal	AISI 4340; quenched and tempered to 260 ksi Ftu class; bar; <=43.18 mm equivalent-round diameter; AISI 4340 column only. Table 2.3.0.2 limits the conservative equivalent-round diameter to 1.7 in for the 260 ksi class; larger diameters depend on the documented quench route.
Shear modulus	75.842	GPa	Historical Nominal	AISI 4340; quenched and tempered to 260 ksi Ftu class; bar; <=43.18 mm equivalent-round diameter; AISI 4340 column only. Table 2.3.0.2 limits the conservative equivalent-round diameter to 1.7 in for the 260 ksi class; larger diameters depend on the documented quench route.

Property	Value	Unit	Type	Applies to
Poisson's ratio	0.32	-	Historical Nominal	AISI 4340; quenched and tempered to 260 ksi Ftu class; bar; <=43.18 mm equivalent-round diameter; AISI 4340 column only. Table 2.3.0.2 limits the conservative equivalent-round diameter to 1.7 in for the 260 ksi class; larger diameters depend on the documented quench route.

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