MATERIAL DATA SHEET

# Aluminum 7075-T6510/T6511 extrusion, 12.7-19 mm (MIL-HDBK-5H)

Historical public-release A-basis extrusion reference for 12.7-19 mm quench thickness.

| Field | Value |
|---|---|
| Material ID | milhdbk-7075-t651x-extrusion-12-7-19-mm |
| Category | Metal |
| Condition | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench \| extruded rod, bar or shape |
| 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 3.7.4.0(f1), PDF page(s) 656 (handbook page(s) 3-360); 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 | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench |
| 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| Notes | Historical reference only; design release is explicitly disabled.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 | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench |
| Temper | T6510 or T6511 |
| Heat treatment | solution heat treated, stress relieved by stretching and artificially aged |
| Product form | extruded rod, bar or shape |
| Thickness / diameter range | 0.500-0.748 in (12.7-19 mm), within the 0.500-0.749 in table column |
| Test direction | L and LT |
| Processing route | wrought heat-treatable aluminum 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 | 2796 | kg/m^3 | Historical Nominal | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench; A-basis, 0.500-0.749 in table column |

## Mechanical

| Property | Value | Unit | Type | Applies to |
|---|---|---|---|---|
| Ultimate tensile strength, L | 558.475 | MPa | Historical Public Release Table Value | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench; A-basis, 0.500-0.749 in table column; L direction |
| Tensile yield strength, L | 496.423 | MPa | Historical Public Release Table Value | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench; A-basis, 0.500-0.749 in table column; L direction |
| Ultimate tensile strength, LT | 530.896 | MPa | Historical Public Release Table Value | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench; A-basis, 0.500-0.749 in table column; LT direction |
| Tensile yield strength, LT | 461.949 | MPa | Historical Public Release Table Value | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench; A-basis, 0.500-0.749 in table column; LT direction |
| Compressive yield strength, L | 496.423 | MPa | Historical Public Release Table Value | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench; A-basis, 0.500-0.749 in table column; L direction |
| Compressive yield strength, LT | 503.317 | MPa | Historical Public Release Table Value | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench; A-basis, 0.500-0.749 in table column; LT direction |
| Ultimate shear strength | 296.475 | MPa | Historical Public Release Table Value | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench; A-basis, 0.500-0.749 in table column |
| Elongation, L | 7 | % | Historical Public Release Table Value | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench; A-basis, 0.500-0.749 in table column; L direction |
| Ramberg-Osgood exponent, tension L | 50 | - | Historical Public Release Table Value | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench; A-basis, 0.500-0.749 in table column; L direction; typical room-temperature curve; extrusion thickness 0.500-0.749 in |

| Property | Value | Unit | Type | Applies to |
|---|---|---|---|---|
| Ramberg-Osgood exponent, tension LT | 22 | - | Historical Public Release Table Value | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench; A-basis, 0.500-0.749 in table column; LT direction; typical room-temperature curve; extrusion thickness 0.500-0.749 in |
| Ramberg-Osgood exponent, compression L | 26 | - | Historical Public Release Table Value | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench; A-basis, 0.500-0.749 in table column; L direction; typical room-temperature curve; extrusion thickness 0.500-0.749 in |
| Ramberg-Osgood exponent, compression LT | 27 | - | Historical Public Release Table Value | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench; A-basis, 0.500-0.749 in table column; LT direction; typical room-temperature curve; extrusion thickness 0.500-0.749 in |
| Young's modulus | 71.705 | GPa | Historical Nominal | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench; A-basis, 0.500-0.749 in table column |
| Compression modulus | 73.774 | GPa | Historical Nominal | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench; A-basis, 0.500-0.749 in table column |
| Shear modulus | 27.579 | GPa | Historical Nominal | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench; A-basis, 0.500-0.749 in table column |
| Poisson's ratio | 0.33 | - | Historical Nominal | 7075-T6510/T6511; extrusion; 12.7-19 mm thickness at quench; A-basis, 0.500-0.749 in table column |

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