MATERIAL DATA SHEET

# AA7005 hot-rolled plate, 3.3 mm, aged 120 degC for 192 h, RD (CC BY experimental)

Measured longitudinal tensile, conductivity and fatigue reference values for exact AA7005 hot-rolled plate after one fully stated solution-and-ageing schedule.

| Field | Value |
|---|---|
| Material ID | mdpi-aa7005-plate-3p3mm-aged-120c-192h-rd |
| Category | Metal |
| Condition | commercial AA7005 hot-rolled plate, solution treated, water quenched and experimentally peak aged at 120 degC for 192 h \| hot-rolled plate |
| 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 | Experimental screening |
| Design release allowed | No |
| Source family | Experimental screening dataset |
| Confidence | Reference-grade |
| License | Open |
| Source note | Condition-specific base-material values from a CC BY 4.0 peer-reviewed article. |
| Citation | Ni Tian et al., Effect of Precipitates on the Mechanical Performance of 7005 Aluminum Alloy Plates, Materials 2022, 15, 5951, https://doi.org/10.3390/ma15175951. |
| Valid temperature | 25 ... 25 degC (Tensile, conductivity and fatigue tests were conducted at 25 degC.) |
| Valid pressure | Pressure dependence is not represented. |
| Valid phase / condition | commercial AA7005 hot-rolled plate, solution treated, water quenched and experimentally peak aged at 120 degC for 192 h |
| Uncertainty | Experimental values for one commercial AA7005 3.3 mm hot-rolled plate, one solution-and-ageing schedule and longitudinal direction. Five tensile and fatigue specimens were tested, but the cited text gives no dispersion. The state is not relabeled as a registered temper and the values are not EN product minima. |
| Last reviewed | 2026-08-03 |
| Reviewer | scripts/import_mdpi_open_aluminum_public.py |
| Review status | Checked |
| Review scope | Checked article CC BY notice, DOI and PDF hash, exact alloy/temper, source geometry, table values, and reported or measured rather than specified-minimum semantics. |

| Field | Value |
|---|---|
| Notes | Experimental values for one commercial AA7005 3.3 mm hot-rolled plate, one solution-and-ageing schedule and longitudinal direction. Five tensile and fatigue specimens were tested, but the cited text gives no dispersion. The state is not relabeled as a registered temper and the values are not EN product minima. |
| License ID | CC-BY-4.0 |
| License URL | https://creativecommons.org/licenses/by/4.0/ |
| Attribution | Ni Tian et al. |

## Material Condition

| Field | Value |
|---|---|
| Condition | commercial AA7005 hot-rolled plate, solution treated, water quenched and experimentally peak aged at 120 degC for 192 h |
| Temper | experimental peak-aged state; no registered T-temper suffix is claimed |
| Heat treatment | solution treatment at 470 degC for 90 min, water quench, no more than 10 min room-temperature rest, then artificial ageing at 120 degC for 192 h |
| Product form | hot-rolled plate |
| Thickness / diameter range | 3.3 mm |
| Test direction | longitudinal, loading parallel to rolling direction |
| Processing route | commercial hot-rolled plate supplied by Northeast Light Alloy Co., Ltd. |
| Temperature range | 25 ... 25 degC |
| Notes | Experimental values for one commercial AA7005 3.3 mm hot-rolled plate, one solution-and-ageing schedule and longitudinal direction. Five tensile and fatigue specimens were tested, but the cited text gives no dispersion. The state is not relabeled as a registered temper and the values are not EN product minima. |

## Properties

### Physical

| Property | Value | Unit | Type | Applies to |
|---|---|---|---|---|
| Electrical conductivity | 40.9 | % IACS | Experimental<br>Measured<br>Screening | commercial AA7005 hot-rolled plate, 3.3 mm thick; solution treated at 470 degC for 90 min, water quenched, and aged at 120 degC for 192 h; longitudinal tensile loading parallel to rolling direction; room temperature 25 degC; strain rate 1e-3 1/s; five specimens |

## Mechanical

| Property | Value | Unit | Type | Applies to |
|---|---|---|---|---|
| Tensile yield strength, RD | 340.0 | MPa | Experimental<br>Measured<br>Screening | commercial AA7005 hot-rolled plate, 3.3 mm thick; solution treated at 470 degC for 90 min, water quenched, and aged at 120 degC for 192 h; longitudinal tensile loading parallel to rolling direction; room temperature 25 degC; strain rate 1e-3 1/s; five specimens |
| Ultimate tensile strength, RD | 382.0 | MPa | Experimental<br>Measured<br>Screening | commercial AA7005 hot-rolled plate, 3.3 mm thick; solution treated at 470 degC for 90 min, water quenched, and aged at 120 degC for 192 h; longitudinal tensile loading parallel to rolling direction; room temperature 25 degC; strain rate 1e-3 1/s; five specimens |
| Elongation, RD | 14.0 | % | Experimental<br>Measured<br>Screening | commercial AA7005 hot-rolled plate, 3.3 mm thick; solution treated at 470 degC for 90 min, water quenched, and aged at 120 degC for 192 h; longitudinal tensile loading parallel to rolling direction; room temperature 25 degC; strain rate 1e-3 1/s; five specimens |
| Fatigue life at 185 MPa and R=0 | 942200.0 | cycles | Experimental<br>Measured<br>Screening | commercial AA7005 hot-rolled plate, 3.3 mm thick; solution treated at 470 degC for 90 min, water quenched, and aged at 120 degC for 192 h; longitudinal tensile loading parallel to rolling direction; room temperature 25 degC; strain rate 1e-3 1/s; five specimens |

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