MATERIAL DATA SHEET

# EN AW-1050A-H14 cold-rolled sheet, 0.8 mm (CC BY reference)

Manufacturer nominal strengths, reported constants and calibrated rolling-direction hardening parameters for exact EN AW-1050A-H14 sheet.

| Field | Value |
|---|---|
| Material ID | mdpi-en-aw-1050a-h14-sheet-0p8mm |
| Category | Metal |
| Condition | EN AW-1050A-H14 low-strength, strain-hardened cold-rolled sheet supplied by Norsk Hydro ASA \| cold-rolled sheet |
| 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 | Kristoffer Aune Brekken et al., Sandwich Panels with Polymeric Foam Cores Exposed to Blast Loading: An Experimental and Numerical Investigation, Applied Sciences 2020, 10, 9061, https://doi.org/10.3390/app10249061. |
| Valid temperature | Tensile-test temperature is not stated; no temperature extrapolation is allowed. |
| Valid pressure | Pressure dependence is not represented. |
| Valid phase / condition | EN AW-1050A-H14 low-strength, strain-hardened cold-rolled sheet supplied by Norsk Hydro ASA |
| Uncertainty | Exact 0.8 mm EN AW-1050A-H14 sheet identity and nine-test campaign context are retained. The 100/116 MPa strengths are manufacturer nominal values, the Voce terms are calibrated to one representative RD curve, and Table 5 constants come from the article's prior source. No value is an EN minimum or design allowable. |
| Last reviewed | 2026-08-03 |
| Reviewer | scripts/import_mdpi_open_aluminum_public.py |
| Review status | Checked |

| Field | Value |
|---|---|
| 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. |
| Notes | Exact 0.8 mm EN AW-1050A-H14 sheet identity and nine-test campaign context are retained. The 100/116 MPa strengths are manufacturer nominal values, the Voce terms are calibrated to one representative RD curve, and Table 5 constants come from the article's prior source. No value is an EN minimum or design allowable. |
| License ID | CC-BY-4.0 |
| License URL | https://creativecommons.org/licenses/by/4.0/ |
| Attribution | Kristoffer Aune Brekken et al. |

## Material Condition

| Field | Value |
|---|---|
| Condition | EN AW-1050A-H14 low-strength, strain-hardened cold-rolled sheet supplied by Norsk Hydro ASA |
| Temper | H14 |
| Heat treatment | H14 as supplied; detailed strain-hardening route is not stated |
| Product form | cold-rolled sheet |
| Thickness / diameter range | 0.8 mm |
| Test direction | nominal strengths are not direction-specific; hardening calibration uses one representative rolling-direction (0 deg) tensile test |
| Processing route | commercial cold-rolled plate/sheet; dog-bone coupons cut at 0, 45 and 90 deg |
| Temperature range | Tensile-test temperature is not stated; no temperature extrapolation is allowed. |
| Notes | Exact 0.8 mm EN AW-1050A-H14 sheet identity and nine-test campaign context are retained. The 100/116 MPa strengths are manufacturer nominal values, the Voce terms are calibrated to one representative RD curve, and Table 5 constants come from the article's prior source. No value is an EN minimum or design allowable. |

## Properties

### Physical

| Property | Value | Unit | Type | Applies to |
|---|---|---|---|---|
| Density | 2700.0 | kg/m^3 | Reported Prior Source Screening | EN AW-1050A-H14 cold-rolled sheet manufactured by Norsk Hydro ASA, 0.8 mm thick; manufacturer nominal strengths apply to the supplied sheet, while calibrated hardening parameters apply to one representative 0 deg tensile test from nine total tests |

## Mechanical

| Property | Value | Unit | Type | Applies to |
|---|---|---|---|---|
| Tensile yield strength | 100.0 | MPa | Reported<br>Manufacturer<br>Nominal<br>Screening | EN AW-1050A-H14 cold-rolled sheet manufactured by Norsk Hydro ASA, 0.8 mm thick; manufacturer nominal strengths apply to the supplied sheet, while calibrated hardening parameters apply to one representative 0 deg tensile test from nine total tests |
| Ultimate tensile strength | 116.0 | MPa | Reported<br>Manufacturer<br>Nominal<br>Screening | EN AW-1050A-H14 cold-rolled sheet manufactured by Norsk Hydro ASA, 0.8 mm thick; manufacturer nominal strengths apply to the supplied sheet, while calibrated hardening parameters apply to one representative 0 deg tensile test from nine total tests |
| Calibrated initial yield stress, RD | 80.0 | MPa | Calibrated<br>Constitutive Parameter<br>Screening | EN AW-1050A-H14 cold-rolled sheet manufactured by Norsk Hydro ASA, 0.8 mm thick; manufacturer nominal strengths apply to the supplied sheet, while calibrated hardening parameters apply to one representative 0 deg tensile test from nine total tests |
| Extended Voce saturation stress Q1, RD | 25.7 | MPa | Calibrated<br>Constitutive Parameter<br>Screening | EN AW-1050A-H14 cold-rolled sheet manufactured by Norsk Hydro ASA, 0.8 mm thick; manufacturer nominal strengths apply to the supplied sheet, while calibrated hardening parameters apply to one representative 0 deg tensile test from nine total tests |

| Property | Value | Unit | Type | Applies to |
|---|---|---|---|---|
| Extended Voce rate parameter C1, RD | 1000.0 | - | Calibrated Constitutive Parameter Screening | EN AW-1050A-H14 cold-rolled sheet manufactured by Norsk Hydro ASA, 0.8 mm thick; manufacturer nominal strengths apply to the supplied sheet, while calibrated hardening parameters apply to one representative 0 deg tensile test from nine total tests |
| Extended Voce saturation stress Q2, RD | 7.6 | MPa | Calibrated Constitutive Parameter Screening | EN AW-1050A-H14 cold-rolled sheet manufactured by Norsk Hydro ASA, 0.8 mm thick; manufacturer nominal strengths apply to the supplied sheet, while calibrated hardening parameters apply to one representative 0 deg tensile test from nine total tests |
| Extended Voce rate parameter C2, RD | 21.4 | - | Calibrated Constitutive Parameter Screening | EN AW-1050A-H14 cold-rolled sheet manufactured by Norsk Hydro ASA, 0.8 mm thick; manufacturer nominal strengths apply to the supplied sheet, while calibrated hardening parameters apply to one representative 0 deg tensile test from nine total tests |
| Young's modulus | 70.0 | GPa | Reported Prior Source Screening | EN AW-1050A-H14 cold-rolled sheet manufactured by Norsk Hydro ASA, 0.8 mm thick; manufacturer nominal strengths apply to the supplied sheet, while calibrated hardening parameters apply to one representative 0 deg tensile test from nine total tests |

| Property | Value | Unit | Type | Applies to |
|---|---|---|---|---|
| Poisson's ratio | 0.3 | - | Reported Prior Source Screening | EN AW-1050A-H14 cold-rolled sheet manufactured by Norsk Hydro ASA, 0.8 mm thick; manufacturer nominal strengths apply to the supplied sheet, while calibrated hardening parameters apply to one representative 0 deg tensile test from nine total tests |
| Shear modulus | 26.92 | GPa | Derived | Calculated from Young's modulus / (2 * (1 + Poisson's ratio)). |

## Composition

| Property | Value | Unit | Type | Applies to |
|---|---|---|---|---|
| Silicon mass fraction | 0.04 | % | Reported Composition Reference | EN AW-1050A-H14 cold-rolled sheet manufactured by Norsk Hydro ASA, 0.8 mm thick; manufacturer nominal strengths apply to the supplied sheet, while calibrated hardening parameters apply to one representative 0 deg tensile test from nine total tests |
| Iron mass fraction | 0.32 | % | Reported Composition Reference | EN AW-1050A-H14 cold-rolled sheet manufactured by Norsk Hydro ASA, 0.8 mm thick; manufacturer nominal strengths apply to the supplied sheet, while calibrated hardening parameters apply to one representative 0 deg tensile test from nine total tests |
| Copper mass fraction | 0.001 | % | Reported Composition Reference | EN AW-1050A-H14 cold-rolled sheet manufactured by Norsk Hydro ASA, 0.8 mm thick; manufacturer nominal strengths apply to the supplied sheet, while calibrated hardening parameters apply to one representative 0 deg tensile test from nine total tests |
| Manganese mass fraction | 0.002 | % | Reported Composition Reference | EN AW-1050A-H14 cold-rolled sheet manufactured by Norsk Hydro ASA, 0.8 mm thick; manufacturer nominal strengths apply to the supplied sheet, while calibrated hardening parameters apply to one representative 0 deg tensile test from nine total tests |

| Property | Value | Unit | Type | Applies to |
| --- | --- | --- | --- | --- |
| Titanium mass fraction | 0.02 | % | Reported Composition Reference | EN AW-1050A-H14 cold-rolled sheet manufactured by Norsk Hydro ASA, 0.8 mm thick; manufacturer nominal strengths apply to the supplied sheet, while calibrated hardening parameters apply to one representative 0 deg tensile test from nine total tests |

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