MATERIAL DATA SHEET

# EN AW-2014A TDCB substrate model inputs (CC BY reference)

Exact-grade EN AW-2014A density, elastic and strength inputs reported for a TDCB finite-element model.

| Field | Value |
|---|---|
| Material ID | springer-en-aw-2014a-tdcb-substrate-model-inputs |
| Category | Metal |
| Condition | source-identified EN AW-2014A TDCB substrate represented by the article's aluminium FE inputs \| tapered double cantilever beam (TDCB) aluminium substrate |
| Unit system | Common SI |
| Unit contract | Material properties stored in SI engineering units. |
| Generated | 2026-11-15 23:19 |

## Source and Validity

| Field | Value |
|---|---|
| Quality | Unknown |
| Design release allowed | No |
| Source family | peer_reviewed_open_article |
| Confidence | Engineering estimate |
| License | Open |
| Source note | Exact-grade EN AW-2014A context with source-reported finite-element inputs from a CC BY 4.0 article. |
| Citation | Wing Lam Tsang, The use of tapered double cantilever beam (TDCB) in investigating fracture properties of particles modified epoxy, SN Applied Sciences 2, 751 (2020), https://doi.org/10.1007/s42452-020-2487-8. |
| Valid temperature | Table 1 does not state a temperature basis or temperature-dependent validity range. |
| Valid pressure | Pressure dependence is not represented. |
| Valid phase / condition | source-identified EN AW-2014A TDCB substrate represented by the article's aluminium FE inputs |
| Uncertainty | The article identifies the TDCB substrates as grade EN AW-2014A and uses the Table 1 aluminium values in its finite-element model. The values are attributed to references [17]-[18], not reported as measurements on the bonded substrates. Temper, product route, direction, batch statistics and a yield-definition method are not stated. These are source-reported model inputs, not current EN minima, supplier guarantees or design allowables. |
| Last reviewed | 2026-08-03 |
| Reviewer | scripts/import_peer_reviewed_open_aluminum_public.py |

| Field | Value |
|---|---|
| Review status | Checked |
| Review scope | Checked explicit article CC BY 4.0 grant, DOI/source integrity, exact alloy identity, condition and geometry limits, value location, and measured/reported rather than specified-minimum semantics. |
| Notes | The article identifies the TDCB substrates as grade EN AW-2014A and uses the Table 1 aluminium values in its finite-element model. The values are attributed to references [17]-[18], not reported as measurements on the bonded substrates. Temper, product route, direction, batch statistics and a yield-definition method are not stated. These are source-reported model inputs, not current EN minima, supplier guarantees or design allowables. |
| License ID | CC-BY-4.0 |
| License URL | https://creativecommons.org/licenses/by/4.0/ |
| Attribution | Wing Lam Tsang |

## Material Condition

| Field | Value |
|---|---|
| Condition | source-identified EN AW-2014A TDCB substrate represented by the article's aluminium FE inputs |
| Temper | not stated; do not infer T6 or another registered temper |
| Heat treatment | bulk-alloy heat treatment not stated; the bonding surface was grit blasted and chromic-sulphuric-acid etched |
| Product form | tapered double cantilever beam (TDCB) aluminium substrate |
| Thickness / diameter range | substrate dimensions are not numerically stated in the main article text/table |
| Test direction | isotropic finite-element input; substrate direction is not stated |
| Processing route | bulk-product route not stated; acetone cleaning, grit blasting and chromic-sulphuric-acid etching were used for bonding |
| Temperature range | Table 1 does not state a temperature basis or temperature-dependent validity range. |
| Notes | The article identifies the TDCB substrates as grade EN AW-2014A and uses the Table 1 aluminium values in its finite-element model. The values are attributed to references [17]-[18], not reported as measurements on the bonded substrates. Temper, product route, direction, batch statistics and a yield-definition method are not stated. These are source-reported model inputs, not current EN minima, supplier guarantees or design allowables. |

## Properties

### Physical

| Property | Value | Unit | Type | Applies to |
|---|---|---|---|---|
| Density | 2700.0 | kg/m^3 | Source Reported Finite Element Input Screening | source-identified EN AW-2014A tapered double-cantilever-beam aluminium substrate; temper, bulk-product dimensions, direction, heat/batch and test temperature are not stated |

### Mechanical

| Property | Value | Unit | Type | Applies to |
|---|---|---|---|---|
| Young's modulus | 72.4 | GPa | Source Reported Finite Element Input Screening | source-identified EN AW-2014A tapered double-cantilever-beam aluminium substrate; temper, bulk-product dimensions, direction, heat/batch and test temperature are not stated |
| Poisson's ratio | 0.33 | - | Source Reported Finite Element Input Screening | source-identified EN AW-2014A tapered double-cantilever-beam aluminium substrate; temper, bulk-product dimensions, direction, heat/batch and test temperature are not stated |
| Shear modulus | 27.22 | GPa | Derived | Calculated from Young's modulus / (2 * (1 + Poisson's ratio)). |
| Tensile yield strength | 430.0 | MPa | Source Reported Finite Element Input Screening | source-identified EN AW-2014A tapered double-cantilever-beam aluminium substrate; temper, bulk-product dimensions, direction, heat/batch and test temperature are not stated |
| Ultimate tensile strength | 485.0 | MPa | Source Reported Finite Element Input Screening | source-identified EN AW-2014A tapered double-cantilever-beam aluminium substrate; temper, bulk-product dimensions, direction, heat/batch and test temperature are not stated |

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