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.
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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.