

MATERIAL ENGINEERING

Sheet Metal Material Datasheets

A production reference for the eight precision-grade alloys currently listed in the WERIX material library. Batch certificates and specified temper take precedence over generic reference values.

ENGINEERING RESOURCE / 2026

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Material matrix

GRADE	FAMILY	DENSITY	UTS	YIELD	ELONG.	THICKNESS
AL5052-H32	Aluminum	2.68	228 MPa	193 MPa	12%	0.3–5.0 mm
AL6061-T6	Aluminum	2.70	310 MPa	276 MPa	12%	0.3–5.0 mm
SUS304	Stainless	7.93	515 MPa	205 MPa	40%	0.3–5.0 mm
SUS201	Stainless	7.93	520 MPa	260 MPa	40%	0.3–5.0 mm
SPCC-SD	Carbon steel	7.85	270 MPa	210 MPa	32%	0.3–5.0 mm
SECC-N5	Carbon steel	7.85	270 MPa	210 MPa	32%	0.3–5.0 mm
SGCC-Z80	Carbon steel	7.85	300 MPa	230 MPa	28%	0.3–5.0 mm
C11000	Copper	8.96	220 MPa	69 MPa	45%	0.3–5.0 mm

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Material selection

GRADE	WHERE IT FITS	POINTS TO CONFIRM
5052-H32	Formed enclosures, panels, brackets and lightweight parts.	Bend radius, temper, grain direction and cosmetic face.
6061-T6	Structural aluminum where strength matters more than maximum formability.	Forming radius and heat-treated condition.
304	General industrial, food, medical and corrosion-sensitive applications.	Surface finish, cosmetic face and environment.
201	Cost-sensitive stainless and decorative / general fabrication.	Do not assume 304-level corrosion performance.
SPCC	Economical cold-rolled steel for enclosures and brackets.	Protective coating is normally required.
SECC	Indoor and mild-outdoor parts with electro-galvanized protection.	Coating condition after cutting and forming.
SGCC	Galvanized enclosures and outdoor-oriented applications.	Zinc coating, edges and cosmetic expectations.
C11000	Electrical busbars and heat-transfer applications.	Forming behavior, weight and surface protection.

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Read the numbers in context

Density supports weight and costing. Yield and tensile strength frame mechanical behavior. Elongation provides a useful ductility reference. None of these values alone determines bendability, weldability or finish performance.

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Surface finish follows the environment

SERVICE CONDITION	DESIGN DIRECTION
General indoor equipment	SPCC can be economical when a suitable protective finish is applied.
Mild outdoor exposure	SECC, SGCC, aluminum or stainless may be considered according to environment and finish.
Corrosive / marine	Evaluate base material and coating together; 5052 and 304 are current WERIX reference choices for corrosion-sensitive applications.
Cosmetic aluminum	5052 or 6061 can be paired with anodizing when finish and forming requirements are compatible.
Electrical contact	C11000 is the current WERIX copper reference; define conductive and masked surfaces.

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Certification and quality

STAGE	CURRENT WERIX PUBLISHED APPROACH
Incoming material	Check thickness, grade and surface finish before production.
In-process	First-article inspection and sampling at production workstations.
Final inspection	Dimensions checked against customer drawings using precision instruments where required.
Shipment	Packaging, labeling and surface protection checked; batches are traceable.
Documentation	FAI reports available on request; the supplied datasheet states certificates of conformity travel with every shipment and mill certificates are available on request before the batch runs.

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Material specification release

RELEASE ITEM	CONFIRM BEFORE QUOTATION
Grade	Full designation, including temper or coating grade where applicable.
Thickness	Explicit thickness in mm; do not rely on gauge names alone.
Surface	Raw, brushed, anodized, powder-coated, plated or other required condition.
Environment	Indoor, outdoor, coastal, chemical, thermal or other service condition.
Functional properties	Conductivity, corrosion, magnetic behavior, forming or structural requirements.
Documentation	CoC, mill certificate, FAI or other quality documentation if required.
Substitution	State whether an equivalent material is acceptable; otherwise require the specified grade.

WERIX MATERIAL LIBRARY

The current WERIX library publishes eight precision-grade alloys across four families with a stated 0.3–5.0 mm thickness range, plus mechanical properties and application guidance.

werixmetal.com/materials · Material selection · DFM review · Production quotation