NEXUS ALUMINIUM

ALUMINIUM EXTRUSIONS

TECHNICAL CATALOGUE

General Information · Quality Systems · Alloy Data
Tolerances · Sizing Capabilities

NEXUS ALUMINIUM PRIVATE LIMITED

R.S. No. 145/146, Sultanpura, Kayavarohan – Dabhoi Road,
Ta: Dabhoi, Dist: Vadodara – 391 210, Gujarat, India

+91 81605 99817 · info@nexusaluminium.com · www.nexusaluminium.com

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What is inside

This section covers the company, our quality systems, the alloys we extrude and the dimensional tolerances and sizing limits we work to. Section drawings and product ranges are issued separately.

Extruding aluminium the way it should be done — in-house, end to end.

Nexus Aluminium Private Limited is an aluminium extrusion manufacturer based at Sultanpura, on the Kayavarohan – Dabhoi Road in Vadodara district, Gujarat. The company was incorporated in 2023 and the plant was built around a single principle: every step that decides the quality of an extruded profile should sit under one roof and under our own control.

That is why melting, billet casting, die design and manufacture, extrusion, ageing, finishing and testing are all in-house. We melt and cast our own billets in a 5 MT furnace, so we know exactly what chemistry goes into every log. Our own tool room designs and cuts the dies, so a new section moves from drawing to first trial in days rather than weeks. Our 1,100 MT extrusion press runs the profile, and our laboratory signs off the chemistry, the mechanical properties and the dimensions before anything leaves the gate.

The result is a supply chain with no blind spots. When a customer asks why a batch behaved the way it did, we can answer from our own records — billet lot, die number, press log, ageing cycle and test certificate, all traceable to the bundle.

AT A GLANCE

1,100 MT
Extrusion press

5 MT
Melting furnace

3,000 MT
Annual capacity

30,000 sq ft
Built-up plant area

80+
Skilled workforce

ISO 9001:2015
Certified QMS

WHAT WE MAKE

- Architectural sections — windows, doors, partitions, curtain wall, glazing systems
- Industrial and structural profiles to customer drawings
- Solar module frames and mounting sections
- Tubes, pipes, flat bars, square and round bars, angles and channels
- Finishes: mill, anodised, powder coated and wood-finish

VISION

To be recognised among western India's most dependable aluminium extruders — the supplier a customer never has to check up on, because the section, the certificate and the delivery date are right every single time.

MISSION

To keep the entire extrusion chain in-house and under measurement — from melt chemistry to the final test certificate — so that consistency is designed into the process rather than inspected in at the end.

CORE VALUES

1. **Integrity**
   What the test certificate says is what is in the bundle. No exceptions, no adjustments.

2. **Traceability**
   Every bundle traces back to its billet lot, die, press log and ageing cycle.

3. **Consistency**
   A section supplied next year should match the one supplied today.

4. **Responsiveness**
   In-house tooling means a new die in days and a quick answer on any query.

5. **Safety & Environment**
   A clean, safe shop floor and captive solar power for a lighter footprint.

6. **Partnership**
   We plan capacity around our customers' order books, not the other way round.

Nexus Aluminium operates a documented Quality Management System certified to ISO 9001:2015. The system covers design and development of dies, purchase and melting of raw material, extrusion, heat treatment, surface finishing, inspection, testing and dispatch of aluminium extruded products.

NEXUS ALUMINIUM

CERTIFICATE OF REGISTRATION

ISO 9001:2015

Quality Management System

NEXUS ALUMINIUM PRIVATE LIMITED

R.S. No. 145/146, Sultanpura, Kayavarohan – Dabhoi Road,
Ta: Dabhoi, Dist: Vadodara – 391 210, Gujarat, India

SCOPE OF CERTIFICATION

Manufacture and supply of aluminium extruded profiles, sections, tubes and bars, including melting, billet casting, die manufacturing, extrusion, heat treatment and surface finishing.

STANDARDS WE WORK TO

Standard	Covers
EN 573-3	Chemical composition of wrought aluminium alloys
EN 755-2	Mechanical properties of extruded rod, bar, tube and profiles
EN 755-9	Dimensional and form tolerances for extruded profiles
IS 733 / IS 1285	Indian standards for wrought aluminium bars, rods and sections
IS 2673	Tolerances for extruded aluminium sections

Testing is not a final gate at Nexus — it runs alongside production. Chemistry is confirmed before casting, dimensions are checked at the press, and mechanical properties are verified after ageing. Results are recorded batch-wise and reproduced on the test certificate that travels with the material.

IN-HOUSE TESTING & INSPECTION

Test / Check	Equipment or Method	Frequency	Reference
Chemical composition	Optical Emission Spectrometer	Every melt, before casting	EN 573-3
Tensile strength (UTS)	Universal Testing Machine	Batch-wise after ageing	EN 755-2 / IS 1608
0.2% Proof stress (Yield)	Universal Testing Machine	Batch-wise after ageing	EN 755-2 / IS 1608
Elongation (%)	Universal Testing Machine	Batch-wise after ageing	EN 755-2 / IS 1608
Hardness (BHN / Webster)	Brinell & Webster hardness tester	Every ageing charge	EN 755-2
Electrical conductivity	Digital conductivity meter (%IACS)	On request / EC grades	IS 5082
Dimensional inspection	Vernier, micrometer, profile projector	Every die trial / shift	EN 755-9 / IS 2673
Straightness, twist & flatness	Surface plate, straight edge, feeler gauge	Every bundle	EN 755-9
Visual inspection	Die-line, dent, scratch, pick-up, flatness	100% of production	Internal norm
Anodised coating thickness	Eddy-current coating thickness gauge	Every anodising batch	IS 1868
Powder coating thickness	Coating thickness gauge	Every coating batch	AAMA 2603/2604
Coating adhesion	Cross-hatch / cross-cut adhesion test	Every coating batch	ASTM D3359
Sealing quality (anodised)	Boiling water / dye stain test	Every anodising batch	IS 5523
Salt spray corrosion	NABL-approved external laboratory	On customer requirement	ASTM B117

TRACEABILITY & RECORDS

Each dispatched bundle carries a tag linking it to its billet lot, die number, press log, ageing charge and inspection record. Test certificates are issued batch-wise and retained along with retained samples, so any queried consignment can be reconstructed from our own records years after despatch.

OUR MANAGEMENT

Nexus Aluminium is promoter-driven. The directors are present on the shop floor, and decisions on tooling, quality and delivery are taken by the same people who answer to the customer. Between them the board brings together manufacturing, engineering, commercial and finance experience.

MD

Manesh Dudhaiya

DIRECTOR

Strategy, finance and business development. Drives the company's expansion planning, systems and customer relationships.

PP

Parth Patel

DIRECTOR

Plant operations and production. Responsible for the melting, casting and extrusion lines and daily output.

JP

Jayesh Patel

DIRECTOR

Commercial and procurement. Manages raw material sourcing, vendor development and order execution.

TP

Tapashvin Patel

DIRECTOR

Technical and quality. Oversees die development, process control and the testing laboratory.

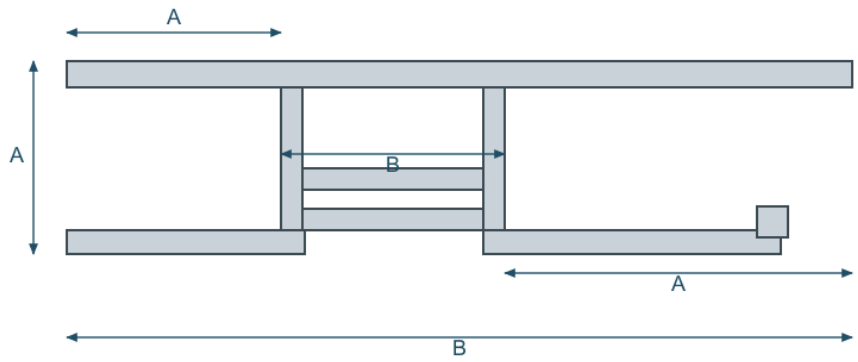
REACH THE RIGHT DESK

Function	Contact	Telephone	E-mail
Sales & Enquiries	Manesh Dudhaiya	+91 77570 45016	info@nexusaluminium.com
Production & Delivery	Parth Patel	+91 81605 99817	info@nexusaluminium.com
Purchase & Vendors	Jayesh Patel	+91 90991 72728	info@nexusaluminium.com
Technical & Quality	Tapashvin Patel	+91 96973 85385	info@nexusaluminium.com

MANUFACTURING PROCESS CHART

Fourteen controlled stages take metal from the scrap yard to a tagged, certified bundle. Two of them are formal quality checkpoints where material cannot move forward until it passes.

Tolerances below apply to dimensions of the extruded cross-section other than wall thickness, and are quoted to EN 755-9. Closer tolerances can be held on request — please confirm at the enquiry stage so the die is designed accordingly.



A — dimension not across a metal-enclosed space
B — dimension across a metal-enclosed (hollow) space

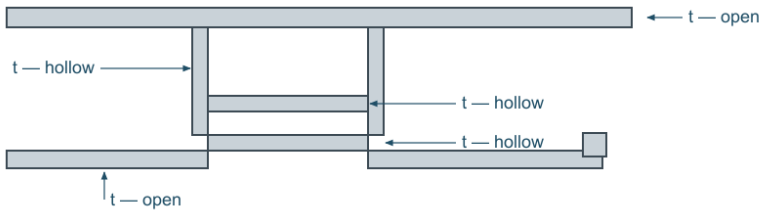
TOLERANCE ON CROSS-SECTIONAL DIMENSIONS

Dimension A — not affected by wall thickness · Dimension B — across a metal-enclosed (hollow) space

Nominal dimension (mm)	Tolerance — dimension A (mm)	Tolerance — dimension B (mm)
up to 3.00	± 0.15	± 0.25
over 3.00 to 6.00	± 0.15	± 0.30
over 6.00 to 10.00	± 0.20	± 0.35
over 10.00 to 15.00	± 0.20	± 0.40
over 15.00 to 20.00	± 0.25	± 0.45
over 20.00 to 30.00	± 0.25	± 0.50
over 30.00 to 45.00	± 0.30	± 0.60
over 45.00 to 60.00	± 0.35	± 0.70
over 60.00 to 90.00	± 0.40	± 0.85
over 90.00 to 120.00	± 0.50	± 1.00
over 120.00 to 150.00	± 0.60	± 1.20
over 150.00 to 180.00	± 0.70	± 1.40
over 180.00 to 250.00	± 0.90	± 1.70
over 250.00 to 300.00	± 1.10	± 2.00

Note: Dimension A is a dimension whose accuracy is not influenced by die deflection across a hollow. Dimension B spans a metal-enclosed space and carries a wider tolerance because both the mandrel and the die can move under pressure.

WALL THICKNESS TOLERANCE



t = nominal wall thickness. A wall bounding a hollow takes the hollow-profile tolerance.

Nominal wall thickness (mm)	Open profile (mm)	Hollow profile (mm)
up to 1.50	± 0.15	± 0.20
over 1.50 to 3.00	± 0.20	± 0.25
over 3.00 to 6.00	± 0.25	± 0.35
over 6.00 to 10.00	± 0.35	± 0.50
over 10.00 to 15.00	± 0.45	± 0.65
over 15.00 to 20.00	± 0.60	± 0.85
over 20.00 to 30.00	± 0.80	± 1.10

Note: Where a wall is thinner than one-third of the maximum wall in the same section, or the section carries a very wide circumscribing circle, the tolerance is agreed case by case before the die is cut.

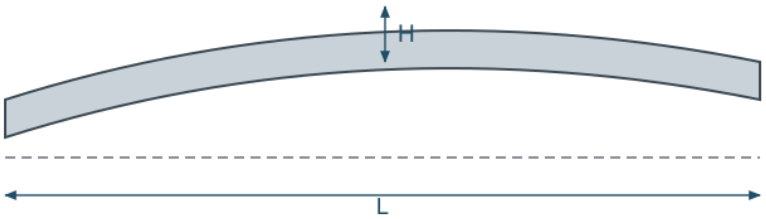
CUT LENGTH TOLERANCE

Cut length (mm)	Standard tolerance (mm)	Precision cut, on request (mm)
up to 1,000	+ 2.0 / – 0	± 0.5
over 1,000 to 2,000	+ 3.0 / – 0	± 0.5
over 2,000 to 4,000	+ 4.0 / – 0	± 1.0
over 4,000 to 6,000	+ 5.0 / – 0	± 1.0
over 6,000 to 8,000	+ 6.0 / – 0	± 1.5
over 8,000	+ 8.0 / – 0	on agreement

MAXIMUM EXTRUDED LENGTH

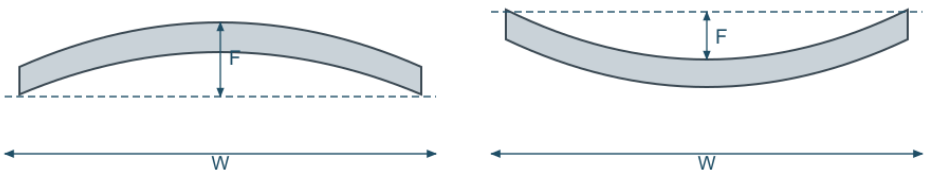
Our run-out table and ageing ovens accept lengths up to 6,500 mm. Standard mill lengths are 3,000 mm, 3,660 mm (12 ft), 4,880 mm (16 ft) and 6,000 mm; any cut length within the range can be supplied to order. Ends are square-cut and deburred as standard.

STRAIGHTNESS (BOW)



Length of piece (m)	Deviation over any 300 mm — max (mm)	Deviation over full length — max (mm)
up to 1.0	0.30	0.30
over 1.0 to 2.0	0.30	0.60
over 2.0 to 3.0	0.30	0.90
over 3.0 to 4.0	0.30	1.20
over 4.0 to 5.0	0.30	1.50
over 5.0 to 6.5	0.30	2.00

CONVEXITY & CONCAVITY (FLATNESS OF A FACE)

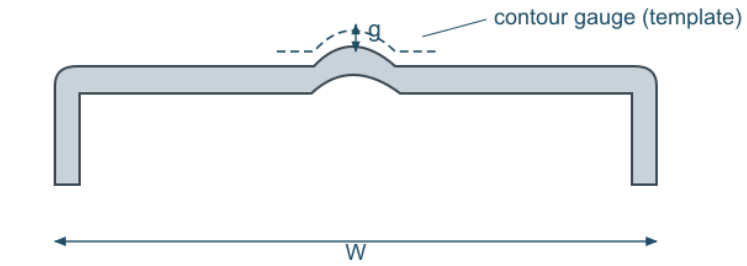


CONVEX CONCAVE

W = width of face · F = maximum deviation from the straight edge (dashed)

Width of face W (mm)	Maximum deviation from flat — convex or concave (mm)
up to 25	0.20
over 25 to 50	0.30
over 50 to 100	0.50
over 100 to 150	0.70
over 150 to 200	0.90
over 200 to 300	1.20

CONTOUR (CURVED AND SHAPED SURFACES)

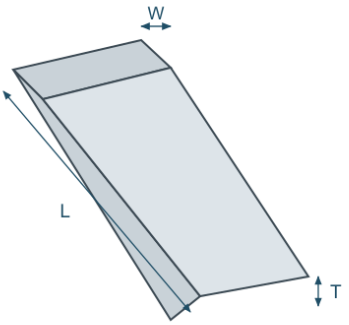


g = maximum light gap between the template and the extruded surface

Width across the curved surface W (mm)	Maximum gap g against contour gauge (mm)
up to 25	0.30
over 25 to 50	0.45
over 50 to 100	0.70
over 100 to 150	0.90
over 150 to 200	1.20

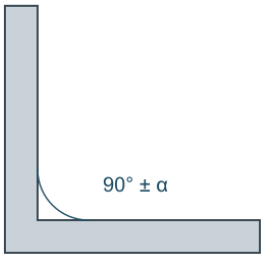
TWIST

Laid on a surface plate, the rise of the free corner is the twist — controlled by the stretcher.



Width of profile (mm)	Twist per metre of length — max (mm)	Twist over full length — max (mm)
up to 30	1.0	3.0
over 30 to 60	1.3	4.0
over 60 to 100	1.6	5.0
over 100 to 150	2.0	6.0
over 150 to 200	2.5	7.0
over 200 to 300	3.0	8.0

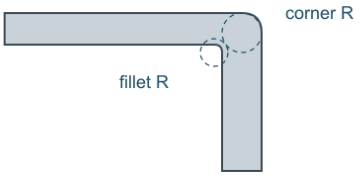
ANGULARITY (RIGHT ANGLES AND INCLUDED ANGLES)



α = permitted angular deviation from the nominal angle

Feature	Standard tolerance	Close tolerance, on request
Right angle (90°) between two faces	± 1° 00′	± 0° 30′
Any other included angle on the section	± 1° 30′	± 0° 45′
Angle on a wall thinner than 3 mm	± 2° 00′	± 1° 00′

CORNER & FILLET RADIUS

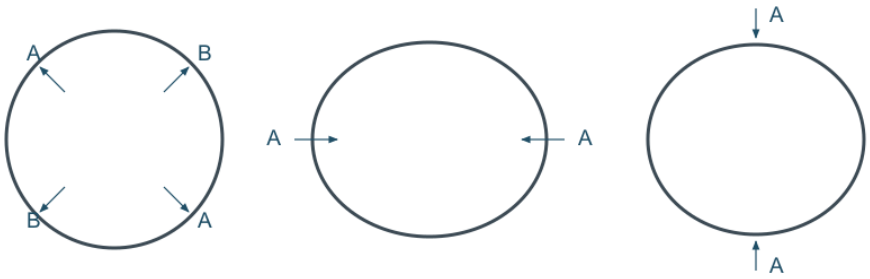


Adjoining wall thickness (mm)	Max sharp corner radius (mm)	Max internal fillet radius (mm)	Tolerance on a specified radius
up to 3.00	0.50	0.80	± 0.30
over 3.00 to 6.00	0.80	1.20	± 0.40
over 6.00 to 10.00	1.20	1.60	± 0.50
over 10.00	1.60	2.40	± 0.60

DESIGNING FOR EXTRUSION

A truly sharp corner cannot be extruded — the die would break down within a few billets. Allowing a small radius at every corner and a generous fillet where two walls meet extends die life, improves surface finish and holds dimensions better across a run. Where a drawing calls for a sharp corner, we will propose the smallest radius the section can carry.

For round tube and round bar, the outside diameter is checked at several points around and along the piece. Roundness is the difference between the largest and smallest diameter measured in the same cross-section.



OUTSIDE DIAMETER & ROUNDNESS

Nominal outside diameter (mm)	Tolerance on diameter (mm)	Max out-of-roundness (mm)
up to 10.00	± 0.20	0.20
over 10.00 to 18.00	± 0.25	0.25
over 18.00 to 30.00	± 0.30	0.35
over 30.00 to 50.00	± 0.40	0.50
over 50.00 to 80.00	± 0.50	0.70
over 80.00 to 120.00	± 0.65	0.95
over 120.00 to 180.00	± 0.85	1.30
over 180.00 to 250.00	± 1.15	1.75

ECCENTRICITY OF TUBE WALL

Wall thickness (mm)	Maximum wall variation in one cross-section
up to 3.00	± 10 % of nominal wall
over 3.00 to 6.00	± 10 % of nominal wall
over 6.00	± 12.5 % of nominal wall

APPLICABILITY OF THESE TOLERANCES

All tolerances in this section follow EN 755-9 / IS 2673 and apply to material in the as-extruded and aged condition, measured at 20 °C. Anodising and powder coating add to the finished dimension and are allowed for at the die stage where the customer specifies the finish.

CHEMICAL COMPOSITION

Composition limits in weight per cent, to EN 573-3. A single figure is a maximum; a range is shown as min – max. Remainder is aluminium with other elements 0.05 each, 0.15 total.

6XXX SERIES — OUR PRINCIPAL EXTRUSION ALLOYS

Alloy	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Al
6060	0.30–0.60	0.10–0.30	0.10	0.10	0.35–0.60	0.05	0.15	0.10	Rem.
6063	0.20–0.60	0.35	0.10	0.10	0.45–0.90	0.10	0.10	0.10	Rem.
6063A	0.30–0.60	0.15–0.35	0.10	0.15	0.60–0.90	0.05	0.15	0.10	Rem.
6005	0.60–0.90	0.35	0.10	0.10	0.40–0.60	0.10	0.10	0.10	Rem.
6005A	0.50–0.90	0.35	0.30	0.50	0.40–0.70	0.30	0.20	0.10	Rem.
6061	0.40–0.80	0.70	0.15–0.40	0.15	0.80–1.20	0.04–0.35	0.25	0.15	Rem.
6082	0.70–1.30	0.50	0.10	0.40–1.00	0.60–1.20	0.25	0.20	0.10	Rem.
6101	0.30–0.70	0.50	0.10	0.03	0.35–0.80	0.03	0.10	—	Rem.
6351	0.70–1.30	0.50	0.10	0.40–0.80	0.40–0.80	—	0.20	0.20	Rem.
6463	0.20–0.60	0.15	0.20	0.05	0.45–0.90	—	0.05	—	Rem.

OTHER SERIES AVAILABLE TO ORDER

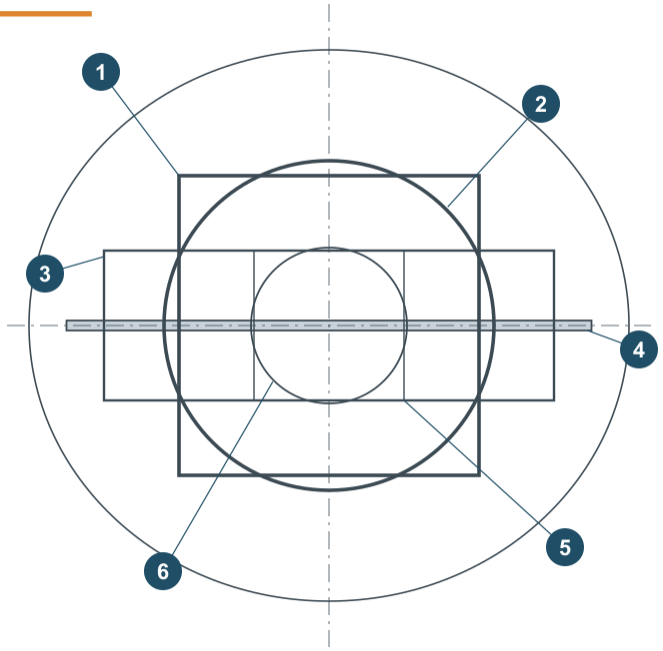
Alloy	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Al
1050A	0.25	0.40	0.05	0.05	0.05	—	0.07	0.05	99.50 min
1070A	0.20	0.25	0.03	0.03	0.03	—	0.07	0.03	99.70 min
1100	0.95 Si+Fe		0.05–0.20	0.05	—	—	0.10	—	99.00 min
3003	0.60	0.70	0.05–0.20	1.00–1.50	—	—	0.10	—	Rem.
5052	0.25	0.40	0.10	0.10	2.20–2.80	0.15–0.35	0.10	—	Rem.
5083	0.40	0.40	0.10	0.40–1.00	4.00–4.90	0.05–0.25	0.25	0.15	Rem.
7075	0.40	0.50	1.20–2.00	0.30	2.10–2.90	0.18–0.28	5.10–6.10	0.20	Rem.

TYPICAL MECHANICAL PROPERTIES (EN 755-2)

Alloy & temper	U.T.S. (MPa)	0.2% Proof (MPa)	Elongation (%)	Hardness (BHN)
6063 – T6	215 min	170 min	8 min	73 typical
6005 – T6	260 min	215 min	8 min	85 typical
6061 – T6	260 min	240 min	8 min	95 typical
6082 – T6	310 min	260 min	8 min	95 min

Maximum sizes currently extrudable on our 1,100 MT press. A section must fit inside the circumscribing circle and its extrusion ratio must suit the press — our tool room reviews every new drawing and advises on feasibility, die cost and lead time before the order is confirmed.

MAXIMUM EXTRUDABLE SIZES



Numbers key into the table of maximum extrudable sizes

#	Profile type	Maximum size
1	Square Tube	100 x 100 mm
2	Round Tube	Ø 110 x 6 mm
3	Rectangular Tube	150 x 50 mm
4	Flat Bar	175 x 6 mm
5	Square Bar	50 x 50 mm
6	Round Bar	Ø 52 mm

Wall thickness on tubes and hollows is set to suit the section — tell us the application and we will propose it.

PRESS & BILLET DATA

Parameter	Specification
Extrusion press capacity	1,100 Metric Tonnes
Container / billet diameter	6 inch (152 mm)
Maximum circumscribing circle	180 mm
Maximum extruded length	6,500 mm
Minimum wall thickness	0.80 mm, subject to section shape
Alloys extruded	6060, 6063, 6063A, 6005, 6005A, 6061, 6082, 6101, 6351, 6463
Tempers offered	T4, T5, T6
Finishes	Mill, anodised, powder coated, wood finish

SEND US YOUR DRAWING

A section outside this envelope can often still be produced. Send the drawing to info@nexusaluminium.com and our tool room will come back with feasibility, die cost and lead time.