Your Ultimate Guide to Aluminium Products and Solutions

ACTIONALUMINIUM

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ACTION ALUMINIUM

Aluminium has become a cornerstone of modern manufacturing and construction, thanks to its unique properties and wide range of benefits. But with so many options on the market, selecting the right aluminium products and solutions can be overwhelming.

That's where we come in.

Our comprehensive guide provides expert insights and practical tips on everything from understanding aluminium grades to selecting the right aluminium sheet and plate for your needs. Whether you're a seasoned professional or a DIY enthusiast, this is the perfect resource for anyone looking to unlock the full potential of aluminium.

So why wait? Let's dive in and discover all that this incredible metal has to offer!

See page 22-23 to see where we're located in your state!

Expanded to **9 locations** over the years in ***Victoria, New South Wales*** and ***Queensland.***

Founded in 2005

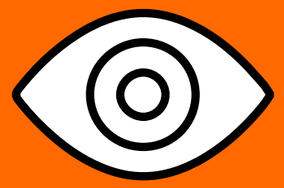
Action Aluminium is synonymous with excellence in supplies of aluminium products. We have a comprehensive sales division that genuinely cares about our customers.

Birth Place

Action's head office is located in Dandenong, Victoria, and the Company remains 100% Australian family-owned.

Mission

Our mission is to provide a complete range of aluminium products, and that our quality and reliability exceeds our customers' expectations and requirements; and a service level second-to-none in the market, reflecting our total commitment to excellence.



Vision

Products

Services

QUALITY OVER COMPROMISE

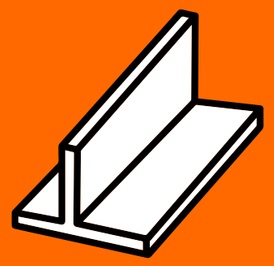
The Action Aluminium Quality Commitment exists throughout all levels of our company - products, service, vision. We source our products from the finest Local and International manufacturers, maintaining our ‘quality without compromise’ ethos. Our commitment results in the most reliable and competitive package available - our customers can be assured they are getting the very best we have to offer.

Lightweight

Aluminium has a density approximately one third of steel or copper. It's light weight and high strength makes it easy to transport and a better option than some other commercial metals. This makes it ideal for aircraft, trucks and other rolling equipment.

Corrosion Resistance

A thin layer of aluminium oxide forms on the surface of aluminium when it is exposed to air, this gives it great resistance to corrosion. Aluminium does not need coating, whether it be for protective or decorative purposes. When a plain aluminium surface is not needed, a range of surface finishes are available to suit. Anodising or a Powdercoating treatment will provide an excellent corrosion resistance and comes with a wide range of colour variations. The finishes can be used in interior or exterior applications.

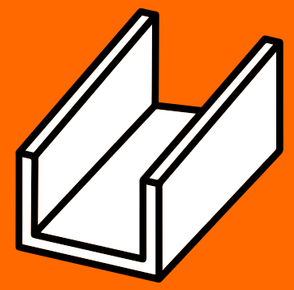


Strength in Varied Conditions

Normally aluminium is soft and ductile. Many commercial users, require extra strength than aluminium affords, however mechanical properties can be increased by adding alloying elements, and tempering to give a higher tensile strength. Aluminium intensifies in tensile strength and retains its toughness when it is subjected to low temperatures.

Easy to Work

Aluminium is ideal for cutting, roll forming, drawing, hammering, forging, bending, cutting and spinning. Using the right toolage, most aluminium alloys can be machined speedily and easily. It can be easily fabricated into various forms such as foil, sheets, rod, tube etc. Aluminium can be riveted, welded, brazed or soldered.



Heat Conductor

Aluminium is a great heat conductor, it is about three times as thermally conductive as steel. It is used in many cooking utensils, air conditioning, industrial heat exchangers and automotive parts.

High Reflectivity

Aluminium has excellent reflector qualities, these range from ultraviolet through to infrared and heat waves. Aluminium has reflectivity characteristics which enables roofs to reflect a high percentage of the sun's heat, this gives a cool interior in the summer and insulates against heat loss in the winter.

Electrical Applications

Aluminium is used in power transmission cables, transformers, busbars and bases of electrical bulbs. This is possible because aluminium is one of two metals having electrical conductivity high enough for use as an electrical conductor. Aluminium is also void of sparking properties against itself and other non-ferrous metals. Aluminium has non-magnetic properties which are useful for electrical shielding.

Non-Toxic

Aluminium is basically non-toxic, for this reason it is used in cooking utensils without any harmful effect. The metal can be easily cleaned because of its smooth surface, it also gives a hygienic environment for food processing.

Many applications require the extreme versatility which only aluminium possesses. Unique combinations of these properties are being put to work daily in new and varied ways.

Understanding Aluminium Grades

Aluminium is a versatile material, and its properties can vary significantly depending on the alloy used. An alloy is a mixture of a metal with other elements, which enhances the metal's properties. In the case of aluminium, alloying elements such as copper, magnesium, silicon, and zinc are added to improve various characteristics like strength, corrosion resistance, and machinability. Here's a brief overview of the most common aluminium alloys, their alloying elements, and their applications:

1xxx Series: *(99% Pure Aluminium)*	This series contains a minimum of 99% aluminium and is known for its excellent corrosion resistance, electrical conductivity, and workability. However, it has relatively low strength. Common alloys in this series include: *1100: Highly ductile and suitable for chemical equipment, food and beverage packaging, and decorative applications.*
3xxx Series: *(Manganese as the main alloying element)*	The addition of manganese increases the strength of these alloys while maintaining good workability and corrosion resistance. *3003: Commonly used in building materials, automotive parts, and kitchenware due to its excellent workability and corrosion resistance.*
6xxx Series: *(Magnesium and silicon as the main alloying element)*	This series offers a good balance of strength, corrosion resistance, and machinability, making it suitable for a wide range of applications. *6061: A popular structural alloy used in automotive parts, aircraft components, and construction materials.*
7xxx Series: *(Zinc as the main alloying element)*	These alloys have the highest strength among aluminium alloys, but their corrosion resistance and workability are generally lower than other series. They are mainly used in aerospace and military applications. *7075: Known for its high strength and toughness, this alloy is used in aircraft structures, missile components, and high-stress engineering applications.*
5xxx Series: *(Magnesium as the main alloying element)*	The presence of magnesium significantly increases the strength of these alloys while maintaining good corrosion resistance. *5052: With superior corrosion resistance, this alloy is ideal for marine applications, fuel tanks, and electronic enclosures.*

When selecting an aluminium alloy for your project, consider the specific requirements and desired properties, such as strength, corrosion resistance, formability, and weldability. Consult with an engineer or material specialist to determine the best alloy for your application. Additionally, be aware that certain aluminium alloys are heat-treatable, allowing for further enhancement of their mechanical properties through controlled heating and cooling processes.

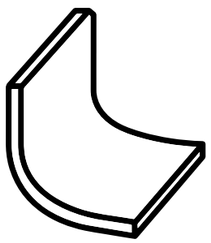
Understanding Aluminium Grades

Shapes, Application, and Customisation Options

Aluminium extrusions are versatile components created by forcing heated aluminium through a shaped die, resulting in profiles with consistent cross-sections. These extrusions come in various shapes and sizes, designed for a wide range of applications. In this section, we will explore the different types of extrusions, their applications, and customisation options in greater depth.

Standard Extrusion Profiles

Standard profiles are readily available and designed for common applications across various industries. Some common standard profiles include:



Angles:
These L-shaped extrusions are used for structural support, brackets, framing, and corner reinforcement.

Channels:
U- or C-shaped profiles ideal for construction, transportation, and industrial applications due to their high strength-to-weight ratio and rigidity.

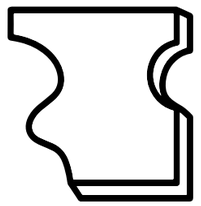
Bars:
Flat, square, or round bars are versatile extrusions used in a wide range of applications, including manufacturing, construction, and transportation.

Tubes:
Available in square, rectangular, and round shapes, tubes are commonly used in automotive, marine, and aerospace industries for framing, structural support, and fluid transportation.

Beams:
I-, H-, or T-shaped extrusions that provide high strength and rigidity, suitable for load-bearing applications, such as bridges and building structures.

Custom Extrusion

If standard profiles don't meet your project's needs, consider ordering custom extrusions tailored to your specifications. Custom extrusions offer various advantages, such as:



Unique Shapes:
Custom extrusions allow for the creation of profiles with complex geometries or specific dimensions that may not be available in standard profiles.

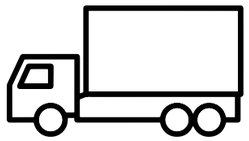
Tighter Tolerances:
Custom extrusions are designed to match your project's requirements, awaste during fabrication and assembly.

Reduced Material Waste:
Custom extrusions are designed to match your project's requirements, resulting in less material waste during fabrication and assembly.

Enhanced Functionality:
Custom extrusions can incorporate features such as integrated channels, screw ports, or snap-fit connections, simplifying assembly and improving functionality.

Applications

Aluminium extrusions are utilised across numerous industries due to their lightweight, corrosion resistance, and structural strength. Some common applications include:



Construction:
Window and door frames, curtain walls, roofing systems, solar panel mounting structures, and architectural accents.

Transportation:
Automotive, marine, and aerospace components, such as body structures, engine parts, rail systems, and boat hulls.

Electronics:
Heat sinks, enclosures, and chassis for computers, televisions, and other devices, providing thermal management and protection.

Industrial Equipment:
Conveyor systems, machine frames, and structural components for manufacturing and processing facilities.

Design Considerations

When designing custom aluminium extrusions, consider factors such as wall thickness, corner radii, and tolerances to ensure optimal performance and manufacturability. Additionally, be aware of potential challenges associated with extruding complex shapes, such as die wear, material flow issues, or the need for additional fabrication processes.

Finishing Options

Like aluminium sheets and plates, extrusions can also undergo various finishing processes to enhance their appearance, durability, and functionality. Some popular finishing options include anodizing, powder coating, painting, and polishing.

Selecting the Right Aluminium Products

Selecting the right aluminium products for your project can be a daunting task, considering the numerous alloys, finishes, and fabrication options available. In this chapter, we will provide you with valuable tips to help you make informed decisions when selecting aluminium products.

1. Identify your Project Requirements:

Before choosing an aluminium product, it's crucial to have a clear understanding of your project's requirements. Consider the following factors:

- *Structural requirements*
- *Mechanical properties needed*
- *Budget constraints and cost-effectiveness*
- *Aesthetic preferences and finish requirements*

2. Choose the Appropriate Alloy:

Aluminium comes in various alloys, each with its unique properties and applications. When choosing the right alloy for your sheet or plate, consider factors such as strength, corrosion resistance, formability, weldability, and any specific requirements for your application. For instance, 3003 aluminium is a popular choice for general-purpose sheets and plates, while 5052 is more suitable for marine environments due to its superior corrosion resistance. Look back to the Understanding Aluminium Grades section to help determine the best alloy for your project.

3. Select the Suitable Temper:

Aluminium alloys come in different tempers, representing the heat treatment or mechanical processes applied to the material. The temper affects the alloy's mechanical properties, such as strength, hardness, and ductility. Common tempers include:

- ***T4:*** Solution heat-treated and naturally aged
- ***T5:*** Cooled from an elevated temperature and artificially aged
- ***T6:*** Solution heat-treated and artificially aged

Choose a temper that meets your project's structural requirements and fabrication needs.

4. Determine the Right Finish:

Selecting the appropriate finish for your aluminium product is essential for both aesthetic and functional purposes. Consider factors such as corrosion resistance, UV stability, and desired appearance when choosing a finish. Common finishes include:

Anodized Finish:	An electrochemical process that forms a protective oxide layer, offering increased corrosion resistance and providing a range of colour options.
Powder Coating:	A dry finishing process that creates a durable, corrosion-resistant, and attractive finish in various colours and textures.
Mill Finish:	This is the natural finish of aluminium after rolling and does not involve any additional treatment. Mill finish is often suitable for applications where appearance is not a priority or when further processing is planned.
Tread Plate:	Aluminium tread plates have raised patterns on the surface, such as diamond or five-bar patterns, to provide slip resistance and added durability. These plates are commonly used for flooring, ramps, and stair treads.
Perforated Sheets:	These sheets have a series of holes punched into the surface in various patterns and sizes, providing aesthetic appeal, weight reduction, or ventilation. They are often used in architectural and decorative applications, as well as filtration systems and equipment.

5. Consider Custom Fabrication:

You may be able to use a standard product like sheets, plates and tubing, but if your project requires unique shapes, sizes, or features, custom fabrication services can help create the perfect aluminium product for your needs. Action Aluminium offers a range of custom fabrication services, including:

- *Cutting to size*
- *Bending and forming*
- *Welding and assembly*
- *CNC machining*

Consult with experts at Action Aluminium to determine if custom fabrication is necessary for your project.

6. Evaluate Supplier Capabilities:

When selecting aluminium products, it's essential to choose a reputable supplier with the capabilities to meet your needs. Look for a supplier like Action Aluminium that offers:

- *A wide range of high-quality aluminium products*
- *Technical expertise and support*
- *Custom fabrication and finishing services*
- *Reliable and timely delivery*

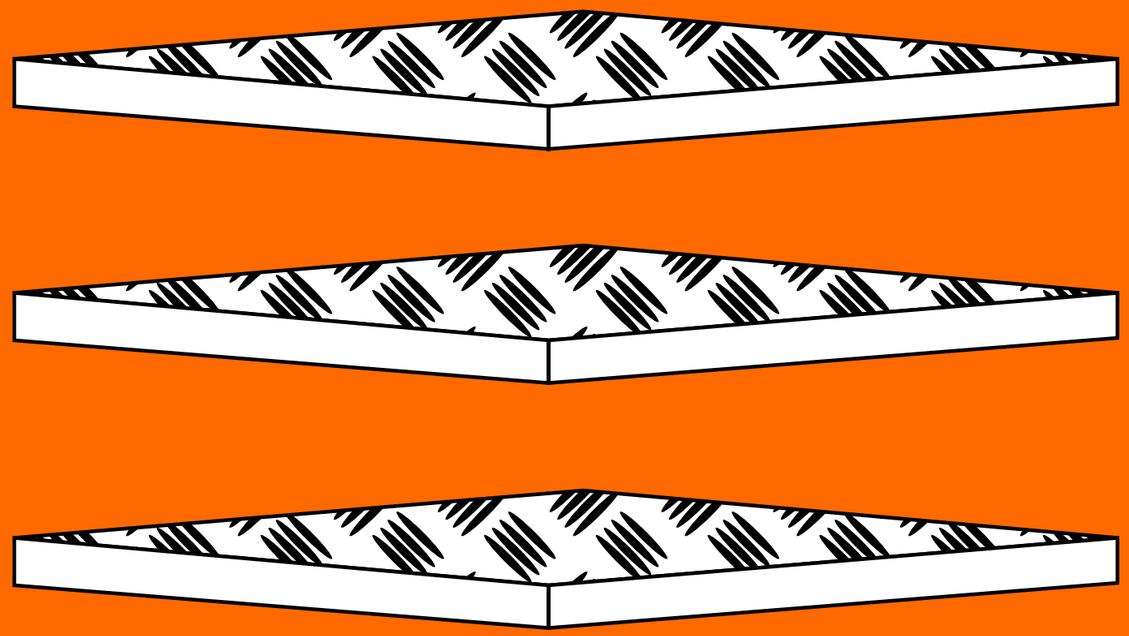
7. Factor in Sustainability:

Consider the environmental impact of your aluminium products by selecting suppliers that prioritise sustainable practices. Action Aluminium, for example, is committed to using recycled aluminium when possible and follows environmentally responsible manufacturing processes.

By considering these factors and working with a knowledgeable supplier, you can confidently select the right aluminium sheets and plates for your project, ensuring optimal performance and longevity.

Let the *ACTION* team *HELP* you pick the right *ALUMINIUM*

THE ACTION ADVANTAGE



Personalised Customer Service:

Action Aluminium prides itself on providing personalised, friendly customer service. Our long-term commitment to the industry and close-knit team ensures that customers receive individualised attention and tailor-made solutions for their specific needs.

Supporting Local Economy:

By choosing an Australian-owned company, you're directly contributing to the growth and development of the local economy. Action Aluminium creates job opportunities for Australians and sources materials from local suppliers, further strengthening the country's economic foundation.

Local Expertise and Knowledge:

As an Australian-owned company, Action Aluminium has a deep understanding of the local market, regulations, and industry trends. This allows us to offer expert advice and stay ahead of the curve in terms of product development and innovation.

High-Quality Products:

Family-owned businesses like Action Aluminium have a personal stake in ensuring the quality of their products. This commitment to excellence guarantees that you receive top-quality aluminium products that meet or exceed industry standards.

Long-Term Business Relationships:

Action Aluminium is well known for building long-term relationships with their customers. Our commitment to customer satisfaction means that we will go the extra mile to ensure your ongoing success and maintain a strong business partnership.

Faster Lead Times and Delivery:

Action Aluminium's strong network of local suppliers and service providers ensures faster lead times and delivery compared to international competitors. This results in reduced wait times and improved efficiency for your projects.

Ethical and Sustainable Practices:

As an Australian-owned company, Action Aluminium is held accountable to the country's strict environmental and ethical standards. By choosing Action Aluminium, you can trust that our products and practices are both sustainable and socially responsible.

COME FIND US!

in *Victoria, New South Wales* and Queensland.

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WORKING WITH ACTION

Want to get started working with Action Aluminium for all your aluminium supply needs? Simply give us a **call at (03) 9708 5188** or fill out our contact form today via our website: https://www.actionaluminium.com.au/#contact