

TECHNICAL
BULLETIN



AUSTRALIAN ALUMINIUM FINISHING

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MILL FINISH ALUMINIUM

When aluminium is exposed to air, it instantly forms a very thin inert aluminium oxide film. This film helps prevent further oxidation of the metal in the mildest of conditions. However the mill-finish aluminium is still relatively soft and susceptible to oxidation by prolonged contact with moisture and other agents.

ANODISING PROCESS

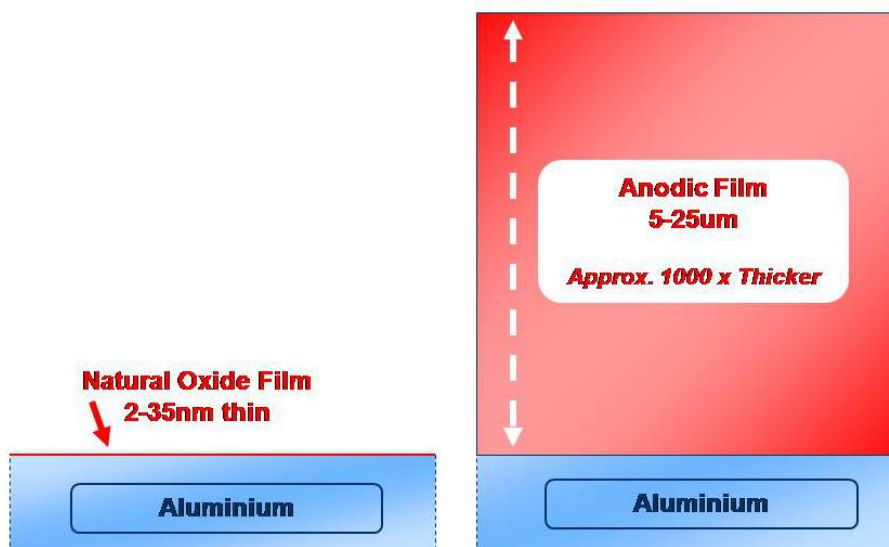
The Anodising process can be described as “the controlled oxidation of the aluminium”. Essentially, we artificially oxidise the aluminium so that it is not susceptible to any further natural oxidation.

In anodising aluminium, we grow the aluminium oxide, from a very thin film into a much thicker anodise (oxide) layer. To achieve this massive growth in oxide thickness, a large amount of electrical current is passed through to the aluminium via an electrolyte.

In process, the conditions of bath chemistry, electrical current and temperature control are all critical in achieving the desired result.

THICKNESS OF THE ANODIC FILM

When Aluminium undergoes the anodising process, the **Aluminium Oxide** film that forms is approximately 1,000 times thicker (5-25 micrometers) than that which originally and naturally formed.














MEASURING HARDNESS

There are many ways in which hardness of materials can be measured. Hardness can include resistance to scratching, abrasion, bending, breaking and indentation.

Different types of materials and industries would typically use different measures of hardness. Other scales of hardness include "Absolute", "Vickers" and "Brinell". On the Brinell scale, a diamond indenter is used for the test, for this reason it cannot be measured itself.

The Mohs scale is a very quick and easy reference of ten natural minerals which are ranked based upon "scratch hardness". That is, if a specimen to be tested can be scratched by a known mineral from the list, it is softer than that mineral. For example, among the natural gems [only Diamond \[10\] is harder than Corundum \[9\]](#). Note Mohs hardness values are not lineal in magnitude.

Hardness of Anodised Aluminium against various Hardness Scales

Common Items	Mohs Scale Gems / Minerals		Hardness Scales		
			Mohs	Brinell	Absolute
	Diamond		10	--	1500
	Corundum		9	667	400
	Topaz		8	304	200
	Quartz		7	178	100
	Feldspar		6	147	72
	Apatite		5	137	48
	Fluorspar		4	64	21
	Calcite		3	53	9
	Gypsum		2	12	2
	Talc		1	3	1

Anodised
Aluminium

Mill Finish
Aluminium

The Aluminium Oxide (Al_2O_3) layer formed in anodising is also known as Corundum, the same material that Ruby's, Sapphires and Emery are made from. If you refer to the MOH's Hardness scale, you can appreciate why the anodised aluminium surface is so hard!

In summary, performance wise;

Harder Anodic Films;

- Give excellent wear and abrasion resistance
- Provide Superior Weathering Performance
- Last longer in the field

Thicker Anodic Films;

- Provide superior Pitting Corrosion Resistance (this is the single most critical factor)

Generally speaking, if you want to diminish the appearance of any aberrations, choose;

- A Lighter rather than Darker shade of colour
- A Lustre that is Lower in Gloss level

AAF EVERSHIELD™ ANODISE RANGE

By deliberate controls of the thermo-electro-chemical conditions in the anodising process, AAF EverShield™ anodic finishes result in an even harder and denser anodic layer. As a consequence, these finishes provide superior abrasion resistance, weathering performance and offer longer serviceable life on your building project.

With the EverShield™ anodic range, you get the best of both worlds. You get the highest thickness specification, as well as the benefit of a more durable finish. A comprehensive warranty is also offered to back up the performance of the AAF EverShield™ anodic range.

NOTE

Details contained herewith do not constitute specific advice, merely they are provided as a matter of courtesy and as general information only. You should seek your specialist's advice, to ensure that any information or suggestion meet your specific requirements. Reference should be made to the respective standards for the finish concerned as well as Australian Aluminium Finishing Pty Ltd (AAF) Terms and Conditions of Sale. Latest releases of Australian Standards are available for purchase via the following website; www.standards.com.au

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For more information on anodising
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