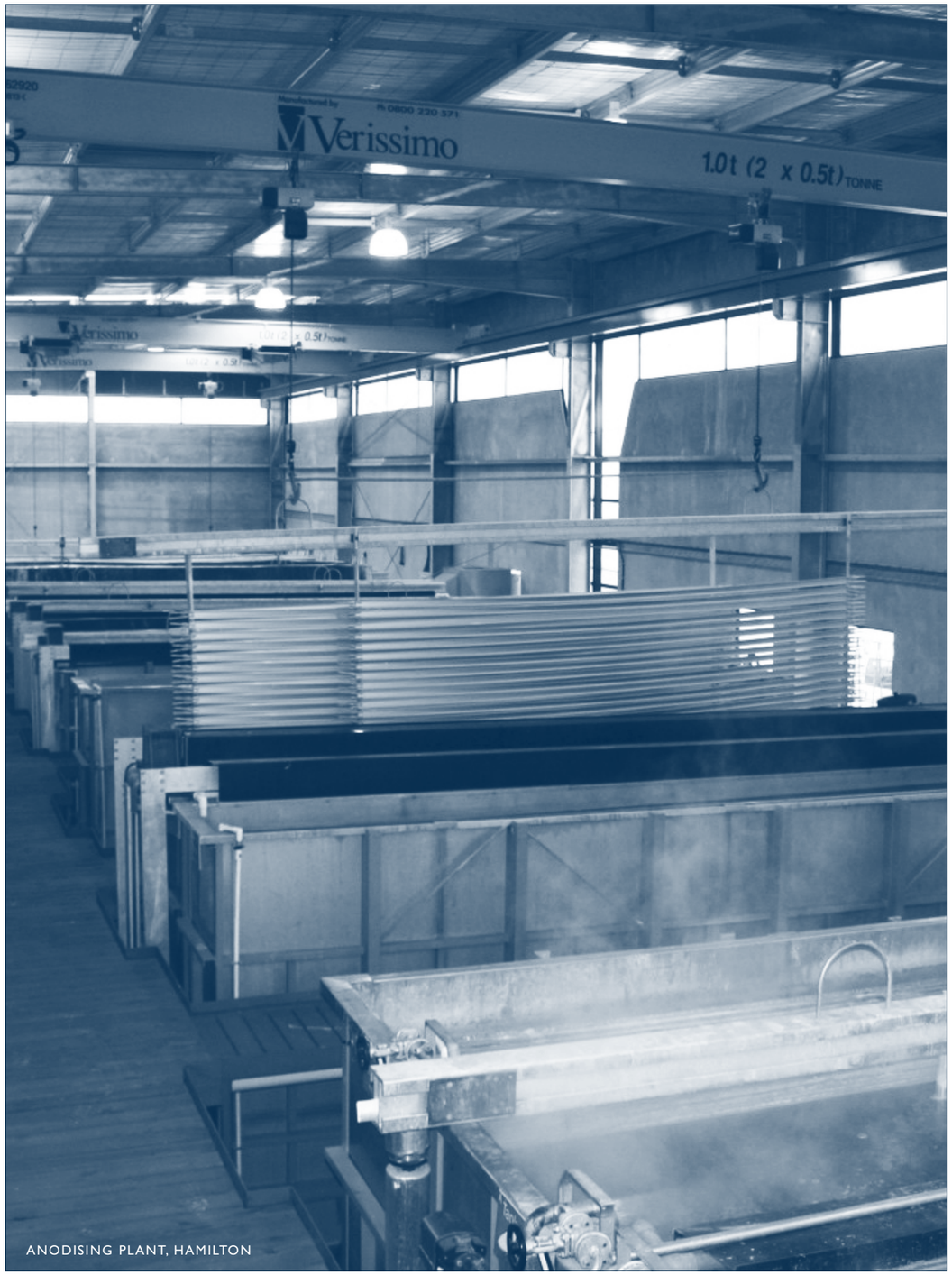


ANODISING PLANT, HAMILTON

TECHNICAL EXTRUSION DATA : ANODISING

ANODISING

The sulphuric anodising processes first made their appearance around 1929. The thick, hard coatings produced could be sealed and were corrosion resistant. They have since been widely accepted for the treatment of aluminium in domestic, industrial and marine uses.

Figure 1 : Aluminium Base Metal

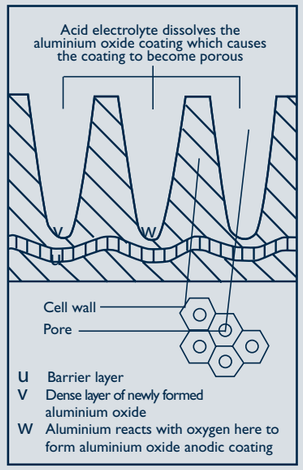
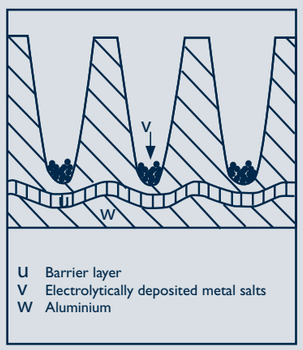


Figure 2 : Electrolytic Colouring



THE ANODISING PROCESS

Aluminium has the natural ability to produce a protective oxide film on exposure to atmosphere. This natural oxide is hard and resistant to both water and normal atmospheric conditions, but the protection it offers is inadequate if other agents are present to start a corrosive attack on the aluminium. For this reason processes were sought whereby the natural oxide film could be reinforced by anodising to form a coating which is hard, could be coloured and was even more resistant to wear and corrosion; especially in aggressive coastal and industrial environments. Anodising is an electro-chemical process whereby the aluminium surface is converted to a hard transparent film of oxide which is an integral part of the aluminium. The anodising process takes place in a diluted solution of sulphuric acid in which the aluminium forms the positive pole (the anode), and the electrode - the negative pole (the cathode) of the cell. A current is passed though the cell and oxide is formed in the pores of the aluminium surface (see Figure 1).

The anodised aluminium can now be coloured or left in its natural silver colour, ready for sealing.

ANODISING AND COLOURING PROCESS

The process starts with a clean and rinse to remove cutting fluids etc from the substrate. An etch follows which is used to remove the naturally formed oxide layer and to give the metal an even matt appearance over the whole surface area. The metal is then rinsed.

Continuing the process, the metal is placed in cold water to neutralize any residue from the etch. The metal is then rinsed again. The anodising process then takes place which is followed by a final rinse.

The colouring process is next. This is achieved by using an electro-chemical process to deposit nickel or tin into the open pores created by the anodising process (see Figure 2).

The pores are then sealed to ensure no airborne contaminants can enter which could cause premature attack of the newly formed oxide layer. The colour is retained and the metal is then rinsed.

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