



**HULAMIN**  
EXTRUSIONS



corrosion  
resistance



maintenance  
free



strength  
&  
durability



## Care of aluminium

Recommendations for correct handling,  
storage, packaging, transportation,  
installation and cleaning

# INTRODUCTION

Hulamin Extrusions is the leading supplier of aluminium extrusions in southern Africa, supplying extrusions and components to the architectural sector and engineering industry. Our production units in South Africa are based in Midrand and Pietermaritzburg.

The Pietermaritzburg and Midrand Plants are ISO 9000 and ISO 14000 Accredited.



# CARE OF ALUMINIUM

## Objectives



With the wealth of knowledge and experience we have built up over the years covering all aspects of aluminium extrusions, we have clearly defined production methods in our business to deliver a quality product. To this end, we bring you this brochure covering the

handling, transportation, storage, care and cleaning of aluminium. This will provide a greater insight into the mechanics of the aluminium extrusion process, and discuss recommended methods for the correct handling of aluminium.

## General



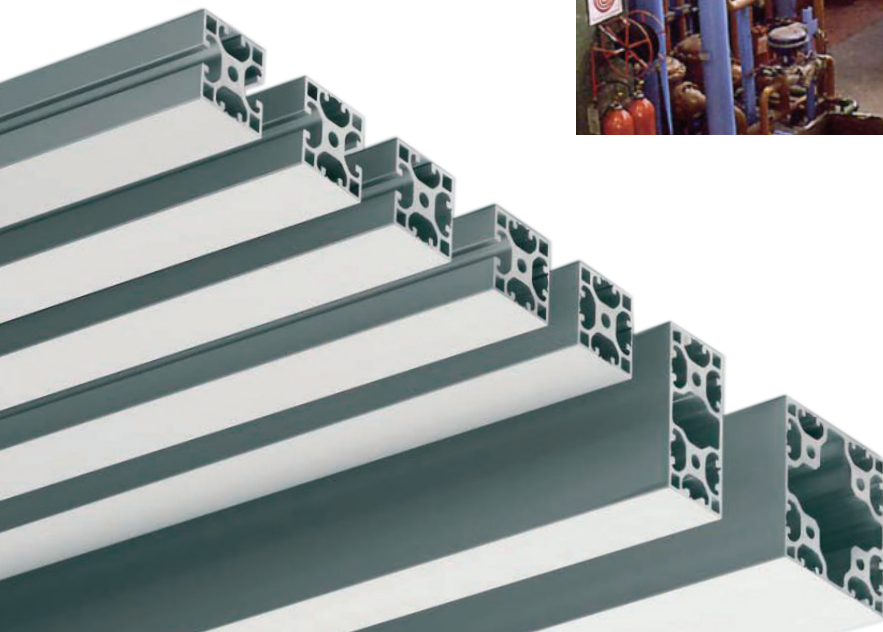
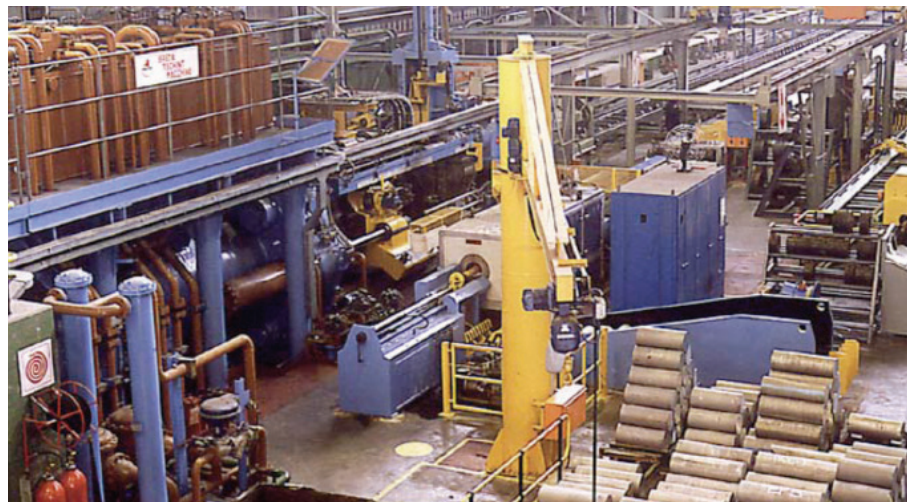
Aluminium has a high durability and corrosion resistance. However, there are certain basic common-sense recommendations regarding all stages of handling, transportation, storage, care and cleaning of aluminium. In particular, we wish to draw attention to a few simple steps that should ideally be followed when handling and cleaning aluminium to avoid staining and damage, as some sections may be thin and intricate and susceptible to damage.

## Staff training

Hulamin has regular staff training sessions including all personnel involved in handling aluminium, from the process foremen, packers, drivers to inventory clerks, warehouse managers and logistics controllers. We feel that everyone should receive instruction to be made aware of the various do's and don'ts as far as the correct handling of aluminium is concerned.

# THE EXTRUSION PROCESS

The cycle of caring for aluminium starts with the production of primary aluminium, and the semi-fabricators (extruders) have a very big role to play as this stage is the foundation for the eventual quality of the aluminium components. At Hulamin, we believe that tidy work area and clean environment is the cornerstone of quality.



## Production stages

Stringent controls are observed at Hulamin to ensure that we set and maintain consistently good quality standards at every stage of the production process.

### Housekeeping

We focus on cleanliness and good housekeeping at all stages of production. A clean press and clean tooling are essential disciplines.

### Dies



The die plays an important role in the surface quality of the extrusions. Working surfaces in the die must be polished. Defects such as die lines and weld marks can be eliminated through proper die management.

### Billets

Good billet quality is vital for the surface quality of extruded sections. The billet is stored in a clean place to avoid excessive dirt, dust and sand build-up on its surface. It is cleaned before bringing it into the process and kept clean at all times.

### Run-out table



The run-out table rollers are covered with woven Kevlar/carbon yarn textiles. Extrusions are separated by means of carbon blocks to avoid damage.

### Cooling table



The cooling table is checked regularly for wear. Profiles are never manually pulled sideways on the transfer and cooling table, as this leads to scratches on the section surface. The transfer and cooling table moves all parts of a profile sideways at the same time, avoiding bending of the profile and scratches in the section surface.

### Stretcher and saw area

The transfer table is covered with woven Kevlar or carbon belts. Excessive use of lubricants at the cutting saw is avoided and left-over lubricants are removed from the section surface. Lubricants trapped between profiles during stacking, packing and storing may lead to staining on the section surface. Clean gloves must be used during handling of sections. Care is taken to avoid touching the sections with bare hands and getting fingerprints on the surface.

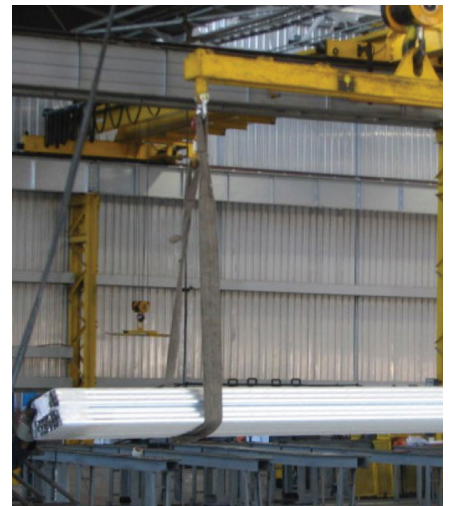
The saw is equipped with rollers covered with woven polyester. Wear and alignment of rollers and transfer belts are checked regularly to ensure proper transportation of sections from the run-out table to the saw, avoiding scratches and handling marks. Contact with other metals is avoided and care is taken not to drag the aluminium sections across other surfaces. The extrusion is securely held in place whilst cutting.

### Ageing furnace



Spacers used to separate extrusions during the ageing process consist of rectangular bars covered with woven polyester yarn. This circumvents detrimental surface marks from spacers on extrusions during ageing.

### Packing



Hard or sharp surfaces are avoided during packing. Two people are used when stacking or moving extrusions. Correct cranes and slings are used when lifting bundles. Aluminium lengths are never dragged, thrown or walked over. The correct packing method is specified to suit the end use requirement of the extrusion.

## SURFACE DEFECTS

There are certain critical points to look out for when inspecting mill aluminium extrusions for defects and to understand the various causes of such defects so that steps can be taken to avoid them. These include correct dimensions, pick-up marks, snap/stop marks, die line marks, scratches, bad saw cut, handling damage, tearing, blisters, waving, oil stains, water stains, jig marks, kinks, straightness, twists, etc.

### Water stains

Water stains occur from time to time with aluminium. High magnesium alloys are the most likely to develop water stains and, depending on the alloy or amount of oxidation, the water stain may have a shiny, reflective appearance but is generally a white powdery substance on the surface. This is caused by entrapment of moisture between closely packed aluminium sections. Water stains give the aluminium a different appearance, but they do not alter the mechanical properties of aluminium. Wet aluminium sections should be dried off immediately. If aluminium

material is delivered wet, it should be dried thoroughly before storage. Removal of the moisture will prevent stains occurring and halt the growth of any existing water stains. If you are not able to deal with wet extrusions on delivery, contact our regional office for assistance. The extent of existing stains can be determined by surface roughness. If the stains are light, the surface will still be smooth and these stains can be removed by brushing. If the staining is extensive, the surface will be rough and these stains can be removed by dipping in an aqueous solution of 10% by volume sulphuric acid and 3% by weight chromic acid.

## Examples of surface damage:



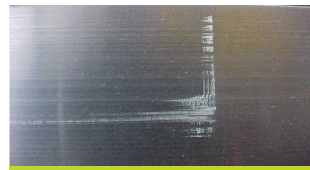
**Die lines & surface damage**

Die lines caused by extrusion process parameters, i.e. badly polished dies, poor billet quality and extrusion parameters.



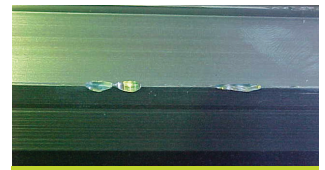
**Blisters**

Extruded section with surface damage caused by poor fix pad and shear blade performance, excessive use of dag, poor tooling and poor sealing.



**Handling scratch**

Section with surface damage caused by scratches due to rough handling and damage caused by sections moving against each other.



**Handling damage**

Section with surface damage caused by sections being knocked against baskets.



**Pre-treatment water stain**

Powder-coated extrusions with surface defect caused by insufficient drying after pre-treatment.



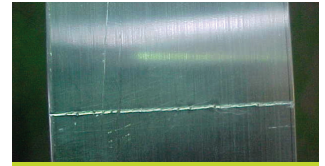
**Jig marks**

Extruded section with jig mark defect.



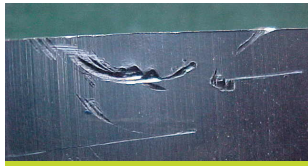
**Scuffing**

Scuffing due to swarf in between extrusions.



**Snap mark**

Section with surface damage caused by high pressure die can be resolved by re-designing the die.



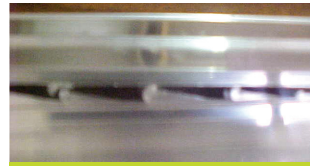
**Bad saw cuts**

Bad saw cut, due to inappropriate speed or worn-out teeth.



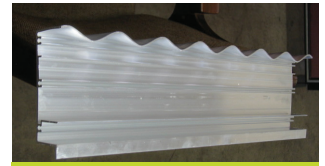
**Oil stains**

Oil stain which is not acceptable as a finished product - however, if the section is going through the pre-treatment process where it's going to be washed out, it can be accepted.



**Tearing**

Tearing due to incorrect die design and extrusion parameters.



**Waving**

Waving due to incorrect metal flow through the die.

## Surface criteria Mill Finish Aluminium

Class	Definition	Production Directions: Typical applications	Recommended alloy
1	<b>Extremely high surface requirements.</b> No scratches, marks or noticeable structural lines on the extrusions visible surfaces. Inspection distance: 0,5m. Cannot be run on the visible surface. Maximum delivery length: By agreement.	<b>Super quality</b> Handled individually at all stages. Visible surfaces well protected during packaging. Décor strips, picture frames, radio/TV fascias.	6060 6463
2	<b>Very high surface requirements.</b> No scratches, marks or noticeable structural lines on the extrusions visible surfaces. Inspection distance: 1,0m. On non-visible surfaces: Quality 3. Should not be run on the visible surface.	<b>Very high paint/anodising quality</b> Visible surfaces well protected during packaging. Décor strips, picture frames, radio/TV fascias, exclusive furniture, kitchen, bathroom fittings.	6063 6060
3	<b>High surface requirements.</b> No noticeable structural lines or other damage on the extrusions visible surfaces. Inspection distance: 2,0m. Graphite damage and other minor damage from the run-out table permissible on visible surfaces. On non-visible surfaces: Quality 4. Free from chips	<b>High paint/anodising quality</b> Visible surfaces protected during packaging. Can be produced with visible surfaces down towards the table. Can with care be laid on one another during extrusion, stretching and cutting. Damage/ marks disappear during anodising can be accepted on visible surfaces. Furniture, lamps, kitchen, bathroom, windows, doors and shop fitting.	6060 6063 (6005)
4	<b>Normal surface requirements.</b> No noticeable scratches, marks or other damage on the extrusion. Inspection distance: 4,0m	<b>Normal quality</b> Fine mechanical parts, internal components for radio/TV building systems apart from windows and doors, balconies, sun blinds, railings and steps. Standard extrusions.	All
5	<b>Small no surface requirements.</b> Inspection distance: 6,0m. Blisters and cracks not permissible	<b>Commercial quality</b> Commercial elements, parts for rough mechanical machining. Standard extrusions.	All

# HANDLING OF ALUMINIUM

## Packaging

The preferred type of packing varies according to the shape of the goods, distance to the final destination and the end use of the product. Extrusions destined for decorative applications should always be handled with great care. In general, the type of packaging is discussed and agreed during commercial negotiations and at the time of placing the order.



Tissue Interleaves

### Various recommended packaging methods:

- Tissue interleave and spiral wrap.
- Fanfold.
- Wooden crate.
- Fanfold with skid.
- Solid wooden crate.
- Tissue interleaves.
- Skeleton wooden crate.
- Solid base wooden crate.
- Bundles (ferrules).
- Tissue interleaves and crate.



Skeleton wooden crate



Solid base wooden crate

## Loading



Use correct crane and slings for lifting, hoisting and loading

It is important that aluminium sections are handled with care during loading and transportation.

When hoisting, use nylon or polyester slings to evenly distribute lifting stress: this will avoid distortion. Do not permit sling hooks, slings or other handling equipment to damage the aluminium. When loading,

do not drag or throw aluminium - rather lift and carry the sections. Do not scrape sections against each other or other materials. Hoist bundles evenly to avoid distortion. Avoid contact between aluminium and handling equipment.

## Extrusion transportation

At Hulamín every precaution is taken to protect against mechanical damage and the detrimental effects of exposure to the elements and humidity during storage and transport.



### Loads are stacked evenly

Crates, cases and bundles are never stood on edge or loaded upside down. Great care is taken not to drop the packed goods, as this might cause the goods to slide inside the packing and be scratched or dented.

### Loads are secured

To prevent aluminium from moving during transport, avoid unnecessary hard acceleration, braking and swerving. Loads must be properly secured with the correct strapping.

### Protection against the elements

Aluminium should not be transported in uncovered vehicles unless adequately packed and the goods protected against the elements. Tarpaulins protect the loads from the elements when the goods are transported on open trailers.

### Avoid handling damage

Lift material from transport – do not drag sections off the end of transport. Do not walk on aluminium extrusions.

## Storage

Aluminium is one of the easiest materials to keep in good condition. It has a high natural resistance to corrosive conditions normally encountered during shipment and storage, and a little care will maintain its original appearance for a long time. The main things to guard against are conditions that might cause surface abrasions or water stains. Suppliers make every effort to pack aluminium so that traffic marks or rub marks do not occur during shipment and so that it remains dry.

### Recommendations for good storage management

Guard against surface damage and



Horizontal storage in warehouse

water stains. Aluminium should be stored indoors at a stable temperature, protected from moisture, combustible products, construction dust, smoke and pollutants. All incoming shipments should



Vertical storage in warehouse

be inspected promptly. Should aluminium arrive wet, it should be unpacked and dried immediately with a soft cloth. Aluminium should be stored in such a manner that air can flow freely over

the aluminium, preferably on supports covered with a soft material to prevent contact with concrete floors, stone walls or other materials. Aluminium can be stored horizontally or vertically.

Long thin extrusions should be stored horizontally in racks. Lift extrusions from racks and do not pull them along the rack. Keep aluminium away from caustics, nitrates and

phosphates. Good storage practices such as FIFO (first in, first out) should also be observed.

## FURTHER FINISHING OF ALUMINIUM EXTRUSIONS

Enhanced resistance to surface defects and certain corrosion conditions can be achieved by surface finishing applications

such as anodising or powder coating.

## FINISHED PRODUCT

### Packaging, transportation and installation

Finished components should be packaged securely

packaging during the installation process, apply oil or a clear lacquer to unprotected aluminium surfaces to avoid staining.

Take special care to protect the corners. The packaging should stay in place until the product is ready for installation.

### Just-in-time delivery

Installation and delivery of aluminium components to building sites should always be delayed to the last possible moment to avoid accidental staining and/or damage. Keep the products in plastic

Newly installed aluminium components usually require cleaning due to carelessness and exposure to other nearby work procedures. If the aluminium is tainted with a wet product it should be removed before drying and washed thoroughly with water. If dry mortar, plaster or paint needs to be removed from aluminium by scraping, use a plastic or wooden scraper. Metal scrapers will damage the surface of the aluminium.



## Cleaning

### Recommendations for keeping aluminium looking as good as new

The best way to keep aluminium looking pristine is by regular cleaning to remove any build-up of dirt.

If left for an extended period of time, grime can cause staining and, depending on the extent of staining, it will require a harsher cleaning method to remove the

stain. When cleaning aluminium one should always start with the mildest method possible and only move to successively harsher treatments if absolutely necessary. After cleaning the aluminium should be washed thoroughly and dried to prevent streaking. Special care should be taken to remove any traces of cleaner from edges and joints. Always follow the manufacturer's recommendations when using proprietary cleaning products. If the aluminium has a grain, always clean with the grain.

### Recommended cleaning methods from mildest to harshest

- Plain water.
- Mild soap or detergent.
- Solvents such as kerosene, turpentine and white spirits.
- Non-etching chemical cleaner.
- Wax-based polish.
- Abrasive wax.
- Abrasive cleaner.

## INSPECTION OF ARCHITECTURAL ALUMINIUM PRODUCTS

The inspection for scratches and blemishes on the surfaces of architectural aluminium product should be as specified in the Association of Architectural Aluminium Manufacturers of South Africa (AAAMSA) selection guide which states:

- Scratches in aluminium are defined as being a mark on the aluminium

surface which penetrates the anodised or painted surface thereby exposing the natural metal. If visible from a distance of 3 metres under normal lighting conditions, the product may be rejected.

- Blemishes in aluminium are defined as flaws/stains or runs, or any other indication that mars the aesthetic

appearance of aluminium. If visible when viewed from a distance of 3 metres under normal lighting conditions, the product may be rejected.

Note: Normal lighting conditions shall mean "reasonable lighting conditions under which the product is normally viewed".

We trust that you found the information in this brochure interesting and useful in your own business. Should you have queries or require further information, please do not hesitate to contact us.

### Hulamin Extrusions

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# Think future. Think aluminium.