# GRP AUSTRALIA

# Maintenance & Repair Manual

## GRP Pultruded Structural Sections Including GRP Decking

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# 1 INTRODUCTION

## 1.1 Overview

GRP Australia pultruded glass reinforced plastic (GRP) profiles are corrosion resistant and low maintenance. A service life more than 25 years and up to 50 years can be expected, provided the GRP pultruded sections are maintained in accordance with this manual. However, the lifespan of GRP pultruded sections can be reduced due to long term weathering, mechanical damage, chemical action, and other factors. Regular inspection and maintenance is therefore recommended to ensure the optimum service life is maintained.

## 1.2 Purpose of Document

This document is a maintenance and repair guide for pultruded GRP sections including GRP decking and GRP structural sections. The document covers sections on cleaning, inspection, maintenance, and repair of GRP pultruded sections.

## 1.3 Specific Project Details

Refer to **Schedule 1** for project specific details where relevant.

# 2 CLEANING OF GRP

## 2.1 High Pressure Water Cleaning

High pressure water cleaning can be used on large areas of GRP surfaces to remove most types of dirt and other contaminants. To prevent damaging the GRP, the pressure washer should not exceed 140 kPa (2000PSi).

## 2.2 Hand Wash with Soap and Water

For smaller areas or areas unable to be cleaned using the high-pressure cleaner, use soap and water along with a damp cloth, a soft bristle brush, or a broom. Common household mild detergents should be used. Apply the soap and water then scrub.

## 2.3 Solvent Wiping

For difficult to remove substances such as oils, solvent wiping may be used. In this procedure, the pultruded shape should be wiped using a non-abrasive cloth and a solvent such as acetone (highly flammable). The cloth may require repeated soaking in these solvents as they evaporate quickly. Do not wipe surfaces to be adhesively bonded with a solvent dampened cloth.

Note: Do not immerse GRP sections in solvents as prolonged soaking may cause damage. Abrasive cloths may ultimately be required for complete cleaning.

# 3 PREVENTATIVE MAINTENANCE INSPECTION

## 3.1 Inspection Tools

Recommended inspection tools:

- A small metal hammer or similar tool to tap the GRP looking for voids or delamination,
- A high-resolution digital camera with normal range and macro images used for documenting appearances,
- Tape measure to provide scale in photographs.

## 3.2 Frequency of Inspections

The recommended frequency of inspections is dependent on several factors including:

- Exposure to weather, particularly UV,
- Exposure to chemicals,
- Frequency of use,
- Exposure to mechanical damage.

**Inspection Guidelines**

| Installation | Inspection Focus | Frequency of Inspection |
|---|---|---|
| GRP pultruded decking with non-slip grit surface. | Non-Slip Grit Surface | 6 months after first installation and yearly inspections thereafter. |
| GRP structural profiles including GRP decking | Mechanical damage- scratches, gouges and major structural damage. | Yearly |
| GRP structural profiles including GRP decking | Surface weathering | Once every 2 years |

## 3.3 Inspections

Inspection of the GRP pultruded decking and structural sections can be carried out using visual and other non-destructive means such as tapping. Issues to look for during the inspection:

**Mechanical Damage**

Mechanical damage can vary from minor scratches and scrapes, deep gauges which expose the glass fibres, to serious structural damage.

Photography should be used to document any imperfections providing evidence to enable an independent Engineer to verify the observations. Photographs to include:

- Photos to show element in context to allow for location identification

- Photos to show defects, preferably with an identifying label and an object of known scale such as a tape measure.

For repair of minor scratches, scrapes and gauges refer to section 4.3. Pultruded sections that have major structural damage should be replaced and / or referred to the responsible Structural Engineer.

**Wear of a Non-Slip Grit Surface on Pultruded Decking**

After prolonged use, the non-slip grit surface applied to decking will wear which will reduce the slip resistance and aesthetics of the decking. The rate of wear will depend on the amount and type of traffic. However, high wear areas need to be identified and monitored with possible use of slip tests to gauge the need for reapplication of the non-slip grit surface. See section 4.5 for repair method.

**Weathering**

Most plastic materials undergo some decay and change in appearance during prolonged exposure to outdoor weathering. GRP Australia pultruded sections contain UV inhibitors and surface veils for protection against UV radiation, which will retard the effect of outdoor weathering, but eventually the profile surface will degrade and a protective coating may be required. ( see section 4.2 ). Weathering can be evidenced by discoloration, rough surface and in extreme cases, glass fibres may become exposed.

## 3.4 Inspection Reports

It is recommended that the report includes the following as a minimum.

- A summary of the inspection completed including a description of the subject structure or decking,
- A summary of the inspection including observations relating to potential structural deficiencies, other observations and a discussion (including images),
- Conclusions and recommendations,
- An appendix of photographs appropriately labelled.

Photography should be used to document any imperfections providing evidence to enable an independent Engineer to verify the observations.

- Photo/s to show element in context to allow for location identification. It may also be necessary to include drawings of the structure or decking to identify the location of imperfections.
- Photo/s to show defects, preferably with an identifying label and an object of known scale

Any other notable observations should be recorded including foot traffic or signs of defacement.

# 4 GRP REPAIR METHODS

## 4.1 Cleaning

Prior to any repairs, it is necessary to remove any foreign material which may contribute to poor adhesion in the repair. Routine cleaning is recommended as a preventative maintenance measure.

For cleaning methods refer to section 2. Ensure the surface is dry before attempting any repair.

## 4.2 Weathered Surfaces (Non-grit surfaces)

Weathered surfaces should be lightly sanded, cleaned and then a protective coating applied. Suitable protective coatings for GRP:

| Coating System | Description | Examples |
|---|---|---|
| Acrylic paint for external applications | Suitable | Dulux Aquanamel |
| 2 Part Polyurethane solvent based | Highly durable and abrasion resistant coating system suitable for commercial and industrial applications. | ~Norglass Northane 2 part Polyurethane<br>Dulux Luxathane HPX |
| 2 Part water borne Polyurethane | Excellent UV resistance and gloss retention. Good abrasion and chemical resistance. | Dulux Duration T74 |

Application of the coatings should be to the manufacturer's recommendations.

## 4.3 Scratches and Scrapes

GRP structural shapes are manufactured with a resin rich surface; this is accomplished using a synthetic surfacing veil to improve corrosion and ultraviolet resistance. If the surface has been drilled, cut, punched, sanded, or otherwise broken, exposing the glass reinforcement, the surface must be Resin Sealed to maintain optimum properties.

**Procedure**

Sand the damaged area, remove the dust, and clean as required. Verify that the area to be repaired is free of moisture to ensure proper adhesion of the sealant.

Catalyzed resins, paints (polyester, epoxy, or polyurethane) and acrylic paints, can all be used as sealants. All of these products will effectively seal the surface, but some resins will provide better corrosion resistance than the paints. Carefully follow the manufacturer's instructions for the use of these products.

## 4.4 Deep Gouges

This procedure will discuss repair techniques when a section has received minor mechanical damage. In this situation, the damage is not severe enough to warrant replacement of the component however, some repair is required to prevent the absorption of contaminants.

Epoxy resin is recommended for this type of repair. Preparation of the epoxy should be as per the manufacturer's instructions and if required a filler may be added to improve the workability of the filling paste. Pigment can be added to match the colour of the section to be repaired.

Using a spatula or putty knife, fill the damaged area. Cover the repair with cellophane and press together, massaging the repaired area to remove entrapped air. Tape the cellophane into position while the resin cures.

After 24 hours, remove the tape and cellophane and carefully sand the repaired area. Complete this repair by employing the sealing procedure described in section 4.3.

## 4.5 Non-Slip Grit Surface Repair

Lightly sand the damaged area and remove all loose material to provide a good bonding surface. After sanding the damaged area must be cleaned and dried.

GRP Australia recommends using an epoxy or acrylic based non-slip coating system with silicone or aluminium oxide grit to resurface and repair the non-slip surface. There are many non-slip coating systems available however, the following have been tested with good results. Apply as per manufacturer's recommendations.

**Hempadur Mastic 45880/45881**

A two-component high build epoxy based paint. Achieved excellent adhesion when applied on top of a worn grit surface on pultruded decking.

**Emer-Clad Façade Acrylic**

Single component water based, acrylic copolymer coating. Highly flexible coating. Achieved good adhesion when applied on top of a worn grit surface on pultrude