

Materials – Luminaires



Modern computer operated metal working machine

Metal types used in luminaires and enclosures are selected for application and suitability of purpose. Design factors include forming capability, corrosion resistance, strength, weight etc.

- steel - electro-galvanised zinc and pre-painted, sheet and coil
- aluminium - commercial grades

Electro-zinc coating is applied to the basic uncoated grades of steel. The forming ability has been maintained in conjunction with a protective coating of high purity zinc which does not interfere with forming processes. This coating is specifically designed for good paint adherence combined with underpaint corrosion resistance for internal application. The zinc coating is valuable in preserving the surface of product during storage and forming processes, and is normally given a phosphate treatment to enhance the paint grip.

Pre-Treatment — Iron Phosphate



Troffers entering treatment chamber prior to painting.
Inset - close up of cold water rinse stage.

Plant Type — Peerless Engineering 2 stage phosphate type treatment plant designed to clean and phosphate metals with light or medium oily soil. Heated in the first stage and designed for use with combined cleaner/phosphate type chemicals. This replaces trichlorethylene degreasing methods and spray etch priming.

The stages are as follows:

Stage 1 — 5000 litres of cleaner/phosphate, heated to 50°C and applied at 100 kPa pressure through directional nozzles. This stage removes the majority of oils and soils on the metalware and applies at the same time a very light phosphate coat.

Stage 2 — 2500 litres of cold water rinse applied at 100 kPa pressure through directional nozzles. This stage flushes excess chemicals off the metalwork. Protection — approximately 1 gram weight per sq metre of metalware.

Advantages of Phosphate Pre-Treatment:

(a) Steel is the metal which gives the most corrosion problems and metal pre-treated by this means using a paint coverage of 30 microns will increase the humidity corrosion resistance up to 10 times that of bare steel coated with the same paint thickness.

(b) It normally will provide 50% better paint adhesion than bare degreased steel. This increased adhesion will result in reduced damage due to bumps and handling, thus preventing flaking or chipping of the paint.

Steel fittings which have been phosphate treated are not generally suitable for use in extremely corrosive environments. Under such conditions we recommend luminaires specially designed for adverse locations eg. Impact and Europroof.

Powder Coat Paint Finish

First quality polyester powder is electrostatically applied to a minimum thickness of 30 microns. This finish provides a high resistance to ultra-violet light and industrial chemical atmospheres. It has a superior resistance to scratching and scuffing plus a minimum reflectance of 85%

Principles of Electrostatic Finishing

Electrostatic application of paint is based on the fundamental law that objects carrying unlike electrical charges attract each other... negatively charged paint particles are attracted to positively grounded objects. Atomized particles of coating material are negatively charged at the atomizing device, while the article to be coated is grounded. When the charged particles are brought near the object electrostatic attraction draws the coating material to it. The process is so efficient that coating material waste is almost eliminated.



Automatic powder coating paint line using electrostatic application.



Manual painting for unique project requirements

Metal Joining

There are three commonly used methods-spot and MIG welding and cold form joining. The method selected for a given luminaire depends upon many factors including metal gauge, ultimate product use, material type etc.

- Spot welding occurs when pieces of metal are joined by passing electricity through the metal via a pair of fine copper teeth.
- MIG welding utilises a continuous wire feed which melts along with the parent metals.
- Cold form joining is a technique of holding two pieces of metal together without the use of adhesives, hardware or welding.

Wiring

Locally manufactured and wired products carry a specific 12 month factory replacement warranty on workmanship and materials. They are 100% tested, wired to AS3137 and EMC compliant. Light fittings wired HPF are generally 0.9 lagging or greater.