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## Application Data Sheet

## Plastic Surface Protection Films

## Stainless Steels

Stainless steel can be ordered from Austral Wright Metals with one of three different plastic films applied for surface protection. There are significant differences in purpose and performance of the plastic films.

The films are intended to protect the surface of the stainless steel from scratches and scuffing during handling and working prior to and during installation. They should be removed in service.

### 1. White Polyethylene (PE)

- The appropriate protective film for most applications is polyethylene (PE), with a rubber adhesive layer. This film is applied by default when the quality of the film to be used is not specified.
- The film is nominally 80 micrometres thick. It is white, and may have two blue stripes printed at intervals across the width. The stripes have no significance.
- The adhesive may be clear or black. Clear adhesive looks white on the film.
- Film with clear adhesive should not be exposed to the sun for more than a few hours to avoid breakdown of the adhesive, which will leave a residue on the surface of the stainless when the film is stripped off. Film with a black adhesive should be stable in the sun for a few months.
- The steel may be plasma or laser cut with the film in place, as it does not produce toxic or corrosive products when burnt. When laser cutting, for best results cut from the side which does not have the plastic applied, or use oxygen to assist and cut from the protected side.

### 2. Light Blue Polyvinyl Chloride (PVC)

- This film is appropriate for deep drawing application, particularly multi-stage deep drawing. It is a polyvinyl chloride (PVC) film, with a rubber adhesive layer.
- The film is nominally 70 micrometres thick, and is light blue in colour.
- The film should be used at a temperature between 15°C and 40°C.
- The film should not be exposed to the sun for more than a few hours to avoid breakdown of the adhesive, which may interfere with deep drawing or leave a residue on the surface of the stainless when the film is stripped off.
- The steel should not be plasma or laser cut with the film in place, as the film will produce fumes containing hydrochloric acid which are toxic and corrosive.
- The film should be removed from the steel after pressing, at a temperature between 15°C and 40°C.

### 3. Black Polyvinyl Chloride (PVC)

- This film is appropriate for heavy roll forming and other applications requiring heavy surface protection. It is a polyvinyl chloride (PVC) film, with an acrylic adhesive layer, and a very high level of adhesion.
- The film is nominally 120 micrometres thick, and black in colour.
- The film should be used at a temperature between 15°C and 40°C.
- The film is weather resistant, and can be exposed to the sun for several months.
- The steel should not be plasma or laser cut with the film in place, as the film will produce fumes containing hydrochloric acid which are toxic and corrosive.

### 4. Laser Cutting Special

- for significant quantities, Austral Wright Metals are able to supply sheet coated with a polyethylene film specially formulated to work well in laser cutting.

### 5. Other films

- Other suppliers may use white PVC films for general surface protection. This is less likely than hitherto as PVC films are significantly more expensive than PE films.

#### **Stripping & Cleaning**

- On occasions the film is left in place for too long. It may become very hard to strip, and may also leave a gummy or friable residue of degraded adhesive on the steel surface.
- The residue is unsightly, and may also impair corrosion resistance by retaining atmospheric corrodents which settle on the steel surface.
- Even if the film is stripped promptly, there may be small amounts of this residue left, although they may not be visible. It is prudent to clean the surface after stripping the film.
- The adhesive residue can be cleaned from the surface of the steel with a solvent such as methyl ethyl ketone (MEK), eucalyptus oil or a similar solvent.
- The surface should be swabbed with the solvent on a clean, soft, grit free cloth, left to soak in, then the solvent wiped off (and use elbow grease). The intent is to dissolve the adhesive into the solvent, then wipe off the solution. Hence the solvent chosen should not evaporate too rapidly. Consideration should also be given to the flashpoint and toxicity of the solvent.
- Care should be taken to avoid marking the stainless – check a small area after the solvent has dried, as fine scratches may not be visible while the surface is wet.
- Highly adherent films which have baked onto the steel may require an extended soaking period with the solvent, preferably after pulling away strips of film to allow access of the solvent to the adhesive.
- The solvent may leave tide marks, which can usually be removed with an alkaline detergent and hot water, well rinsed. Allow the steel surface to dry naturally, blot dry with a clean rag, or blow dry with clean air.