55% Aluminum-Zinc Alloy Coated Steel

TECHNICAL BULLETIN #4

Prevention of Damage to Roofing and Siding Products from Metal Filings

4.0 Introduction.
Steel filings are typically created from cutting or piercing operations when using friction saws, abrasive discs, drills etc., on steel roofing and siding products. This debris in addition to other discarded steel objects such as rivet shanks, nails, screws and nuts, which may come in contact with coated products; (i.e. pre-painted steel, 55% Aluminum-Zinc Alloy Coated Steel) are the subject of this bulletin.

These particles, if left on the surface, will corrode and cause rust stains which will detract from the finished Appearance of a project. These stains are often mistaken for early deterioration of the roofing or siding itself. Prevention of such staining is the responsibility of the installer and it is strongly suggested that the recommendations contained in this bulletin be followed.

Metal debris will come in contact with coated steel sheet products in three ways.

1. Loose particles left after cutting, drilling and riveting operations.
2. Hot metal filings from disc cutting or drilling operations which may adhere to the finished surface.
3. Loose particles which may be ground in underfoot or become embedded in the surface film of pre-painted products under pressure from adjacent equipment or materials.

4.1 Prevention.

4.1.1 Cutting.
Use of a power saw with a metal cutting steel blade is the best way to cut sheets on site. This method generates larger and cooler particles than abrasive discs. Where possible, cutting should be minimized by using factory supplied cut-to-length sheets.

Sheets cut on site should, where practical, be cut on the ground, with the exterior color finish of pre-painted sheet facing down. Care should be taken to ensure hot filings do not come into contact with nearby pre-paint steel sheets. Do not cut over the top of other coated products, where debris may fall onto other sheets. Where cutting must be carried out near sheets already installed, the area around the cut must be covered and the stream of hot particles directed away from completed work.

4.1.2 Drilling.
The area around the hole should be covered to shield the product from hot metal filings.

4.1.3 Installation.
Smooth soled shoes should be worn when working on a roof; avoid the ribbed type which will carry metal filings and other objects.

4.1.4 Clean Up.
Metal debris/filings should be swept or hosed from the job progressively and certainly at the end of each day. This action will remove loose particles. Maximum care should be taken when attempting to detach filings which have become stuck; this can be done, but no action which is likely to remove paint or metal coatings should be attempted. Any damage to these coatings will lead to reduced life of the material. When sweeping or hosing into a gutter, clean out the gutter before leaving the job in order to prevent premature corrosion. On completion of the job give a final wash or sweep down. For critical applications,

inspection of the job should be made after two weeks when rain or condensation will have caused any remaining filings or debris to rust, and will highlight affected areas.

***NOTE**: Many staining problems arise not from installers, but from other contractors working in the vicinity. Architects and builders need to be aware of this possibility and warn contractors accordingly.*

4.2 Identification.
Fresh stains are characterized by small red-brown colored areas with a central dark spot (the remains of the steel particles). The surface will feel like sandpaper, and the particle may be lifted with a fingernail. An old stain will appear as a localized red-brown stain, the steel particle having corroded away, and the surface will be smoother.

4.3 Effect on Performance.
The effect of staining itself on Cascadia Metals supplied products is generally aesthetic, and may not be detrimental to the performance of the product. The product life will be severely affected where attached metal particles have penetrated the pre-painted film and are in contact with the protective metallic coating, although this only occurs in severe cases. This is because on pre-painted surfaces red oxides of iron are normally inert substances and do not attack the finish; the stain is merely absorbed by the finish. Red oxides of iron are insoluble in water and the stain will take considerable time to weather away.

On metallic coatings, concentrated corrosion can occur over a small area as the zinc in the coating sacrifices itself to prevent oxidation of both the debris and, if allowed to continue, exposed areas of the steel base.

4.4 Repair of 55% Aluminum-Zinc Alloy Coated Steel Sheet.
Brush the surface with a stiff bristle (not metallic wire) brush to dislodge particles which must then be completely removed. Wire brushing will mar the appearance of the sheet if brushing is not followed by painting. If the coating is severely damaged by corrosion, the area should be painted. Please contact Cascadia Metals to discuss the correct coating to repair the damaged area.

4.5 Repair of Pre-painted Steel Sheet.

4.5.1 Mild Staining.
A household cream cleanser, used according to directions, will remove most mild staining from metal debris (one cup of Tide®, or other common detergents which contain less than 0.5% phosphate, dissolved in warm water are usually effective).

4.5.2 Severe Staining.

1. Clean the surface by washing with a nonionic industrial or household detergent and water in Proportions as recommended by the detergent manufacturer. Wash well with clean water.

2. Remove the corrosion product by using a stiff nylon brush and washing off completely. More heavily affected areas may need a light rub with a Scotch guard tape pad (not steel wool). Abrasive papers should only be used if repainting is to be carried out.

3. Great care must be taken not to cause damage to the paint film.

4. Hose down the affected area completely after treatment.

5. This treatment will normally leave only very mild stains.

4.5.3 Very Severe or Extensive Staining.
In these cases, where aesthetic factors are important, such as on pre-painted steel finishes, over painting may be the quickest solution. Contact Cascadia Metals to discuss the best system to repair damaged areas.

The whole visible area should be repainted, as air-drying paints will weather more rapidly, and in a different manner to pre-painted roofing and walling products. If the metallic particles are painted over, rust bleed through is likely to occur. These particles should be removed if possible as outlined above.