



Metal Shield

Protection from Acid Etching

Background

A new method employed by graffiti vandals or “taggers” is the use of glass etching compounds on stainless steel surfaces. These over the counter items usually contain hydrofluoric, ammonium bifluoride and/or sulfuric acids. These etching compounds can be mixed with shoe polish and applied to stainless steel where they will react with the surface within minutes. The use of polyester film as a sacrificial barrier has been found to be very useful in preventing damage to stainless steel surfaces by physical and chemical attack.

Test Matrix

Metal Shield was tested for its protective capabilities against readily available glass etching materials. Armour Etch® glass etching cream and Etch Bath® glass dipping solution were applied to Metal Shield on ordinary common stock stainless steel. The test panels were placed in a horizontal position (worse case) and the etch compounds were left in contact with the film for 24, 48 and 72 hours. The results from the exposures are listed below.



Film	24 Hours	48 Hours	72 Hours
Bare Stainless Steel	Severe (5 minutes)	N/A	N/A
Metal Shield Etch Cream	No damage	No damage	No damage
Metal Shield Etch Solution	No damage	No damage	No damage

Conclusion

Neither the Etch Cream, nor the Etch Bath, caused stainless steel damage during the extended test duration with Metal Shield.

The experiment was carried out in a horizontal orientation. More commonly, stainless steel surfaces are vertical thus allowing for run-off. Furthermore, the effect of exterior environmental factors, solar heat, wind, etc. would cause these etchants to dissipate faster; decreasing the actual duration the etchant is in contact with the stainless steel. Worth noting, the Etch Bath material is extremely low in viscosity and does not wet out the film’s surface well. The liquid etch would run off vertically installed stainless steel surface rather quickly.

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