



## 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 metal surfaces 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 metal surfaces by physical and chemical attack.

**Test Matrix:** The 6.5 & 6 mil Metal Shield films were tested for their protective capabilities against readily available glass etching materials.

Armour Etch® glass etching cream and Etch Bath® glass dipping solution were applied to 6.5 & 6 mil 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 Hour	48 Hour	72 Hour
Bare Stainless Steel	Severe (5 minutes)	N/A	N/A
6.5 & 6 mil Metal Shield Etch Cream	No Damage	No Damage	No Damage
6.5 & 6 mil 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 the 6.5 & 6 mil Metal Shield.

The experiment was carried out in a horizontal orientation. More commonly, stainless steel is 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 glass rather quickly.

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