

3M Corporate Analytical Services - Report No 6587

To : Brian Wong
Subject : FILM COMPATIBILITY TESTING
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Date : 6 April, 2006



Copies :

Background

Four film samples mounted on glass backing were submitted for analysis.

Sample Name
SCLARL400
SH4CLARXL
SH4CLARL
HPWF 70

It was requested to determine the compatibility of the samples with brake fluid, glass etching cream and graffiti remover.

The 3 media were spotted on to the films and removed after set intervals of time. The samples were tested in triplicate for each time interval. A control sample of glass was also tested. After the allotted time the samples were cleaned with water and a soft cloth. SEM (Scanning Electron Microscopy) images of the damage were collected.

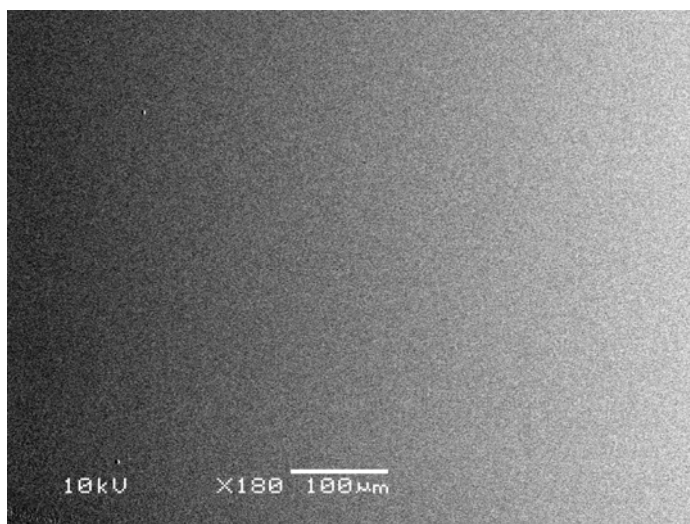
Analysis Results and Discussion

Brake Fluid –

GM Brake Fluid DOT4 Part # 93160365

	10min	1hr	3hrs	6hrs	24hrs
Glass	No effect	No effect	No effect	*	No effect
SCLARL400	No effect	No effect	No effect	No effect	No effect
SH4CLARXL	No effect	No effect	No effect	No effect	No effect
SH4CLARL	No effect	No effect	No effect	No effect	No effect
HPWF 70	No effect	No effect	No effect	No effect	No effect

* No 6hr glass spots were run due to limited sample space

**Fig 1. SEM image of un-affected surface****Glass etching cream –**

Armour Etch Glass Etching Cream contains Ammonium Bifluoride (21-27%), Sodium Bifluoride (7-12%), Sulphuric Acid (0-9%) and Barium Sulphate (0-6%), and is commercially available at craft and hobby shops.

	10min	1hr	3hrs	6hrs	24hrs
Glass	Surface damage	Surface damage	Surface damage	*	Surface damage
SCLARL400	No effect	No effect	No effect	No effect	No effect
SH4CLARXL	No effect	No effect	Very minor film blemish	Very minor film blemish	Very minor film blemish
SH4CLARL	No effect	No effect	No effect	No effect	No effect
HPWF 70	No effect	No effect	No effect	No effect	No effect

* No 6hr glass spots were run due to limited sample space

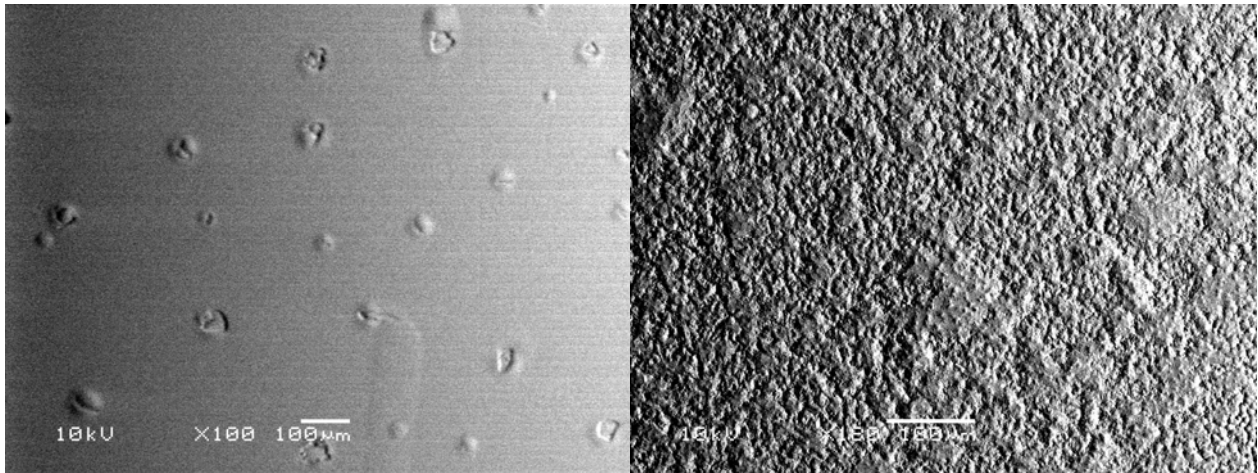


Fig 2. SEM images showing the very minor film blemish on SH4CLARXL (left) and surface damage on glass (right)

Graffiti remover –

Chela Erazo Gel contains N-methyl-2-pyrrolidone (5-10%), 2-methoxy-1-methylethyl acetate (5-10%) and Alcohol Ethoxylate (1-5%)

	10min	1hr	3hrs	6hrs	24hrs
Glass	No effect	No effect	No effect	*	No effect
SCLARL400	No effect	No effect	No effect	No effect	No effect
SH4CLARXL	No effect	No effect	No effect	No effect	No effect
SH4CLARL	No effect	No effect	No effect	No effect	No effect
HPWF 70	No effect	No effect	No effect	No effect	No effect

* No 6hr glass spots were run due to limited sample space