



## CHEMICAL RESISTANCE & ANTI GRAFFITI

Chemical resistance is becoming more and more important because of the enduring problem of graffiti removal. As truly self cleaning surfaces are not yet available, all around high chemical resistance and barrier properties are necessary to ensure that graffiti can be removed using increasingly potent stain removers without leaving a stain, or “ghost,” on the substrate.

Test Method : KYNAR<sup>®</sup> Films are tested for graffiti removal properties according to a method developed by Arkema for its PVDF paints sold under the tradename KYNAR 500<sup>®</sup> (Figure 1). A cotton pad, saturated with the chemicals to be tested, is rubbed back and forth onto the films under the constant pressure from a 1 kg dead weight. The number of return trips before visual deterioration of the film is observed and recorded.

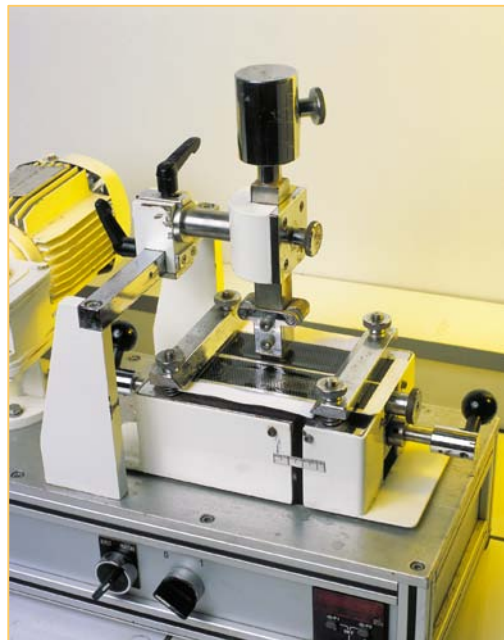


Figure 1 : Testing Apparatus for Chemical Resistance of Films

This test combines elements of surface chemical resistance, barrier properties and mechanical abrasion resistance and is an attempt to measure, quantitatively, how the film will perform under conditions which mimic what the film will actually see in its lifetime. Tests have been conducted (Table 1) on PVDF and PMMA Films which were first laminated onto a thick thermoplastic substrate (2 mm red ABS) for better stiffness of the test sample. Detection of failure is made easier by the fact that the substrate is colored.





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Test Chemicals	KYNAR® Film 50 µm 501CUH-CR (Cycles)	PMMA Film 50 µm* (Cycles)
Methyl Ethyl Ketone	80	8
Ethyl Acetate	180	5
Toluene	> 1000	5
Isopropyl Alcohol	> 1000	120
Gasoline 110B	> 1000	< 230
Isooctane	> 1000	< 500
Diesel Fuel EMC5	> 1000	> 1000
Bleach (0,1°CI)	> 1000	> 1000
Diluted Ammonia 28%	> 1000	> 1000

Table 1 : Comparison of Chemical Resistance of KYNAR® Film vs. PMMA Film

\*Commercially available Transparent UV Screening PMMA Film (50 µm)

KYNAR® Film offers a very high all around chemical resistance and performs consistently better than PMMA film. Practical significance of this is illustrated below (Figure 2) where test samples of KYNAR® Film 501 CUH-CR and PMMA Films printed with the same pattern are shown after 20 return trips with Methyl Ethyl Ketone as the test chemical :

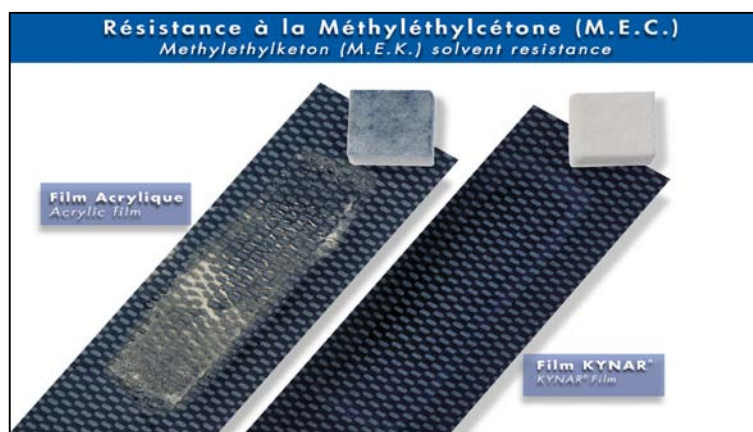


Figure 2 : Comparison of MEK resistance of Printed PVDF Film vs PMMA Film

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