



INTERNATIONAL MARKETING, INC. TECHNICAL BULLETIN

SUBJECT: MEK Solvent Rub Test

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The Solvent Rub Test is a well-known and frequently used test throughout the coatings industry. Its primary utility is to determine the extent to which a coating is cured and when interpreted properly, can be a very useful tool. The test itself is simple; a Q-Tip (or cotton ball or rag) is soaked in solvent and rubbed over the surface of the coating a given number of times. The effect on the surface is then evaluated in terms of gloss loss, softening, or degree of rub off. The results of this type of test provide a measure of the chemical resistance for a given coating. When the results are compared to those of a control, known to be fully cured, a good qualitative determination of the degree of cure can be made.

To view the Solvent Rub Test in the proper context, it must be understood that the test results are not absolute and unless compared to a control are meaningless. Solvent rub data are highly dependent upon the method used, the operator running the test and the type of coating being tested. Various solvents, for example, can affect a coating to different degrees. MEK and acetone are much more aggressive than xylene or toluene and a coating which is unaffected by xylene may be considerably softened by MEK. Similarly an operator who "bears down" on the coating will affect the surface more than one who uses less force. Coating type, of course, strongly influences the results obtained on the test. A standard epoxy powder coating will show little or no effect after 50 double rubs with MEK, whereas, on a standard polyester urethane, softening and slight rub off is normal, even though the coating is fully cured. Accurately judging the degree to cure for either coating without knowing the MEK resistance of the fully cured film is not possible. As the table below indicates, even coatings within the same chemical family can have different solvent rub results.

POLYESTER FORMULATIONS	URETHANE		
	1	3	5
50 MEK Double Rubs (1=Poor 5=Excellent)			
Direct Impact	160	160	160
Reverse Impact	160	160	160

All three coatings listed are polyester urethanes but are formulated for different applications. Impact resistance indicates that all are completely cured, yet MEK rub results range from "no effect" to "rub through at 40 rubs." If an operator ran the test on formulation 1 and did not know that "rub through" was normal, he would be tempted to come to the erroneous conclusion that it was undercured. By comparing the result to that of a fully cured control, he would know that the sample tested was probably cured. It cannot be stressed strongly enough that for results to be meaningful, data must be compared to a control.

CONCLUSIONS

1. The Solvent Rub Test can be a useful tool, both in the field and the laboratory, to gain a qualitative idea of the chemical resistance of a powder coating.
2. If comparisons of different coatings are to be valid, it is important to ensure that the solvent used, the test method and the operator are consistent.
3. When using the test to determine the degree of cure, the results obtained on the sample coating must be compared to those of a fully cured control, for meaningful conclusions to be drawn.

Important: Warranty and Disclaimer - The performance characteristics of these products vary according to product application, operating conditions, materials applied to or with and use. Since these factors can affect results, we strongly recommend that you make your own test to determine to your satisfaction whether the product is of acceptable quality, has not been affected by storage or transportation and is suitable for your particular purpose under your own operating conditions prior to using any product in full-scale production. Seller warrants the products to be free from defects in materials and workmanship. Such warranty is exclusive and is in lieu of any other warranty, express or implied, including but not limited to any implied warranty of merchantability of fitness for a particular purpose. No representative of ours has authority to waive or change this provision, which applies to all sales of these products.

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