

Excerpt from ASTM D3359 standard:

### X1.6 Procedural Problems

X1.6.1 The tape test is operator intensive. By design it was made as simple as possible to perform, and requires a minimum of specialized equipment and materials that must meet certain specifications. The accuracy and precision depend largely upon the skill of the operator and the operator's ability to perform the test in a consistent manner. Key steps that directly reflect the importance of operator skill include the angle and rate of tape removal and the visual assessment of the tested sample. It is not unexpected that different operators might obtain different results (7, 8).

#### X1.6.2 Peel Angle and Rate:

The standard requires that the free end of the tape be removed rapidly at as close to a 180° angle as possible. If the peel angle and rate vary, the force required to remove the tape can change dramatically. Nearly linear increases were observed in peel force approaching 100 % as peel angle was changed from 135 to 180, and similar large differences can be expected in peel force as peel rate varies. These effects are related as they reflect certain rheological properties of the backing and adhesive that are molecular in origin. Variation in pull rate and peel angle can effect large differences in test values and must be minimized to assure reproducibility (9).



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X1.6.5 Test Method B has been used successfully, without affecting adhesion test results, by some coil coating users on coatings up to and including 2.0 mils (50 µm) by spacing the cuts 2 mm apart. While this may be an agreement between purchaser and seller, the precision values given in 14.1 do not apply, as they are based on cuts 1 mm apart.

X1.6.6 Some have found that the use of a suitable mechanical device is helpful in minimizing some of the variables in placing the tape onto the coatings (see 7.5 and 12.7) and removing the tape from the coatings (see 7.6 and 12.8) which maintains consistent pressure on the tape during application and ensures a 180° pull off.<sup>10</sup>

### X1.7 Conclusion

X1.7.1 All the issues aside, if these test methods are used within the Scope Section and are performed carefully, some insight into the approximate, relative level of adhesion can be gained.

<sup>10</sup> The sole source of supply of a suitable mechanical device for laying down and removal of tape known to the committee at this time is ReliaPull, a registered trademark of Random Logic LLC, manufactured by Random Logic LLC, Cincinnati, OH 45245. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,<sup>1</sup> which you may attend.