

B. Paints, Sealants, Adhesives

Technical Bulletin B-4

ASTM D3359 Paint Adhesion Test Method

ASTM D3359 test method assesses the adhesion of coating films to various substrates (such as metal and plastic) by applying and removing pressure-sensitive tape over “X” cuts made in the film.

Let’s focus on what X-cuts are. X-cuts are typically two 4cm long incisions intersecting each other in the middle with the smallest angle being 30° to 45°. A thin razor sharp knife is typically used to produce the “X”-Cut.

Most people make the cuts manually without the use of a template. When it comes to tape, all kinds of tape are used but typically 3M invisible tape is preferred. The tape is often smoothed with the fingernail but a rubber eraser on the end of a pencil should be used. Pulling off the tape correctly after using the prescribed period gives you the test result.

The evaluation according to the scale described in the standard is outlined below:

- 5A : no removal or peeling.
- 4A : Trace peeling or removal along incisions; leaves room for discussion, e.g.
- 3A : Jagged removal along incisions up to 1.6 mm on either side.
- 2A : Jagged removal along incisions up to 3.2 mm on either side.
- 1A : Removal from most of the area of the X under the tape.
- 0A : Removal beyond the area of the X.

There are two test methods under D 3359. Test Method A is primarily intended for use at job sites while Test Method B (PPG test method) is more suitable for use in the laboratory. Also, Test Method B is not considered suitable for films thicker than 5 mils (125µm).

These test methods are used to establish whether the adhesion of a coating to a substrate is at a generally adequate level. They do not distinguish between higher levels of adhesion for which more sophisticated methods of measurement are required.