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ISQ-PB SERIES CROSS CUT ADHESION TESTER OPERATION MANUAL

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1. Instrument Introduction

- 1) The principle of the instrument is to evaluate the resistance of the paint to detachment from the substrate by cutting the paint layer through the substrate in a right-angled grid pattern.
- 2) To test the adhesion of paint coating on metal, wood, plastic, etc.
- 3) According to ISO 2409, ASTM D3359 DIN53151

2. Procedure

- 1) Choosing the right cutting head
 - 1mm pitch blade: for hard (e.g. metal and plastics) substrates, coating thickness less than 60 µm, substrate thickness not less than 0.25mm
 - 2mm pitch blade: for hard (e.g. metal and plastics) substrates, coating thickness 61~120 µm, substrate thickness not less than 0.25mm
for soft (e.g. wood and plaster) substrates, coating thickness less than 120 µm, substrate thickness not less than 10mm
 - 3mm pitch blade: for hard (e.g. metal and plastics) substrates, coating thickness 121~250 µm, substrate thickness not less than 0.25mm
for soft (e.g. wood and plaster) substrates, coating thickness 121~250 µm, substrate thickness not less than 10mm.
- When a stick-off test is required (only for hard substrates), please select the standard test tape.
- 2) Cutting the coating using the manual procedure, Place the test panel on a rigid, flat surface to prevent any deformation of the panel during the test.
 - 3) Before the test, inspect the cutting edge of the blade and maintain its condition by sharpening or replacement. Perform the cutting manually, following the specified procedure. If the panel is of wood or similar material, make the cuts at approximately 45° to the direction of the grain.
 - 4) Hold the cutting tool with the blade normal (perpendicular) to the test panel surface. With uniform pressure on the cutting tool and using the appropriate spacing guide, make cuts in the coating at a uniform cutting rate. The minimum cut length shall be significantly longer than the width of the multi-cut tool. All cuts shall mark or scratch the substrate. The depth of indentation into the substrate shall be as low as possible, however, for some substrates, e.g. plastics, there is the risk of tearing and flaking of the coating if the cutting tool penetrates the substrate too deep.
 - 5) Repeat to intersect the original cut lines at 90° to form a grid pattern.
 - 6) Brush the panel lightly with a soft brush several times backwards and several times forwards along each of the diagonals of the lattice pattern.
 - 7) In the case of soft substrates, carefully examine the cut area of the test coating with visual magnification under good illumination with normal or corrected strength, rotating the sample in the observation so that the observation and illumination of the test surface is not confined to one direction.
 - 8) For hard substrates, test tape must be used, pull out a section of tape at an even rate, cut off the top two loops, and then cut off about 75mm of the tape

- 9) Place the centre of the tape over the lattice in a direction parallel to one set of cuts and smooth the tape into place over the area of the lattice. The procedure shall be carried out in such a way that the adhesive tape fully covers the lattice.
- 10) To ensure good contact with the coating, rub the tape firmly with a fingertip or fingernail. Within 5 min after applying the tape, remove the tape by grasping the free end and pulling it off steadily in 0.5 s to 1.0 s at an angle which is as close as possible to 60°. The operation of applying and removing the tape can be carried out more than once, depending on the kind of coating and cutting direction. A new piece of tape shall be used for each lattice area.

3. Determination of results

Classification	Description
0	The edges of the cuts are completely smooth; none of the squares of the lattice is detached.
1	Detachment of small flakes of the coating at the intersections of the cuts. A cross-cut area not greater than 5 % is affected.
2	The coating has flaked along the edges and/or at the intersections of the cuts. A cross-cut area greater than 5 %, but not greater than 15 %, is affected.
3	The coating has flaked along the edges of the cuts in large ribbons and/or some squares have detached partly or wholly. A cross-cut area greater than 35 % but not greater than 65 %, is affected.
4	The coating has flaked along the edges of the cuts partly or wholly in large ribbons, and/or it has flaked partly or wholly on different parts of the squares. A cross-cut area greater than 15 %, but not greater than 35 %, is affected.
5	Any degree of flaking that cannot even be classified by classification 4.

NOTE: Frequent inspection of the cutting blade. When the cutter is worn down to 0.1mm, it can be sharpened or replaced with a new cutting blade.

