Cross Hatch Cutter

BEVS 2202

User Manual

Version 201412

This manual shall be read carefully before starting. Directions included in this operation manual shall be strictly followed.

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1. Introduction

BEVS cross hatch tester is designed for assessing the resistance of paint or related coatings separated from substrates when a right-angle lattice pattern is cut into the coating, penetrating through to the substrate.
When applied to multi-coat system, assessment of the resistance to separation of individual layers of the coating from each other may be made.

2. Packing List

2.1 1 x Carrying Case
2.2 1 x Cross Hatch Cutter & Handle
2.3 1 x Magnifier （5X）
2.4 1 x Tape (3M)
2.5 1 x Soft Brush
2.6 1x Certificate of Conformity

3. Specifications

The Cross Cutters Tester conform with the requirements of: ISO2409-1992, GB/T9286-98,BS3900 E6, ASTM D3359.
In order to achieve consistent results it is recommended that the test be conducted in accordance with the stated test methods.

4. Preparation for Test

The following guide will provide the user with a working knowledge of how to conduct the test. These notes should be read in conjunction with the stated test methods in order to obtain meaningful results that can be used for comparative purposes.

4.1 Check for correct selection of cutter type:
2202/1 is designed for hard substrates with a coating up to 60 microns.
2202/2 for hard substrates up to 60 microns, with the benefit of 11 teeth to produce 100 squares, enables % values to be obtained from the results.
2202/3 intermediate, suitable for hard and softer substrates up to 60 microns.
2202/4 for both soft & hard substrates with a coating thickness from 61 - 120 microns.
2202/6 for both hard & soft substrates coating thickness 121 - 250 microns.
Obtain Pressure Sensitive Adhesive Tape (for hard substrates).
It is important that the same specification tape is always used (the grade of tape supplied is the same as specified in the standard test methods) in order that consistent, comparable results are obtained.

4.2 Place the coated test panel on a rigid, flat surface to prevent any deformation of the panel during test.

4.3 Before the test, inspect the cutting edge of the blade for sharpness and condition. If the panel is of wood or similar material, make cuts at approximately 45° to the direction of the grain.

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4.4 Grip the cutter firmly, place the index finger (if required) onto the cutter holder to enable even pressure to be applied to the coating.

4.5 With the blade normal to the test panel surface, apply uniform pressure on the cutting tool, draw the cutter at a uniform rate across the surface for a distance of approximately 30 mm All the cuts shall penetrate to the substrate.

4.6 Repeat the operation, crossing the original cuts at 90° to them so that a lattice pattern is formed.

4.7 Brush the panel lightly with a soft brush along each of the diagonals of the lattice pattern.
For hard substrates proceed to step 4.8.
Soft substrates, carefully examine the cut area of the test coating in good lighting using normal or corrected vision, (a lens of 3 or 5 times magnification maybe used). During the viewing process, rotate the panel so that the viewing and lighting of the test area are not confined to one direction.

4.8 If the test is made on hard substrates the Pressure Sensitive Tape is too be used. (para 4.1 refers)
If beginning a new series of tests, remove two complete laps of Pressure Sensitive Tape and discard. Remove an additional length at a steady rate and cut a piece approximately 75 mm long.

4.9 Place the centre of the tape over the lattice in a direction parallel to one set of cuts, smooth the tape into place over the area of the lattice and for a distance of at least 20 mm beyond with a finger.
To ensure good contact with the coating, rub the tape firmly with a fingertip. The colour of the coating seen through the tape is a useful indication of overall contact.

4.10 Within 5 minutes of 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 60° refers to the angle between the tape being pulled off and the tape remaining)

4.11 Retain the tape for reference purposes, for example by attaching it to a sheet of transparent film.

5. Evaluation of Results.

The results maybe classified into 6 categories:

Cat 0. The edges of the cuts are clean and smooth; no squares of the lattice show any detachment.

Cat 1 Detachment of small flakes of the coating at the intersections of the cuts. A cross-cut area not greater than 5%.

Cat 2 The coating has flaked along the edges and/or at the intersections of the cuts. A cross-cut area significantly greater than 5%, but not greater than 15%, is affected.

Cat 3. 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 significantly

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greater than 15% is affected.

Cat 4. 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 significantly greater than 35%., but not significantly greater than 65%, is affected.

Cat 5 Any degree of flaking that cannot even be classified by classification 4.

For multi-coat systems the evaluation should review the interface at which flaking occurs.

Note. the categories stated are based on ISO 2409 test method, for more complete definition of test it is recommended that the user refer to the stated test methods.

6. Limitations.

The Cross Hatch Cutters are not suitable for coatings thicker than 250 microns or for textured coatings.

7. Routine Maintenance

Inspect the Cross Hatch Cutter for wear to the edges of the teeth, also any damage.
New cutter teeth have flats machined into the apex of the teeth, the width of which is nominally 0.05 mm,
Through use the width of the flats will increase and the cutting edge will loose it's sharpness, check flat width not to exceed 0.1 mm. Where they are in excess of this size, a new cutting edge should be selected. Replace cutter accordingly

8. Calibration

No calibration of this instrument is required, inspect for wear see para 6.0.

9. Further Information

For more information regarding this product, spares, accessories etc. or if you would like a catalogue listing our full range of products, please contact your local agent or BEVS Industrial Ltd via www.bevsinfo.com .

10. Order Information

BEVS 2202/1C	Cross Hatch Cutter (1MM 6Blades)
BEVS 2202/2C	Cross Hatch Cutter (1MM 11Blades)
BEVS 2202/3C	Cross Hatch Cutter (1.5MM 6Blades)
BEVS 2202/4C	Cross Hatch Cutter (2MM 6Blades)
BEVS 2202/6C	Cross Hatch Cutter (3MM 6Blades)

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