



#### International Standards

ISO 2409

ASTM D3359

ISO 16276-2

## Cross Hatch Cutter

**ISO 2409: Paints and varnishes.**  
**Cross-cut test.**

**ISO 16276-2: Corrosion protection of steel structures by protective paint systems.**  
**Assessment of, and acceptance criteria for, the adhesion/cohesion (fracture strength) of a coating.**  
**Part 2: Cross-cut testing and X-cut testing.**

The Cross Hatch Cutter is a multi-blade cutting tool which enables an assessment to be made of the adhesion resistance of coatings to separation from substrates when a right-angled lattice pattern is cut into the coating and penetrates through to the substrate.

The coating thickness determines the Cutter size used.  
The 1mm Cutter is suitable for coatings under 60 microns.  
The 2mm Cutter is suitable for coatings over 60 microns.

Multiple coatings can be tested for the assessment of the resistance to separation of individual layers of the coating from each other.

The hardened tool steel cutting blades are precision-ground with 6 cutting sides, so that when one cutting side becomes blunt there are a further 5 cutting sides to use.

The Adhesion Test Tape has an adhesive strength of 9.5N per 25mm width and is transparent to ensure correct adhesion to the coating.

Supplied in an industrial foam-filled Carrying Case with Adhesion Test Tape 25mm and a x3 Illuminated Magnifier.

#### Cross Hatch Cutter Specifications

Part No	Cutter Size Metric	Cutter Size Imperial	Coating Thickness	Number of Teeth	Conformance Cert Part No
X2001	1mm	40mils	Under 60µm	6	NXC01
X2002	2mm	80mils	Over 60µm	6	NXC01
XS001	Spare Cutter Head 1mm (40mils)				NXC01
XS002	Spare Cutter Head 2mm (80mils)				NXC01
XA001	Adhesion Test Tape 25mm (1") 60m Roll (ISO2409)				NXC03

# Operation

## Cutting

Select the correct Cross Hatch Cutter for the required coating thickness.  
Hold the Cross Hatch Cutter so the blade is normal to the test surface.  
With uniform pressure draw the cutting edge across the coating at a uniform cutting rate.  
All cuts should penetrate to the substrate.  
Repeat this operation making further parallel cuts, crossing the original cuts at 90° so that a lattice pattern is formed.

The Cutter Head will make 8 cuts in the surface: the 2 fine cuts each side are to steady the Cutter Head, and the 6 cuts in the centre create the lattice pattern that is the test area.

## Coating Removal

Brush the test area lightly several times along the diagonals of the lattice pattern with a soft brush.

At the beginning of each series of tests, remove and discard the first three turns of the Adhesion Test Tape from the roll.

Remove a piece of Tape about 75mm long.  
Holding the Tape only at the ends, press the freshly exposed Tape onto the lattice pattern in a direction parallel to one set of cuts and smooth into place over the lattice pattern and 20mm beyond.  
To ensure good contact with the coating, rub the Tape firmly with a finger.  
The colour of the coating seen through the tape is a useful indication of overall contact.

Within 5 minutes of applying the Tape, remove by pulling the free end steadily within 1 second at an angle as close as possible to 60°.

For powder coatings or coatings made up of more than one layer it is recommended that the Tape application and removal is carried out at least once in each direction of the lattice pattern.

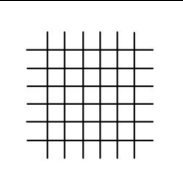
The Adhesion Test Tape can be kept as a permanent record for the inspection carried out by attaching to a sheet of transparent film.

## Evaluation

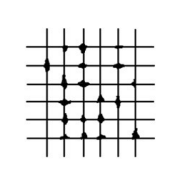
Carefully examine the cut area of the coating using the x3 Illuminated Magnifier.  
Classify the cut area according to the Classification Guide.  
If possible rotate the area under test so that the viewing and lighting of the test area is not confined to one direction.  
It can be useful to examine the Tape in a similar manner.

The following Classification Guide is given as an approximate information guide only (refer to the appropriate International Standard for the precise classification).

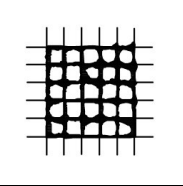
## Classification



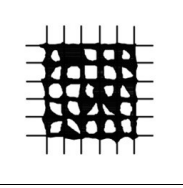
0. The edges of the cuts are completely smooth; none of the squares of the lattice is detached.



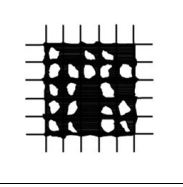
1. Detachment of small flakes of the coating at the intersections of the cuts. A cross-cut area not greater than 5% is affected.



2. The coating has flaked along the edges and 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 partly or wholly in large ribbons, and 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.



4. The coating has flaked along the edges of the cuts in large ribbons and some squares have detached partly or wholly. A cross-cut area greater than 35% but not greater than 65% is affected.



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

The first three steps of the Classification Guide are satisfactory for general purposes and are to be used when a general pass/fail is required.

## Changing Cutter Head

The Cutting Head has 6 cutting edges.  
When one edge becomes blunt simply remove the Cutter Head by removing the retaining screw, and turn the Cutter Head around until the second new unused cutter edge is selected.  
Replacement Cutter Heads are available.

## Tape Shelf Life

Do not expose the Adhesion Test Tape to any extremes of temperature or daylight.  
We would recommend that the Tape is used within a 12-month period from date of purchase.

# Paint Inspection Kit

*The New Paint Inspection Kit offers the Industrial Painter all the essential equipment to carry out a full inspection of the coating process in compliance with ISO Standards*

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