

Paint Test Equipment

Adhesion Tester



Adhesion



Information

ISO 4624: Paints and varnishes. Pull-off test for adhesion.

ISO 16276-1: Corrosion protection of steel structures by protective paint systems. Assessment of, and acceptance criteria for, the adhesion/cohesion (fracture strength) of a coating. Part 1: Pull-off testing.

The Adhesion Tester is one of the most accurate and versatile adhesion testers currently available. It measures the adhesion bond strength of applied coatings with ease and precision.

The adhesion is measured by the tensile pull on a Dolly glued to the coating surface. The force is applied through the centre of the Dolly by a hydraulically loaded pin. This ensures an exactly central point-loading of the force.

The maximum value achieved at pull-off is recorded by a reset needle that is easily read on the large scale of the pressure gauge.

Ensures effective quality control with a non-destructive capability. To allow the specification minimum to be proven, the dolly can be removed using the heated dolly remover supplied. If necessary, the dolly can be left in place for testing during service as part of a planned maintenance programme.

Specification

Pressure Gauge resolution: psi 20, Mpa 0.2.

Accuracy: $\pm 1\%$ FSD.

Supply

Supplied in an industrial foam-filled Carrying Case with 5 Flat Dollies, Adhesive, Heated Dolly Remover, Dolly Cleaning Tool and Dolly Plug.

The Calibration Certificate with traceability to UKAS is an optional extra.

Ordering Information

- X1003 Analogue Adhesion Tester (Standard) 0–3500psi (0–25MPa)
- X1004 Analogue Adhesion Tester (Right angle) 0–3500psi (0–25MPa)
- NX001 Adhesion Tester Calibration Certificate
- XS101 Spare Flat Dolly
- XS102 Spare Turbo Fuse Adhesive
- XS103 Spare Dolly Plug (pack of 5)



Concave Dollies

The Adhesion Tester can test external surfaces of pipes. Because the load reacts internally within the dolly, curved surfaces of pipes can be easily tested.

To obtain a uniform tensile load, Concave Dollies machined to match the diameter under test need to be used. External diameters as small as 51mm (2”).

Ordering Information

XA201	Concave Dolly 2” (51mm)	XA208	Concave Dolly 14” (356mm)
XA202	Concave Dolly 3” (76mm)	XA209	Concave Dolly 16” (406mm)
XA203	Concave Dolly 4” (102mm)	XA210	Concave Dolly 18” (457mm)
XA204	Concave Dolly 6” (152mm)	XA211	Concave Dolly 20” (508mm)
XA205	Concave Dolly 8” (203mm)	XA212	Concave Dolly 24” (610mm)
XA206	Concave Dolly 10” (254mm)	XA213	Concave Dolly 30” (762mm)
XA207	Concave Dolly 12” (305mm)	XA214	Concave Dolly 36” (914mm)



Convex Dollies

The Adhesion Tester can test internal surfaces of pipes. Because the load reacts internally within the dolly, curved surfaces of pipes can be easily tested.

To obtain a uniform tensile load, Concave Dollies machined to match the diameter under test need to be used. Internal diameters as small as 152mm (6”) can be tested.

Ordering Information

XA215	Convex Dolly 6” (152mm)	XA221	Convex Dolly 18” (457mm)
XA216	Convex Dolly 8” (203mm)	XA222	Convex Dolly 20” (508mm)
XA217	Convex Dolly 10” (254mm)	XA223	Convex Dolly 24” (610mm)
XA218	Convex Dolly 12” (305mm)	XA224	Convex Dolly 30” (762mm)
XA219	Convex Dolly 14” (356mm)	XA225	Convex Dolly 36” (914mm)
XA220	Convex Dolly 16” (406mm)		



Operation

Safety



When using the cyanoacrylate Adhesive – ensure the work area is well ventilated, wear gloves and do not let any Adhesive come into contact with your skin.

When using the Dolly Remover – do not touch the elements or heads after switching on. Allow approximately 15 minutes for the elements and heads to cool to ambient temperature after switching off.

The Right Angle version of the Adhesion Tester enables the user to test the adhesion of coatings inside pipes with a minimum diameter of 150mm (6”).



Information

Prior to testing, a recently applied coating shall be dried/cured in accordance with the manufacturer's recommendations.

In the absence of manufacturer's recommendations, the coating should be dried/cured for at least 10 days.

Pull-off tests are destructive test methods. Repair work will be necessary when they are used on coated structures. To avoid damage to the coated structure, test panels can be used.

The cyanoacrylate Adhesive should not be used with thermoplastic, non-convertible paint systems due to chemical reactions that could affect adhesion results. These paint systems include cellulose, vinyls, chlorinated rubbers and some acrylics. For these paint systems a two-pack epoxy adhesive should be used.

Taking Measurements

To reduce the likelihood of adhesive failure, abrade the face of the Dolly and the surface of the protective coating with fine emery paper.

Clean the surface of the Dolly and protective coating. The cleaning process should include thorough degreasing.

Check that no adhesive has been left in the dolly hole by trial fitting the Dolly Plug.

Insert the Dolly Plug into the Dolly until the tip protrudes from the surface. Apply the Adhesive thinly and evenly to the whole end surface of the Dolly in sufficient quantity to ensure a good bond to the protective coating. Ensure that no Adhesive is on the Plastic Plug.

Press the Dolly onto the surface using thumb pressure for approximately 10 seconds and then remove the Dolly Plug. Do not twist the dolly as this could introduce air bubbles. Allow the adhesive to dry for approximately 15 minutes.

If you are testing a pipe using curved Dollies, ensure that the aligning mark is lined up with the longitudinal axis of the pipe.

Connect the Adhesion Tester to the Dolly by pulling back the coupling socket, pushing the head and releasing the coupling. Ensure the Adhesion Tester is held so that the rubber hose is straight.

To pressurise the Adhesion Tester, turn the handle clockwise at a uniform rate, not greater than 1MPa/s. To decrease the pressure, turn anticlockwise at a uniform rate. Set the red needle to zero before pressurising.

To destructively test the coating, increase the pressure slowly until the Dolly pulls off.

To non-destructively test the coating, increase the pressure slowly until the specified minimum value has been reached – you can then decrease the pressure to zero and remove the head.

The Dolly can be removed by using the heated Dolly remover. The pressure is recorded from the red needle.

General

Dolly Cleaning

After use, clean the Dolly with the Dolly Remover. A duration of 3–5 minutes per Dolly should normally be sufficient to degrade the adhesive, which can then be scraped off.

Ensure the work area is well ventilated.

The hole can be cleaned using the Dolly Cleaning Tool.

Care and Maintenance

Always store the Adhesion Tester with a Dolly fitted to the head. This will prevent any damage to the pin.

Do not hold the Adhesion Tester under pressure for longer than is required.

If the Adhesion Tester is not used on a regular basis, you will need to pressurise once a month to 2500psi, then immediately release the pressure. This will ensure that the seals are kept working to their maximum potential. Always pressurise with the Dolly fitted.

About Us

Paint Test Equipment is a global leader in the manufacture of specialist test equipment specifically for the industrial painting and coating industries for the protection of steel assets from corrosion, mainly in the oil, renewables and steel construction sectors. We have over 30 years experience and extensive knowledge in delivering practical solutions in supporting our customers with world class products for corrosion prevention.

Prevention of corrosion on steel is essential to extend the asset lifetime, optimise performance and minimise downtime for expensive maintenance work. Using Paint Test Equipment products ensures that industrial coatings are applied to the highest achievable quality standards of ISO compliance.

We supply small, medium and multinational companies with the full range of technologies and innovations in our unrivalled portfolio of products for our customers to grow their business and enhance profits through cost effective corrosion management equipment.

Paint Test Equipment is committed to providing proactive and innovative solutions to meet customer requirements for the highest quality, user friendly inspection equipment. Paint Test Equipment is the partner of choice.

