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TECHNICAL DATA SHEET

JULY 2015

PRODUCT NAME

WCFF Penetrant Dye Test Kit

PRODUCT RANGE

Part Number	Available Size
CT-WCFF	CT-ASC-240
	CT-DPI-300
	CT-DVP-300

Refer to SDS for product safety guidelines

WCFF Penetrant Dye Test Kit

Chemtools® CT-WCFF Penetrant Dye Test Kit is used to reveal microscopic cracks and flaws on the surface of metals, plastics and ceramics. The detection procedure is a 5 step process involving 3 materials. Cracks and flaws are revealed as red marks on a white background.

The 3 materials used are:

- A Cleaner/Remover (part number CT-ASC240)
- A Red Penetrant Dye (part number CT-DPI300)
- A Developer (part number CT-DVP300)

The 5 steps involved are:

- Pre-Clean the Surface
- Apply Dye to the Surface
- Remove Excess Dye from the Surface
- Apply the Developer to the Surface
- Inspect the Surface for Flaws

THE PROCESS:

1. **Pre-Cleaning**

A completely clean surface is necessary for successful dye penetrant inspection. The surface should be free of such contaminants as, fluxes, weld spatter, scale, rust, paint, oil and grease. If oil and grease remains on the surface it will tend to clog cracks and prevent the penetration of the dye into the crack or pore. Dry contaminants, such as scale, rust and dirt will attract the dye and give false positive indications. These contaminants may require the use of stainless steel wire brushes for removal. Spray Chemtools Prep-Solv directly on the surface, saturating the contaminated area. Let stand for about 15 seconds while organic soils dissolve. Wipe clean with a lint-free dry towel or cloth before the Cleaner/Remover evaporates completely. (The use of a lint-free cloth helps prevent small particles of cloth or paper being snagged by a rough surface and absorbing dye, leading to false or confusing

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indications.) Repeat until clean. Please note that Chemtools Prep-Solv is highly flammable and should not be used around possible sources of ignition. Also it should not be used in confined spaces.

2. Apply Penetrant Dye

Spray the dye penetrant onto the cleaned and, dried surface; let it stand for 15 to 30 minutes or more. If especially fine cracks are suspected, or if the substrate is cold (below 15°C), the dye penetrant should dwell on the surface for a longer time. 30 minutes or more is not uncommon. If the surface temperature is higher than 50°C, shorter dwell times are recommended.

3. Remove Excess Dye

Wipe off the excess penetrant from the surface using a dry 'lint-free' towel or a soft cloth. This is a critical procedure. It must be performed correctly in order to prevent diluting or disturbing the trapped dye penetrant. Smooth surfaces may wipe clean with a dry cloth and may not require further cleaning. Remove any remaining surface dye penetrant film with a towel pre-moistened by spraying with Chemtools Prep-Solv. Use the minimum amount of Cleaner/Remover (Prep-Solv) and repeat the wiping process until the surface is free of dye penetrant. Important: Do not spray Cleaner/Remover directly on the surface to remove excess dye penetrant. This may remove penetrant dye from flaws and result in a false negative indication.

4. Apply Developer

Shake the Developer aerosol can well for one minute after the internal ball starts to rattle in order to bring the ingredients back into suspension

Spray an even, light, slightly damp coating from a distance of 250 to 300mm. Spray 2 or 3 light applications rather than one heavy application. The ideal coating is an even thickness that is not too light or not too heavy. If the coating is too wet, the solvent will dilute the dye and spread it over a wider area making blurred indication. If the coating is too light there will not be sufficient powder to absorb the dye and will be of lower contrast. If the coating is too thick it may hide or obscure the indications.

An even, light developer covering of white particles pulls the red dye penetrant from the crack to the surface by absorption.

5. Inspection

Allow time for flaw indications to appear completely

As soon as the developer has dried white, indications of flaws (if present) will appear. An additional few minutes, should be allowed for indications to reach their full intensity prior to final visual examination. The need for a longer developing time is essential if extremely tight cracks are suspected. Some types of flaws re-bleed profusely, and monitoring the surface during the developing time assists in correctly interpreting the characteristics of the flaw. The rate of bleed, depth of colour, as well as the pattern will indicate the type of defect.

Red lines indicate cracks, laps or lack of fusion. Tight cracks may appear as a line or curve of dots. Porosity appears as scattered red dots.

Post Inspection Cleaning

The Developer may be removed prior to further processing by brushing with a stiff brush or by wiping with a clean dry cloth.

After cleaning the metal surface will be prone to rusting and corrosion and should be protected by applying a suitable protectant such as Chemtools R44 or R50.

Leak Test Inspection

Flaws which extend from one side of a container to the other can be easily detected by the dye penetrant process. The procedure differs slightly from the standard process in that the penetrant is applied to one side while developer is applied to the opposite side and there is no dye penetrant removal step. The penetrant dye migrates through the flaw and on reaching the opposite side it appears as a red mark on a white background. Again, surfaces must be scrupulously clean, as contaminants such as oil, greases and water may interfere with penetration of the dye.

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An extended dwell time is required to ensure that the dye has time to penetrate the wall thickness and a second application of penetrant may be required during the extended dwell time.
Dye penetrant leak testing has limitations and wall thickness will have an upper limit of around 6mm.

STORAGE:
Store in a cool, dry place, in tightly closed original containers at a room temperature between 5°C and 40°C. Do not place in direct sunlight or near any heat source. Do not return any used material to its original container.

PRECAUTIONS:
This product is capable of producing adverse health effects ranging from minor skin irritation to serious systemic effects. None of these materials should be used, stored, or transported until the handling precautions and recommendations as stated in the Safety Data Sheets (SDS) for this and all other products being used are understood by all persons who will work with the material.

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