CANTESCO®

welding chemical products

CANTESCO® SOLVENT REMOVABLE AND WATER WASHABLE DYE PENETRANT SYSTEMS

INSTRUCTIONS FOR USE

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TYPICAL APPLICATIONS

CANTESCO® dye penetrant systems detect surface flaws and defects in nonporous metallic, non-metallic surfaces, ceramics and other suitable materials. They can be used to inspect engineered materials such as forgings, castings, weldments, tank seams, saw blades and other high stress areas. CANTESCO® dye penetrants are not suitable for underwater or immersion testing applications.

HOW IT WORKS

Following a simple six step process CANTESCO® red dye penetrant inspection systems indicate surface flaws in red against a white powder background. This process does not require any additional equipment or materials to provide visible indications under normal light conditions. After inspection the materials clean up easily with CANTESCO® dye penetrant cleaners. For additional information see THE DIRECTIONS FOR USE section of this booklet.

SPECIFICATION AMS 2644A

AMS 2644A is the aerospace material specification for INSPECTION MATERIAL, PENETRANTS used by all Departments and Agencies of the US Department of Defense. It is also commonly referenced by firms requiring standards and test methods. CANTESCO® dye penetrants are considered to be Type 2 Visible Dye penetrants.

SPECIFICATION ASTM E165-80 / ASME SE-165

Specification ASTM E165-80 / ASME SE-165 describes a STANDARD PRACTICE FOR LIQUID PENETRANT INSPECTION METHOD under Article 24-Liquid Penetrant Standards of the ASME code. This practice covers procedures for liquid penetrant inspection of materials.

ASME SECTION V NONDESTRUCTIVE EXAMINATION

Often referred to as Nuclear Industry Standards ASME SECTION V ARTICLE 6 covers LIQUID PENETRANT EXAMINATION (see also ASME SE-165). ARTICLE 6 specifies a requirement for CONTROL OF CONTAMINANTS which states that “The user of this Article shall obtain certification of contaminant content for all liquid penetrant materials used on nickel base alloys, austenitic stainless steels, and titanium.” CANTESCO® Corporation completes testing to these requirements as detailed in certificates of compliance.

CERTIFICATES OF COMPLIANCE

All CANTESCO® dye penetrant systems are lot numbered for complete traceability. As part of our QC system, the lot number is printed on each aerosol product, either on the bottom of the can, or on the top rim.

Certificates of compliance for halogen and sulfur content can be provided at any time. To receive a copy e-mail info@cantesco.com stating item and lot number. For a copy of ASTM test methods used to evaluate CANTESCO® Dye Penetrants, contact ASTM at www.astm.org.

CANTESCO® PART NUMBERS

There are three steps to identifying CANTESCO® dye penetrant inspection part numbers. The first letter indicates whether the product is a penetrant (P), developer (D) or cleaner (C). The letter S indicates a solvent based penetrant while a W indicates a water washable penetrant. See page 4 for additional product information. All aerosols are designed with the ending –A for flammable aerosols, or NFA for non-flammable aerosols. Therefore a typical code for an aerosol solvent removable penetrant (P101S-A) is as follows:

P101	S	-A
(P) penetrant	(S) solvent	(-A) aerosol

In addition all kits are designated with the prefix (K). For a complete product listing see the WELDING PRODUCTS SELECTION GUIDE back of this booklet.

ADDITIONAL INFORMATION

For additional information on each specific product, request the TECHNICAL INFORMATION - TYPICAL ANALYSIS form for each material(s) you are considering using.

For health and safety information request the specific SDS for each product(s) you are considering using.

Ensure appropriate precautions are taken to eliminate potential sources of ignition during product use. It is recommended to use static grounding and bonding equipment to eliminate static problems. Additionally, these products should never be applied on or near live circuits or energized equipment. Always ensure adequate ventilation using either natural airflow or appropriate mechanical ventilation.

HOW TO TELL THE PRODUCTS APART

Our product labels are color coded for ease of use. All dye penetrants have red labelled products, all developers have blue labelled products and all cleaners have yellow labelled products.

Certain cleaning components, penetrants and developing materials may have a deteriorating effect on some plastics. Prior to use tests should be made to ensure materials to be used are compatible with material being inspected.

In addition the instructions for each stage of use are printed on the can label.

MIXING PRODUCTS FROM OTHER MANUFACTURERS

It is not recommended to mix products from different manufacturers in following the dye penetrant inspection process. All of our products have been evaluated and tested to work as a family of related penetrants, developers and cleaners. Mixing products from other manufacturers may not provide the same results due to chemical incompatibility, sensitivity, etc.

TYPES OF PENETRANTS ARE AVAILABLE

CANTESCO® red dye penetrants are available in two different base materials; either Method C solvent removable, which requires the use of a suitable solvent cleaner for the removable of the red dye; or Method A water washable penetrants which can be removed with either water or solvent cleaner.

CANTESCO® WATER WASHABLE PENETRANT

CANTESCO® water washable penetrant is a solvent based dye penetrant which includes an emulsifier, allowing the product to be washed away with water. IT IS NOT WATER BASED, it contains the same base materials as the solvent removable penetrant with the addition of the emulsifier for water removable purposes.

WHAT DOES NONAQUEOUS DEVELOPER MEAN

A nonaqueous developer means that there is no water in the formulation. CANTESCO® developers are Nonaqueous Type 2 Visible Dye solvent based Developers.

CAN ANY CLEANER BE USED FOR THE CLEANING APPLICATIONS

It is strongly recommended that only the cleaner supplied in CANTESCO®'s dye penetrant inspection process be used in each of the three cleaning steps.

Some industrial cleaners, if used in the precleaning process, may leave a film or residue which could affect the later application of penetrant and developer and hinder test results. CANTESCO® cleaners are designed to provide effective cleaning solvency with fast evaporation and little or no residue.

In addition, CANTESCO® cleaners are designed to effectively remove the penetrants and developers from the surface area. Other industrial cleaners may not fully remove all traces of the penetrants and developers which may lead to later stage production problems.

HOW TO APPLY CANTESCO® INSPECTION MATERIALS

For ease of application aerosol containers provide the most effective means to applying the inspection materials.

If you have any questions about material compatibility contact our office prior to use.

HOW MUCH INSPECTION MATERIAL IS REQUIRED

The following are estimated coverage's for penetrants and developers only, actual amount used will vary depending on type and condition of surface being inspected, temperature use, method of application, etc.:

- On rough surface applications, 12 aerosol cans will provide approximately 140 sq. ft of coverage.
- On smooth surface applications, 12 aerosol cans will provide approximately 300 sq. ft of coverage.

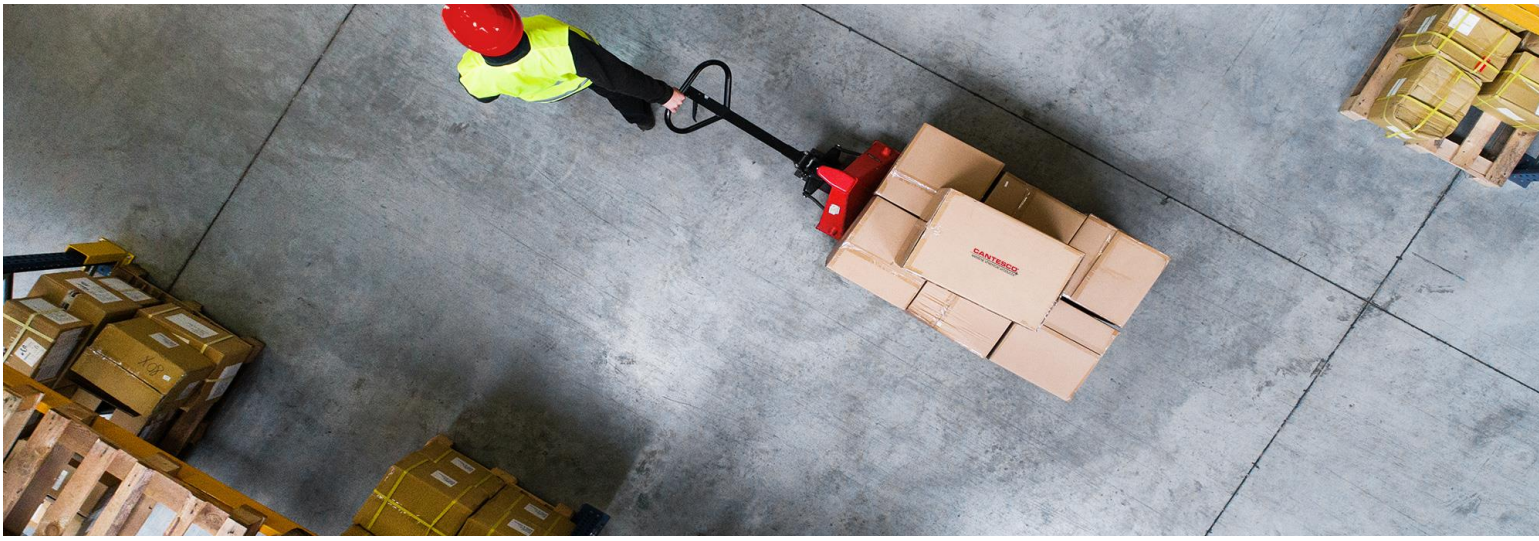
Cleaner requirements will depend on number of cleanings, amount of penetrant and developer applied to surface area, condition of surface (amount of dirt and scale to be removed in the precleaning stage), etc.

Considering that the cleaner is recommended to be used in three of the six dye penetrant inspection steps the amount of cleaner estimated per application should be two to three times the amount of penetrant and developer required.

SHELF LIFE

The shelf life for CANTESCO® dye penetrants is a minimum of 36 months when used as directed.

To ensure your satisfaction, all CANTESCO® aerosol products come with a 100% aerosol spray out guarantee.



DIRECTIONS FOR USE

STEP 1 – PRECLEANING

Parts should be free from rust, scale, flux and other contaminants which will provide false indications. Use appropriate CANTESCO® cleaner for effective precleaning results. Parts and materials are to be completely dry before application of penetrant.

STEP 2 - APPLICATION OF PENETRANT

CANTESCO® dye penetrants are applied by spraying, a thin, even spray over area being inspected from a distance of 12" to 20" (30 cm to 50 cm). After applying penetrant, position parts to allow excess to drain from surface. Refer to formula label for minimum dwell times.

STEP 3 - REMOVAL OF PENETRANT

After appropriate dwell time, remove penetrant. For solvent based penetrants remove excess penetrant by wiping with lint free cloth and an appropriate CANTESCO® cleaner. DO NOT FLUSH THE PENETRANT FROM SURFACE WITH SOLVENT. For water washable penetrants remove with steady stream of water. DO NOT FLUSH SURFACE TOO LONG OR VIGOROUSLY.

STEP 4 - APPLICATION OF NONAQUEOUS WET DEVELOPER

Prior to use agitate developer thoroughly. CANTESCO® developers are applied by spraying, a thin, even spray over area being inspected from a distance of 12" to 20" (30 cm to 50 cm).

STEP 5 – INSPECTION

As dwell times vary according to the type of developer and surface defect, sufficient dwell time is required to allow indication to form. Minimum dwell time for nonaqueous wet developers is TEN MINUTES. Inspection should be made before penetrant bleeds into developer (maximum dwell time SIXTY MINUTES) causing loss of definition.

STEP 6 - FINAL CLEANING

Once areas containing flaws have been analyzed and recorded, use CANTESCO® cleaner to remove developer and penetrant residue from surface area. Make sure all materials are removed before further processing.

Available by the case of 12 cans per product, or as 8 can test kits containing two penetrant, two developer and four cleaner.

ITEM NUMBER	PRODUCT SELECTION GUIDE	STANDARD GRADE APPLICATIONS	NUCLEAR GRADE APPLICATIONS
P101S-A	Penetrant-Red Dye-Solvent Removable	•	•
P301W-A	Penetrant-Red Dye-Water Washable	•	•
D101-A	Developer - Nonaqueous - Wet	•	•
C101-A	Cleaner - Standard	•	•
C901N-A	Cleaner - Nuclear	•	•