

TURCO[®] Dy-Chek penetrant inspection process

BY THE HAND WIPE OR SOLVENT REMOVAL METHOD

Description:

TURCO Dy-Chek[®] penetrant inspection is a method of non-destructive testing which effectively detects material discontinuities open to the surface. It is one of the most sensitive of the penetrant inspection techniques of its type.

Features:

TURCO Dy-Chek solvent removal method offers these features:

1. Exposes surface discontinuities in magnetic and non-magnetic parts.
2. Detects very minute flaws.
3. Economical to use.
4. Results are easy to see within minutes.
5. Ideal for spot application on both small and large articles.
6. Conforms to MIL-I-25135 D & E, NAVSEA 250-1500-1, and many other industry specifications.

TURCO Dy-Chek hand wipe or solvent removal process may be conducted at locations where water for rinsing is not available or prohibited as in NAVSEA 250-1500-1, where inspection volume does not warrant a production line installation, or where spot application on large parts is required.

Procedure:

The following steps are necessary to obtain accurate results:

1. Clean and dry parts.
 2. Apply TURCO Dy-Chek Penetrant
 3. Apply TURCO Dy-Chek Remover #3
 4. Dry
 5. Apply TURCO Dy-Chek or Fluro-Chek NAD Developer
 6. Inspect and evaluate.
 7. Post-cleaning
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1. Pre-cleaning and drying:

It is absolutely necessary that parts be dry and free from all surface contamination. Not only can surface soils cover or bridge a discontinuity, inhibiting entrance of the dye penetrant, they can also

absorb the penetrant and render a false indication. Typical surface soil which must be removed include oils, rust, paint, carbon, grease, oxide deposits, and residues from previous inspections. Your TURCO sales engineer will assist you in pre-cleaning and post-cleaning product recommendations.

Ultrasonic cleaning techniques have been found to assist in removing penetrant residues and other contamination for critical parts.

Abrasive cleaning, such as vapor blasting with coarse abrasive, is not recommended since it tends to peen flaws and obscure their detection. When an abrasive surface finishing method is used prior to inspection, an etch treatment is recommended.

Before penetrant application, it is absolutely necessary that all parts be dry. Drying may be accomplished by any conventional method.

2. Applying TURCO Dy-Chek Penetrant:

Application of the dye penetrant is the second step in the penetrant inspection process. This step must not be attempted until pre-cleaning and drying have been completed.

TURCO Dy-Chek Penetrant is a red liquid, which penetrates surface discontinuities, even extremely minute ones. Apply TURCO Dy-Chek Penetrant liberally, either by brush, spray or dip methods. Under normal conditions, a penetrant dwell time of 10 minutes is sufficient. Shorter dwell times on the order of 1-5 minutes are generally adequate. Some trial of the process on known flaws is helpful in establishing the optimum dwell times and technique to be employed.

CAUTION:

TURCO Dy-Chek Penetrant contains petroleum distillates. Avoid contact with eyes and skin. Do not take internally. Use with adequate (equivalent to outdoor) ventilation. If aerosol containers are being used do not use near open flames, torches or welding arcs, since hazardous gases may be formed.

Before using this product refer to container label and TURCO MATERIAL SAFETY DATA SHEET for additional handling, precautionary and first aid information.

3. Applying TURCO Dy-Chek Remover #3:

The next step in the process is penetrant removal. Wipe off the excess penetrant with clean, dry rags or absorbent paper towels. Dampen a rag or towel with TURCO Dy-Chek Remover #3 and remove any remaining surface penetrant by hand wiping.

CAUTION:

TURCO Dy-Chek Remover #3 contains petroleum distillates. Avoid contact with eyes and skin. Do not take internally. Use with adequate (equivalent to outdoor) ventilation. If aerosol containers are being used do not use near open flames, torches or welding arcs, since hazardous gases may be formed.

Before using this product refer to container label and TURCO MATERIAL SAFETY DATA SHEET for additional handling, precautionary and first aid information.

4. Dry:

Before application of the developer, it is necessary to dry all parts. A clean dry cloth or towel is usually sufficient to dry the parts.

5. Apply TURCO Dy-Chek or Fluro-Chek NAD Developer:

The next step in the TURCO Dy-Chek Penetrant Process is the application of TURCO Dy-Chek or Fluro-Chek NAD Developer. The developer serves two purposes:

- A. A fine film of TURCO Dy-Chek NAD Developer applied to the parts provides a white contrasting background for the red TURCO Dy-Chek Penetrant.
- B. It draws the penetrant from flaws to the surface of the part so it can be readily observed and evaluated.

Spray a thin, even coating of TURCO Dy-Chek NAD Developer onto the area being inspected. TURCO Dy-Chek NAD Developer is a liquid suspension of a powdered absorbent material and must be thoroughly agitated before use to insure complete suspension.

Spray application of TURCO Dy-Chek NAD Developer should be employed since this method provides a thin, even coating, precluding laps and runs, and insures clear flaw indications. A spray gun with an atomizing tip, operated with a minimum flow of developer under 25-30 psi air pressure is recommended. The rapid drying of TURCO Dy-Chek NAD Developer exposes indications as rapidly as parts can be handled. When spraying facilities using compressed air are not available, a light even coating of developer may be applied by means of the TURCO Dy-Chek NAD Developer press spray aerosol containers. TURCO Dy-Chek NAD Developer should be applied in a spray booth or in a well ventilated area.

The application of TURCO Dy-Chek NAD Developer is somewhat critical. Application of a thin uniform film is essential. Too light a film will provide insufficient background for good detection; too heavy a film will tend to obscure the indications. A few experimental trials will familiarize the operator with the desired developer film thickness.

For coarse, deep defects, bleed-out into the developer will continue for some time, causing the indications to run together and lose their definition. In such instances, observation of indications should be made as soon as the developer dries.

CAUTION:

TURCO Dy-Chek NAD Developer contains alcohol, silica and calcium carbonate. Avoid contact with eyes and skin. Do not take internally. Use with adequate (equivalent to outdoor) ventilation. If aerosol containers are being used do not use near open flames, torches or welding arcs, since hazardous gases may be formed.

Before using this product refer to container label and TURCO MATERIAL SAFETY DATA SHEET for additional handling, precautionary and first aid information.

Disposal information:

Dispose of all materials per local, state and regional regulations. Refer to your TURCO MATERIAL SAFETY DATA SHEET for additional disposal information.

6. Inspection and evaluation:

As the TURCO Dy-Chek NAD Developer dries to a smooth, even white coating, red indications will appear at the locations of defects. If the inspection process has been properly performed and no red indications appear, there are no surface discontinuities present. Depth of discontinuities will be indicated by richness of the red color and speed of bleed-out.

Since red indications will remain visible until wiped off manually, there is no need to rework defective parts immediately. If salvage is practical, defective parts can be reworked with the location and extent of flaws still showing, thus, simplifying repairs.

Trained personnel evaluate the extent and seriousness of the flaws.

7. Post cleaning:

To remove residual penetrant following the process, it has been found that vapor degreasing or a suitable solvent removal method is generally adequate. Prior to vapor degreasing, remove developer residues by flushing with water applied by spray. Parts need to be dried before vapor

degreasing. For critical cleanliness, such as that required for some aerospace applications, ultrasonic cleaning techniques have been found to be satisfactory.

NOTICE:

The above information and recommendations concerning these products are based upon our laboratory tests and field use experience with this or similar products. However, since conditions of actual use are beyond our control, any recommendations or suggestions are made without warranty, express or implied. Manufacturer's and seller's sole obligation shall be to replace that portion of the product shown to be defective. Neither shall be liable for any loss, damage, or injury, direct or consequential, arising out of the use of this product.

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