

## DP-40 VISIBLE PENETRANT

### Technical Data Sheet

**Description:** DP-40 is a non-water washable visible penetrant used to locate cracks, laps, pores, lack of bonding, and similar surface flaws. DP-40 can be used on nonporous parts including both ferrous and nonferrous metals, ceramics, and glass. Referred to as the “visible dye penetrant” method or “color contrast” method of inspection for weld inspection.

#### Chemical Properties

Color: Red  
Viscosity: 5.76 cSt @ 100°F  
Flash Point: 230°F (110°C)  
Water Tolerance: 14%  
Odor: Petroleum Odor  
Boiling Point: 44°F (226°C)

#### Companion Products

|                                    |                               |
|------------------------------------|-------------------------------|
| D-110A Water Suspensible Developer | DR-62 Solvent Remover         |
| D-100 Non-Aqueous Developer        | DR-60 Solvent Remover         |
| D-106 Non-Aqueous Developer        | ER-83A Hydrophilic Emulsifier |
| ER-85 Lipophilic Emulsifier        |                               |

#### Packaging

One Gallon Cans                      55 Gallon Drums  
Five Gallon Cans                    16oz. Aerosol Cans (9 cans per case)

#### Storage /Shelf Life

Keep away from moisture and sunlight.  
Temperature limit: 40°F to 125°F (0-50°C)  
Keep the container closed when not in use.  
Shelf life from invoice date: Bulk Container –5 Years / Aerosol Can – 36 months

#### Specifications

SAE AMS 2644 & QPL  
MIL-I-25135 Revisions C, D, & E      ASME Code NDT, Sec V

## Special Features

1. Brings flaws into sharper, clearer focus with more intense red color.
2. Performs more reliably over a greater range of temperatures.
3. **DP-40** meets stringent low sulfur and chloride requirements.
4. Long lasting flaw mark indications; less fading.

## Instructions

**Note:** These instructions describe the basic process, but they may need to be amended by the user to comply with applicable specification and/or inspection criteria provided by the contracting agency.

1. **Application:** Apply **DP-40** only to clean, dry surfaces by spraying, flowing, brushing or dipping.
2. **Dwell Time:** A 10 minute dwell time is suggested, although in many cases five minutes will suffice. When particularly tight cracks are suspected, or the part is especially critical, the dwell time may be extended to 30 minutes, or longer. Allow the penetrant to drain from the part surface back into the penetrant tank to conserve material.
3. **Removal:**

### A) Hydrophilic Dip Method

- a) **Pre wash:** Following the dwell, use a plain water rinse to remove most of the undrained penetrant from the surface. Use a coarse spray of ambient temperature water.
- b) **Immersion:** Immerse and agitate the part in 20-30% hydrophilic emulsifier solution. Immersion time and agitation time will vary with part geometry and surface condition.
- c) **Rinse:** Remove the part from the tank; clean with a coarse, plain water spray.

### B) Hydrophilic Spray Method

- a) **Wash:** Following the dwell, use an injection of 0.1 to 5.0% emulsifier solution to wash the excess penetrant from the part surface. Time and solution concentrations will vary with part geometry and surface conditions.
- b) **Rinse:** Use a coarse plain water spray to remove all traces of the emulsified penetrant.

### C) Lipophilic Method

- a) **Emulsification:** Following the dwell, dip the part into undiluted lipophilic emulsifier. Remove the part and allow the excess emulsifier to drain back into the tank. Parts with rough surfaces require longer drain times.
- b) **Rinse:** Use a coarse plain water spray to remove all traces of the emulsified penetrant.

### D) Solvent Wipe Method

- a) Remove as much excess penetrant as possible using clean, dry rag or toweling. Remove remaining penetrant film by wiping with a rag or toweling that has been slightly moistened with solvent. Use a minimum of solvent; avoid flushing penetrant from flaws. Do not spray solvent

directly on the part surface when removing excess penetrant. Rough surfaces require more generous application of solvent.

**4. Drying:**

A) A recirculating oven set no higher than 160<sup>0</sup>F (71<sup>0</sup>C) is suggested. Leave the part in the oven just long enough to evaporate surface moisture. Drying is improved by using pressurized air to disperse and remove as much excess water as possible before placing the part in to the oven.

B) When solvent remover is used, allow the surface to dry completely before applying developer.

**5. Developing:** Apply the developer by spray or dip using the appropriate developer. Flaw marks are visible almost immediately, but allow sufficient developing time to enhance the flaw visibility.

**6. Inspection:** Inspect parts under appropriate light.

**Health & Safety**

**DP-40** is a combustible liquid. Use with adequate ventilation and away from sparks, fire or open flames. Avoid prolonged or repeated contact with skin. Do not take internally. Consult the MSDS for more safety and health information.