

# DP-51 DYE PENETRANT

Approved Type II, Methods A & C, MIL-I-25135 Rev. D & E. and AMS-2644  
Approved Group I & III of MIL-I-25135 Rev. C



## PRODUCT INFORMATION

**Description:** DP-51 is a red colored dye penetrant liquid used to locate cracks, laps, pores, lack of bonding, and similar surface flaws in any insoluble, nonporous substance including both ferrous and nonferrous metals, ceramics, glass and many plastics. Referred to as the "visible dye penetrant" method or "color contrast" method of inspection. DP-51 meets MIL-I-25135 and AMS-2644 requirements.

DP-51 is approved for solvent removal (Method C) or water removal (Method A). The water wash feature means spillage and over spray can be flushed away with water for easy clean up.

**Special Features:** DP-51 Dye Penetrant can be applied by dipping, brushing, or spraying. Excess penetrant can be removed by simple water wash. DP-51 offers the following advantages.

1. Brings flaws into "sharper, clearer focus" with a more intense red color.
2. Performs more reliably over a greater range of temperatures.
3. DP-51 meets stringent low sulfur and chlorine specifications.
4. Long lasting flaw-mark indications; less fading.
5. Higher sensitivity. DP-51 finds more minute surface openings and enters flaws in greater volume.
6. Water washable; easy to remove.

### Companion Materials:

Developer -	Sherwin D-100 Nonaqueous (form d) Sherwin D-106 Nonaqueous (form d) equivalent MIL-I-25135/AMS-2644 developers
Removers -	Sherwin DR-60 (Class 2) Sherwin DR-62 (Class 2) equivalent MIL-I-25135/AMS-2644 removers

**Container Sizes:** one-gallon cans  
case of 4 one-gallon cans  
five-gallon pail  
55-gallon drum  
case of 12 aerosol cans

**Basic Instructions:** (These instructions describe the basic process, but they may be amended by the user to comply with applicable specifications and/or inspection criteria provided by the contracting agency.)

1. **Clean Surface:** DP-51 must be applied to a dry surface that is free of soils, oils, or solvents that would impede the penetrant's entering surface flaws. If there is any doubt concerning the surface's cleanliness, the surface should be cleaned with Sherwin's DR-60, DR-62, or similar product.
2. **Application:** Apply DP-51 only to clean, dry surfaces by spraying, flowing, brushing or dipping.
3. **Dwell-Time:** A minimum 5 minute dwell time is suggested, although when ambient temperatures are below 60°F, when particularly tight cracks are suspected, or when the part is especially critical, the dwell time may be extended to 10 minutes, or longer.

Do not soak the part. To increase sensitivity, as well as conserve material, allow the penetrant to drain from the part.

revised September 2003

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4. **Removal:**  
**A. Water Wash:** Rinse part with ambient temperature, coarse water spray. Water pressure should not exceed 30 psi. Do not over wash or use heated water.  
**B. Solvent Removal:** When solvent removal method is used, use clean rag or towel that has been slightly moistened with Sherwin **DR-60** or **DR-62 solvent** to remove excess surface penetrant.
5. **Drying:** Surface must be free of solvent or water before applying developer.
- Excess water may be removed in one of several ways. Small areas are simply blotted dry—wiping may smear indications. Larger parts should have as much water as possible removed by a blast of air after which they may be placed in an oven or blown dry with a heat gun. Do not allow surface temperatures to exceed 140°F or parts to remain in oven longer than necessary.
6. **Developing:** Sherwin **D-100** or **D-106 (non-aqueous) developer** is essential for activating and fixing the **DP-51**. Dry powder, water-base, and competitive non-aqueous developers do not give full performance.

Spray developer lightly and evenly on completely dry part surface. Examine surface for flaw indications: red lines are cracks; scattered red dots are pores; dots in a line may indicate an incipient crack. Darker shades of red may indicate deeper cracks.

(**DP-51** is more difficult to wash from hands than conventional penetrants; use gloves and protective clothing.)

### **Specifications and Approvals:**

MIL-I-25135 Rev's. C, D & E  
ASME Code  
ASTM-E-165  
ASTM-E-1417

RDT Standard  
MIL-STD-271 E  
Navships 250-1500

AECL  
MIL-STD 6866  
AMS-2644

### **PRECAUTIONARY INFORMATION**

**DP-51** is a combustible liquid. Use with adequate ventilation and away from sparks, fire or open flame. Avoid prolonged or repeated contact with skin. Do not take internally. Avoid prolonged or repeated breathing of vapors. Read the label on the container for additional precautionary information. Never puncture, heat, or burn spray cans: store at less than 120°F; keep out of direct sun.