

# HM-440 FLUORESCENT PENETRANT

Approved Type I, Methods A & C, Level 2  
MIL-I-25135 Rev. D & E, and AMS-2644  
Approved Group VI of MIL-I-25135 Rev. C



## PRODUCT INFORMATION

**Description:** HM-440 is a medium sensitivity, water-washable fluorescent penetrant, OSHA Class IIIB. Flash point over 200°F. Complies with low-sulfur and low-halogen requirements.

**Special Features:** Bio-degradable; does not contain petroleum distillates, e.g. kerosene and light oils. Meets certain sewage disposal requirements, and more likely to be accepted by sewage treatment facilities. HM-440 is free-rinsing and outperforms conventional penetrants on difficult surfaces, e.g. conversion coat surfaces. (Such as anodized surfaces.)

HM-440, approved under MIL-I-25135 and AMS-2644, qualified to the requirements of Revision D, without modification! The Sherwin laboratory was the first to recognize the need for high flash point, highly stable, nonvolatile, low toxicity penetrants.

HM-440 is a proven product with the following advantages.

1. Reliable performance on rough and coated surfaces.
2. Clean, relatively odorless product and vapor-free atmosphere.
3. Accepted as low-toxicity product by health authorities.
4. Bio-degradable; effluent more readily accepted by sewer treatment officials.
5. Excellent electrostatic spray capability.
6. Special feature — does not contain petroleum distillates.
7. Free rinsing — leaves almost zero background, even on difficult surfaces.
8. Use without developers where specifications permit.

HM-440 meets all military and applicable commercial specifications. Full conformance certification documentation complying with MIL-STD-6866, ASTM E-1417 and other applicable specifications are provided with each shipment.

### Companion Materials:

Developers -	Sherwin D-90G.1 Dry Powder (form a) Sherwin D-100 Nonaqueous (form d) Sherwin D-106 Nonaqueous (form d) Sherwin D-110A.1 Water Suspensible (form c) 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/cleaners

**Container Sizes:** one gallon can  
case of four one gallon cans  
five-gallon pail  
55-gallon drum

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

1. **Application:** Apply HM-440 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.

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

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3. **Removal:** Use a quick, ambient temperature water wash at tap pressure to rinse **HM-440** from the part surface. To avoid washing entrapped penetrant from surface flaws, do not use high water pressures and temperatures, or prolonged washing and scrubbing.
4. **Drying:** A recirculating oven set no higher than 160°F (71°C) is suggested. Leave part in 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 part in oven.
5. **Developing:** **HM-440** is self-developing. Flaw marks start becoming visible under black light when part is dry. After about two minutes, flaw marks are fully visible.

To amplify flaw marks or in critical inspection situations, use a developer such as the Sherwin developers listed above. (MIL-STD-6866 mandates the use of developers, and ASTM E-1417 strongly recommends it..)

### **Applicable Specifications:**

MIL-I-25135 Rev's. C & D & E  
ASME Code NDT, Sec. V  
Navships 250-1500  
ASTM-E-1417

ASTM-E-165  
MIL-STD-271 E  
AMS-2644  
AMS-3156

AECL  
MIL-STD 6866  
RDT-F3-6T

### **PRECAUTIONARY INFORMATION**

**HM-440** 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.

