

HM-604 FLUORESCENT PENETRANT

Approved Type 1, Method A, Level 3
MIL-I-25135 Rev. D & E, and AMS-2644
Approved Group VI of MIL-I-25135 Rev. C



PRODUCT INFORMATION

Description: HM-604 is a high sensitivity, water-washable fluorescent penetrant. It has been accepted and used by major aerospace firms — airframes, turbine engine, and missile — for several years. Approved under MIL-I-25135 and AMS-2644, HM-604 qualified to the stricter requirements of MIL-I-25135-D without modification. Sherwin Incorporated recognized early the need for high flash point, highly stable, nonvolatile, low toxicity penetrants. Flash point over 200°F. OSHA Class IIIB material.

Special Features: HM-604 displays minimal fluorescent background.

HM-604 is more effective in locating shallow flaws than conventional —i.e., petroleum distillate diluted— water-washable (Method A) penetrants. It resists over washing.

Containing no petroleum distillates or light oils, HM-604 is biodegradable, and disposal authorities are more likely to accept its waste water than the waste water of conventional penetrants.

HM-604 is a proven product with the following advantages.

1. Reliable, high sensitivity 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. Biodegradable; effluent more readily accepted by sewage 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-604 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 Suspendable (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

Container Sizes: one-gallon cans
case of 4 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-604 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.

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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.

3. **Removal:** Use a quick, ambient temperature water wash at tap pressure to rinse **HM-604** 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-604** is self-developing. Flaw marks start to become 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, and ASTM E-1417 strongly recommends, using a developer.)

Applicable Specifications:

MIL-I-25135 Rev's. C & D & E
ASME Code NDT, Sec. V
Navships 250-1500
Pratt & Whitney
AMS-2644

ASTM E-165
MIL-STD-271 E
AMS-2647
AMS-3156

AECL
MIL-STD 6866
RDT-F3-6T
ASTM-E-1417

PRECAUTIONARY INFORMATION

HM-604 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. **DANGER!** Causes eye burns. First Aid: flush eyes with water; call a physician. Read the label on the container for additional precautionary information.