

RC-88 FLUORESCENT PENETRANT

Approved Type I, Methods B C & D, Level 4
MIL-I-25135 Rev. D & E, and AMS-2644



PRODUCT INFORMATION

Description: RC-88 is a nonwater-washable, ultra-high sensitivity (Level 4), fluorescent penetrant, formulated for super critical inspections. It is a grade above Sherwin RC-77 fluorescent penetrant. It is an OSHA Class IIIB material. Flash point over 200°F. Complies with low-sulfur and low-halogen requirements. Excellent heat and UV stability. RC-88 meets MIL-I-25135 and AMS-2644 requirements.

Special Features: RC-88 can be considered a special purpose material; formulated with a single objective:

To find the dangerous microscopic flaw, which other penetrant systems overlook!

To do this, RC-88 is charged with a near maximum quantity of heat stable dyes. As a result, the visibility of dangerous microscopic crack indications is at a high level. Flaws, barely observable, or not visible at all, with other Level 4 penetrants are fully apparent with RC-88.

RC-88 was invented primarily for evaluating the critical components of turbine engines—discs, compressor blades, fan blades. It gives added assurance that flaws conducive to catastrophic failures will be detected, *not overlooked*.

Additionally, RC-88 provides a higher degree of heat and UV stability, which are especially important when detecting microscopic flaws, giving further assurance that extremely microscopic flaw indications will not be lost in the drying oven, but will remain visible for detection.

Considering the cost of one overlooked catastrophic failure causing crack, RC-88 is not just cost effective, it is indispensable. In some areas, there is no excuse for not using the best material and process available.

While RC-88 is approved for use with both hydrophilic (Method D) and lipophilic (Method B) emulsifiers, only Method D (hydrophilic emulsifier) is recommended for highly critical inspections.

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)
Sherwin D-113G.1 Water Soluble (form b)
equivalent MIL-I-25135/AMS-2644-listed developers |
| Emulsifiers - | Sherwin ER-83A Hydrophilic Emulsifier (method D)
Sherwin ER-85 Lipophilic Emulsifier (method B) |
| Removers - | Sherwin DR-60 (Class 2)
Sherwin DR-62 (Class 2)
equivalent MIL-I-25135/AMS-2644-listed 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 be amended by the user to comply with applicable specifications and/or inspection criteria provided by the contracting agency.)

1. **Application:** Apply RC-88 only to clean, dry surfaces by spraying, flowing, brushing or dipping.
2. **Dwell-Time:** A 10 minute minimum dwell time is suggested. 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

A. Hydrophilic Dip Method

- a. **pre-wash:** following dwell, use a plain water rinse to remove 90-99% of the undrained penetrant from surface. Use a coarse spray at 20-50 psi; use ambient temperature —not heated— water. Do not over wash.
- b. **immersion:** immerse and agitate the part in 20-30% hydrophilic emulsifier solution. Immersion time and agitation will vary with part geometry and surface condition.
- c. **rinse:** remove part from tank; clean with coarse, plain water spray

B. Hydrophilic Spray Method

- a. **wash:** inject a 0.1-5.0% emulsifier solution into pressurized rinse water; spray the part. Use a coarse spray at 20-50 psi; use ambient temperature —not heated— water. Use very dilute emulsifier solutions since spraying "scrubs" the penetrant from part. Wash time and solution concentrations vary with part geometry and surface conditions.
- b. **rinse:** use coarse plain water spray to remove all traces of emulsified penetrant.

C. Lipophilic Method

- a. **emulsification:** dip part into undiluted lipophilic emulsifier, remove part, and allow excess emulsifier to drain back into tank. During drain time, the emulsifier will mix with surface penetrant. Parts with rough surfaces require longer drain times.
- b. **rinse:** use coarse, plain water spray to remove all traces of emulsified penetrant.

4. **Drying:** A recirculating oven 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 excess water before placing part in oven.

5. **Developing:** RC-88 is self-developing and flaw marks are usually apparent almost immediately after the part is dry. However, since RC-88 is used on critical components to find microscopic and incipient cracks, using a developer is mandatory. Sherwin D-90G.1 or D-99A, both dry powders, are recommended for production inspection. Sherwin D-100 or D-106, both nonaqueous, are suggested for small areas. (Always apply nonaqueous developers in a light coat.)

Applicable Specifications:

MIL-I-25135 Rev's. D & E
ASME Code NDT, Sec. V
Navships 250-1500
RDT-F3-6T

MIL-STD-271 E
ASTM-E-165
AMS-3157
AMS-2644

AECL
MIL-STD 6866
AMS-2647

RC-88 lends itself to heat assisted penetrant methods, and is especially conducive to inspecting in-service parts, e.g., turbine engine parts. Write for heat assisted method particulars.

PRECAUTIONARY INFORMATION

RC-88 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.