



PENETRANT PROFESSOR APPROVED

PRODUCT DATA SHEET
FP-93A(M)
Fluorescent Penetrant

1
3/09



Met-L-Chek Company manufactures a complete line of penetrants used in the fluorescent (Type 1) and visible (Type 2) dye penetrant inspection process. All Met-L-Chek Company penetrants are qualified to AMS-2644E and are sold under the Met-L-Chek and Pen-Chek trademarks. Met-L-Chek Company products are manufactured under license in The Netherlands by NDT Europa.

FP-93A(M) is approved to AMS-2644 as a fluorescent (Type 1); Methods "B", "C", and "D"; sensitivity level 2 post emulsifiable inspection penetrant. It is approved with Method "B" emulsifier E-57 and Method "D" emulsifier E-58D. For Method "C" applications it is used with E-59, E-59A, R-503, and R-504. FP-93A(M) is applied by immersion, spray, or wipe on. FP-93A(M) meets requirements for medium sensitivity aerospace applications.

FP-93A(M) is listed on the Qualified Products List for AMS-2644E. It meets the requirements of AMS-2647C, ASME Boiler and Pressure Vessel Code, ASTM E-165, and ASTM E-1417, and for penetrant inspection materials. It is low in sulfur and halogens and is safe for use on all metal surfaces.

Guide to METHOD "B" (lipophilic) processing per ASTM E-1417

Guide to METHOD "D" (hydrophilic) processing per ASTM E-1417

- 1. Part must be clean, dry and at a temperature of 4.4°-52°C (40°- 125°F) before penetrant is applied.
2. Apply FP-93A(M) penetrant using spray, immersion, or wipe on.
3. Wait a minimum of 10 minutes; 20 minutes if temperature is 4.4°-10°C (40-50°F).
4. Immerse part in and out of E-57 emulsifier, or flow on emulsifier; drain time < 3 minutes.
5. Wash part; water temperature 10°-38°C (50°-100 °F). Water pressure < 275kPa (< 40 psi); if a hydro-air nozzle used limit pressure to < 172kPa (<25 psi). Distance >30cm (>12 inches). Wash time- only long enough to remove surface fluorescence under UV-A (black light) .
6. Dry part; temperature not to exceed 71°C (160°F), time - only long enough to dry surface.
7. Apply dry powder developer, D-72A, by dusting, or non aqueous developer D-70 by spraying. If water based developers D-76B or D-78B are used they are applied by immersion or spray, prior to step 6 drying.
8. Wait a minimum of 10 minutes before inspection. Maximum time is 1 hour for form "d" (non aqueous), maximum 2 hours for forms "b & c" (aqueous), and maximum 4 hours for form "a" (dry powder). If times are exceeded, clean part and reprocess.
9. Use UV-A illumination of >1000 μw/cm² @ 15 inches (38.1 cm) in a darkened area of <21 lux visible light (<2 foot candles).

- 1. Part must be clean, dry and at a temperature of 4.4°-52°C (40°- 125°F) before penetrant is applied.
2. Apply FP-93A(M) penetrant using spray, immersion, or wipe on
3. Wait a minimum of 10 minutes; 20 minutes if temperature is 4.4°-10°C (40-50°F).
4. Pre-rinse part with water. Water temperature 10°-38°C (50°-100 °F). Water pressure < 275kPa (< 40 psi);only long enough to remove bulk of surface penetrant. This step may be skipped when emulsifier is applied by spray.
5. Immerse part in gently agitated E-58D emulsifier diluted to 17-20%. for 30 seconds to 2 minutes depending upon part roughness For spray applications emulsifier concentration should be 1-5% and spray contact for less than 2 minutes.
6. Wash part; water temperature 10°-38°C (50°-100 °F). Water pressure < 275kPa (< 40 psi); if a hydro-air nozzle used limit pressure to < 172kPa (<25 psi). Distance >30cm (>12 inches). Wash time- only long enough to remove surface fluorescence under UV-A .
7. Dry part; temperature not to exceed 71°C (160°F), time - only long enough to dry surface.
8. Apply dry powder developer, D-72A, by dusting, or non aqueous developer D-70 by spraying. If water based developers D-76B or D-78B are used they are applied by immersion or spray, prior to step 7 drying.
9. Wait a minimum of 10 minutes before inspection.
10. Use UV-A illumination of >1000 μw/cm² @ 15 inches (38.1 cm) in a darkened area of <21 lux visible light (<2 foot candles).



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Typical Physical Properties

Form: yellow green liquid
Density: 914 g/L
Flash Point: > 93°C (> 200°F)
Viscosity 6.0 mm²/s
Fluorescent Brightness: (AMS-2644 requirement > 80 %)
Corrosion of aluminum: none
Corrosion of carbon steel: none
Corrosion of magnesium: none
Corrosion of stainless steel: none
Corrosion of titanium: none
Chloride content: < 200 ppm (0.02%)
Fluoride content: < 50 ppm (0.005%)
Sodium content: < 100 ppm (0.01%)
Sulfur content: < 200 ppm (0.02%)
Mercury: none
VOC's: 0 g/L
Ozone layer depleting substances: none
PCB's: none

The warranty shelf life of the product is 5 years from date of batch approval.

Product Availability

5 gallon (18.9L) metal pail
55 gallon (208L) metal drum

	NSN #
1 gallon	6850-01-268-8616
5 gallon	6850-01-268-6694
5 gallon	6850-01-269-4151
5 gallon	6850-01-268-6703
55 gallon	6850-00-782-2732
55 gallon	6850-01-265-2741
55 gallon	6850-01-268-6704

Specifications

AMS-2644E	AMS-2647C
ASME B & PV code 07 sec V	
ASTM E-165	ASTM E-1417
ISO-3452-2005E	
P & W FPM PMC # 4352-AA	SPOP-62
RR Omat# 650B	RR RPS-702-7

Transport: DOT: Bulk - Stain, not regulated

Hazards Eye irritant

Classification: **NFPA Health-1, Flammability-1, Reactivity-0.**

EU- Xn; R65

WHMIS(Canada) D2B (bulk)

Human health hazards: Eye irritant.

First aid measures

Eyes: Check for contact lenses and remove. Flush eyes with clean water holding eyelids open. Seek medical attention.

Skin: Remove contaminated clothing. Wash exposed area with soap and water. Apply moisturizing lotion. Launder clothing before reuse. Clean shoes before reuse.

Swallowing: Do not induce vomiting. Small amounts are not expected to cause significant harm, call a physician.

Inhalation: Remove to fresh air.

See MSDS for detailed health, safety, and disposal information.

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