

Product Data Sheet E-58D Emulsifier



Met-L-Chek manufactures a complete line of emulsifiers used in the fluorescent (**Type 1**) and visible (**Type 2**) dye penetrant inspection process. All Met-L-Chek emulsifiers are qualified to **AMS-2644** and are sold under the **Met-L-Chek**® and **Pen-Chek**® trademarks.

E-58D is a Method D (hydrophilic) inspection penetrant emulsifier approved to **AMS-2644** for use with **FP-94**, **FP-93A(M)**, **FP-95A(M)**, and **FP-97A(M)** fluorescent (**Type 1**) post emulsifiable penetrants. Method D emulsifiers are used either by immersion or spray on. The emulsifier is diluted with water to the desired working concentration. For immersion the use range is 17 - 20 % or 1 part emulsifier to 4 parts water. The concentration is controlled by using a brix refractometer and a concentration chart. For spray applications the concentration is kept below 5 %. In immersion applications the penetrant covered part is given a quick water wash and then immersed into the gently agitated emulsifier from 30 seconds to 2 minutes depending upon the part surface roughness. The part is removed and washed. The pre-rinse step may be omitted for the spray application method of the emulsifier.

E-58D is listed on the Qualified Products List for AMS-2644. It meets the requirements of AMS-2647, ASME Boiler and Pressure Vessel Code Section V, ASTM E-165, and ASTM E-1417, for penetrant inspection materials.

<u>Guide to METHOD "D" (hydrophilic)</u> Processing per **ASTM E-1417**

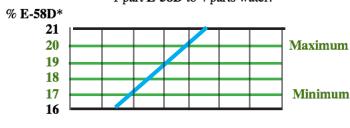
- 1. Part must be clean, dry and at a temperature of 4.4° - 52° C (40° - 125° F) before penetrant is applied.
- 2. Apply **Type 1** penetrant using spray, immersion, or wipe on.
- 3. Wait a minimum of 10 minutes; 20 minutes if temperature is 4.4°-10°C (40-50°F).
- 4. Pre-rinse part with water. Water 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 Method D 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 use 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, form "a", by dusting, or non aqueous developer, form "d", by spraying.
- 8A*. If water based developers forms "b or c" are used they are applied by immersion or spray, prior to step 7 drying.

- 9. Wait a minimum of 10 minutes before inspection. Maximum time is 1 hour for form "d" (nonaqueous), 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.
- 10. Use UV-A illumination of >1000 μ w/cm² @ 15inches (38.1 cm) in a darkened area of <21 lux visible light (<2 foot candles).

CONCENTRATION CONTROL

Brix Refractometer.(scale 0-32)

Refractive Index reading*- % E-58D; Dip applications: 1 part E-58D to 4 parts water.



11 12 13 14 15 16 17 18

Spray applications should be 2-5 % strength

> 5 % -R.I.-> 5

use refractometer RHBN-32ATC or ZGRB-32ATC

Make your own chart for your refractometer by making two known solutions, 4 to 1 is 20%, 9 to 1 is 10%. A third point is deionized water at 0.



RI

E-58D 20% solution

Concentration control using
Brix Refractometer





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Typical Physical Properties

Form: clear reddish orange viscous liquid

Density: 1.08 K/L

Flash Point: > 93°C (> 200°F)

Viscosity 20.7 mm²/s
Water content: 3.3%
Water tolerance: 100%
Brix RF reading at 20%: 14.8
Corrosion of aluminum: none
Corrosion of carbon steel: none
Corrosion of stainless steel: none
Corrosion of titanium: none

Chloride content: < 50 ppm (0.005%) Fluoride content: < 50 ppm (0.005%) Sulfur content: < 100 ppm (0.01%)

Mercury: none VOC's: 0 g/L

Ozone layer depleting substances: none

PCB's: none

Specifications

AMS 2644 AMS 2647 ASTM E-165 ASTM E-1417 ISO 3452-2:2005 ASME B & PV code Sec. V Snecma sensibilité S3 & S4 P & W PMC # 4355-7 & -47 RR RPS-702-7, CSS-232, Omat # 621B

Product Availability

1 gallon (3.7L) plastic bottle 5 gallon (18.9L) plastic jug with our spout 55 gallon (208L) plastic drum

NSN#

1 gallon	6850-01-269-1878
1 gallon	6850-01-268-8618
5 gallon	6850-01-268-6715
5 gallon	6850-01-268-6717
5 gallon	6850-01-268-6719
5 gallon	6850-01-121-0948
55 gallon	6850-01-268-6716
55 gallon	6850-01-268-6718
55 gallon	6850-01-121-3007





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Contact Us

United States McGean

Phone: +1-216-441-4900 Fax: +1-216-441-1377 United Kingdom McGean UK

Phone: +44-1902-456563 Fax: +44-1902-457443 Singapore

McGean Singapore Phone: +65-6863-2296 Fax: +65-6863-2297