



# Product Data Sheet E-58D Emulsifier



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

**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.

### Guide to METHOD "D" (hydrophilic) Processing per **ASTM E-1417**

- Part must be clean, dry and at a temperature of 4.4°-52°C (40°-125°F) before penetrant is applied.
- Apply **Type 1** penetrant using spray, immersion, or wipe on.
- Wait a minimum of 10 minutes; 20 minutes if temperature is 4.4°-10°C (40-50°F).
- 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.
- 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.
- 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 .
- \*. Dry part; temperature not to exceed 71°C (160°F), time - only long enough to dry surface.
- 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 μw/cm<sup>2</sup> @ 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.

% <b>E-58D</b> *									
21									
20									
19									
18									
17									
16									

**RI**      **11   12   13   14   15   16   17   18**

Spray applications should be 2-5 % strength  
> 5 % -**RI**- > 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.



E-58D  
20% solution

Concentration control  
using  
Brix Refractometer





Penetrant Professor Approved

## Product Data Sheet

# E-58D Emulsifier



### Typical Physical Properties

Form: clear reddish orange viscous liquid  
 Density: 1.08 K/L  
 Flash Point: > 93°C (> 200°F)  
 Viscosity 20.7 mm<sup>2</sup>/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 magnesium: 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