

# ZR-10E

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## Hydrophilic Emulsifier

Hydrophilic emulsifier ZR-10E is designed to reduce fluorescent background from penetrants on rough surfaces, as well as reducing bleed-out of penetrant from hollow parts. It yields reliable and reproducible test results from post-emulsifier penetrants.

ZR-10E is listed on the QPL SAE AMS 2644 Qualified Product List and is approved for use by Pratt & Whitney.

### BENEFITS

#### Maximize penetrant inspection process control

- PE penetrant system is less susceptible to human error since ZR-10E only works with rinse water to remove excess surface penetrant
- Tested and confirmed per AMS 2644 to work with Magnaflux PE penetrants for verified penetrant system reliability
- Maintains solution consistency for dependable performance with minimal agitation

#### Wide range of inspections

- Flexible to work with many types of equipment and application methods
- Inspect a wide range of high-value components without fear of corrosion or specification non-conformance
- Meets all major industry and NDT specification requirements, including Aerospace Prime and OEM specs, AMS 2644 and ISO 3452

#### Maximize operator comfort and safety

- Promotes better inspection quality by providing the operator with a more comfortable work environment
- Reduces discomfort from strong odors
- Exceeds all EHS requirements

### SPECIFICATION COMPLIANCE

- AECL
- AMS 2644
- AMS 2647
- ASME
- ASTM E1417
- ASTM E165
- Boeing BAC 5423 PSD 6-46 or 8-4
- Boeing PS-21202
- GE P3TF2
- GE P50YP107
- Honeywell EMS 52309
- MIL-STD-2132
- MIL-STD-271
- Pratt & Whitney 4355

## FEATURES

- Hydrophilic emulsifier
- Reduces bleed-out on hollow parts
- Lower concentration required
- Resist degradation from bacteria, fungus or other contaminants

## APPLICATIONS

**Defect location:** open to surface

**Ideal for:**

- Detecting fine to very-fine discontinuities
- Precision components
- Safety-critical components
- Investment castings
- High-stress parts
- Castings
- Turbine engine blades, disks, etc.

**Defect examples:**

- Cracks
- Seams
- Porosity
- Scratches

## PROPERTIES

Flash Point	> 200°F / 93°C
Density	8.08 lb/gal (970 g/L)
Viscosity (at 100°F / 38°C)	23.40 cs
NPE-Free	Yes

## USE RECOMMENDATIONS

NDT Method	Penetrant Testing
Method(s)	D

## INSTRUCTIONS FOR USE

ZR-10E concentrate is diluted in water before use and can be applied by spray or immersion dip. A water spray pre-rinse step is recommended before applying a hydrophilic emulsifier like ZR-10E in order to reduce the penetrant film. For immersion method application, this also helps by prolonging the emulsifier bath life by reducing the amount of penetrant contaminating the bath.

If the spray method is used, an injector or metering pump should be used to control the concentration. The general spray concentration range is 1 to 5% emulsifier. Spray removal should be performed under UV light to control removal of penetrant from the surface.

If the immersion dip method is employed the general concentration range is 20% emulsifier for optimal remover activity, bath life, economics and process rate. The part is immersed in the emulsifier bath, which is gently agitated by mechanical or air means. The length of time the part is in the bath will vary with the concentration of the bath, the type penetrant being used, specification requirements and the desired results. At the recommended concentration, the immersion contact time generally ranges between 30 and 180 seconds. The immersion dip is followed by a clean water rinse to remove any emulsifier/penetrant residue.

### Maintenance Recommendations:

Hydrophilic emulsifier bath concentration can be monitored using a refractometer and concentration chart. To create a ZR-10E concentration chart, select three to five accurately known samples (e.g. 5, 10, 15, 20, 25% ZR-10E) which have been carefully measured and mixed. Take readings of the known samples using the hand-held refractometer. Plot a chart with the refractometer readings on the vertical y-axis and the known percentage of ZR-10E values on the horizontal x-axis. The water content of the bath can also be determined using the procedure described in ASTM D-95.

**PACKAGING**

5 gal / 18.9 L pail	01-3625-40
20 gal / 75.7 L drum	01-3625-30
55 gal / 208 L drum	01-3625-45

Revised: December 2017

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