

# PRODUCT DATA SHEET

## ZL-27A Zyglol Post Emulsifiable Penetrant

Effective March 6, 1997

Supersedes November 17, 1994

### General Description

ZL-27A is a post emulsifiable fluorescent penetrant, used for a wide range of high sensitivity applications. ZL-27A is typically used on castings, forgings, extrusions, rough and machined surfaces to find cracks, seams, laps, laminations and porosity. ZL-27A is formulated to be impervious to water to assure against being over washed from defects. ZL-27A requires the application of a lipophilic emulsifier or a hydrophilic emulsifier to render it washable with water; the resultant mixture is biodegradable.

ZL-27A is formulated for rapid separation from water, for efficient effluent clean-up by coalescer, separation settling pond, or charcoal filtration.

ZL-27A fluoresces a bright greenish-yellow color under ultraviolet radiation. Use blacklight sources with peak wavelength of 365 nanometers such as MAGNAFLUX ZB-100. ZL-27A is formulated to produce heat stable fluorescent indications under normal drying conditions.

ZL-27A meets OSHA requirements for Class III B liquids due to its high flash point and can be used in open dip tanks.

### Composition

ZL-27A is composed of isodecyl diphenyl phosphate, white mineral oil, castor oil, and fluorescent dyes.

### Safety

1. ZL-27A is intended for industrial use by qualified personnel only.
2. Do not smoke or eat while using ZL-27A. Wash hands thoroughly after use. To protect hands from staining and drying out, protective hand wear is recommended.
3. Store ZL-27A in closed containers away from open flame or heat.
4. Material Safety Data Sheet available upon request.

## **Typical Properties** (Not a Specification)

Viscosity @ 100°F:	9.8cs
Flash Point:	Greater than 200°F(P.M.C.C.)(93.3°C)
Density:	7.6 lbs./ga. (984 gms./L)
Sulfur:	Less than 1000 ppm
Chlorine:	Less than 1000 ppm
Sodium:	Less than 100 ppm
Fluorine:	Less than 50 ppm
Noncorrosive per MIL-I-25135	
Compatible with titanium and high nickel alloys	

Like all MAGNAFLUX materials, ZL-27A is closely controlled to provide unique batch to batch consistency and uniformity to assure optimum process control and inspection reliability. Batch certification available upon request.

## **Method of Application**

### **Warning:**

Penetrants attack and even dissolve many kinds of plastic pipe. Polyvinyl chloride (PVC) pipe is especially vulnerable, and can crumble after only a few days of exposure. Even diluted penetrant rinsings attack it rapidly. ABS plastic pipe is nearly as sensitive. When installing plumbing to handle penetrant rinsings, use metal pipe.

Test parts must be clean, free of all oil, grease or other foreign contaminating substances, and dry, before penetrant is applied. ZL-27A can be applied by immersion dip, brush or flow on, conventional or electrostatic spray. The area to be inspected must be completely covered with penetrant.

## **Penetration Time and Temperature**

The generally accepted minimum penetration time is 2 to 5 minutes. Some specifications may require longer dwell times. ZL-27A is generally used between 50°F (10°C) to 125°F (51.6°C).

## **Penetrant Removal**

ZL-27A requires the use of a Zyglo lipophilic emulsifier or hydrophilic emulsifier to render it water washable.

When using ZL-27A with hydrophilic emulsifier it is advantageous to prerinse the ZL-27A covered part with plain water spray (50°F - 100°F) (20 - 40 psig) before the emulsifier application. The prerinse removes the bulk of the surface penetrant but leaves a thin film, sufficient for quality inspection. The purpose of the prerinse is to lower the amount of penetrant entering the emulsifier tank (dip application), contaminating it and lowering its activity. The prerinse effluent can be treated to separate the penetrant and water to the extent that the water can be reused in the prerinsing operation.

Recommended emulsifiers for use with ZL-27A are:

ZE-4B (lipophilic)

ZR-10B (hydrophilic)

For inspection of small areas the solvent wipe technique is commonly employed, using SKC-S or SKC-HF Solvent-Based Cleaner/Remover. Moisten a clean wiping media with either SKC-S or SKC-HF and wipe inspection area free of surface penetrant. Do not flood surface with cleaner/remover as sensitivity may be impaired.

### **Developer Application**

Developers should be used to maximize the sensitivity of ZL-27A. Aqueous developers are applied prior to drying; dry powder and nonaqueous developers after drying (140°F/60°C).

Recommended developers for use with ZL-27A are:

ZP-4B	ZP-9F
ZP-5B	SKD-S2
ZP-14A	

### **MIL-I-25135 Classification**

"E" Revision - Type I, Method B, Level 3 with ZE-4B emulsifier.

"E" Revision - Type I, Method C, Level 3 with SKC-S or SKC-HF Solvent-based cleaner/remover.

"E" Revision - Type I, Method D, Level 3 with ZR-10B emulsifier (20%).

### **Specification Compliance**

MIL-I-25135	ASTM E 1417
MIL-STD-271	ASME B & PV Code, Sec. V
MIL-STD-2132	AMS-3157
Boeing BAC 5423 PSD 6-46 or 8-4	AECL
Garrett EMS 52309	McDonnell Douglas PS-21202
ASTM E 165	Pratt & Whitney PMC 4353-2

### **Packaging**

1 gallon can	55 gallon drum
5 gallon pail	12 ounce (by volume) aerosol
20 gallon drum	

### **Coverage**

1 gallon approximately 1200 square feet