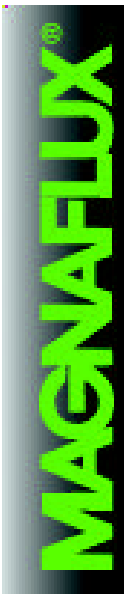


# PRODUCT DATA SHEET



## ZL-37 Zyglo Post Emulsifiable Penetrant

**Effective March 6, 1997**  
**Supercedes July 24, 1996**

### General Description

ZL-37 is a post emulsifiable fluorescent penetrant, used reliably for a wide range of ultrahigh sensitivity, critical applications.

ZL-37 is ideally suited for titanium turbine components, investment castings, and other high stress critical components where detection of fine, tight and broad open shallow discontinuities is a must.

ZL-37 is formulated to be impervious to water to assure against being over washed from defects. ZL-37 requires the application of a lipophilic emulsifier or a hydrophilic emulsifier to render it washable with water, and the resultant mixture is biodegradable.

ZL-37 is formulated for rapid separation from water, for efficient effluent clean-up by coalescer, separation settling pond, or charcoal filtration.

ZL-37 fluoresces a bright greenish-yellow color under ultraviolet radiation. Use black light sources with peak wavelength of 365 nanometers such as MAGNAFLUX ZB-100. ZL-37 is formulated to produce heat stable fluorescent indications under normal drying conditions (140°F/60°C).

ZL-37 meets OSHA requirements for Class III B liquids due to its high flash point, and can be used in open dip tanks.

### Composition

ZL-37 is composed of alkyl aryl phosphate, high boiling petroleum oils, and fluorescent dyes.

### Safety

1. ZL-37 is intended for industrial use by qualified personnel only.
2. Do not smoke or eat while using ZL-37. Wash hands thoroughly after use. To protect hands from staining and drying out, protective hand wear is recommended.
3. Store ZL-37 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:	13.4 cs
Flash Point:	Greater than 200°F (93.3°C) (P.M.C.C.)
Density:	8.1 lbs./gal. (959 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-37 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-37 can be applied by immersion dip, brush or flow on, conventional or electrostatic spray. 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-37 is generally used between 50°F to 125°F.

## **Penetrant Removal**

ZL-37 requires the use of a Zyglo lipophilic emulsifier or hydrophilic emulsifier to render it water washable.

When using ZL-37 with hydrophilic emulsifier, it is advantageous to pre-rinse the ZL-37 covered part with plain water spray (50°F-100°F) (20-40 psig) before the emulsifier application. The pre-rinse removes the bulk of the surface penetrant but leaves a thin film, sufficient for quality inspection. The purpose of the pre-rinse is to lower the amount of penetrant entering the emulsifier tank (dip application), contaminating it and lowering its activity. The pre-rinse effluent can be treated to separate the penetrant and water to the extent that the water can be reused in the pre-rinsing operation.

Recommended emulsifiers for use with ZL-37 are:

ZE-4B          ZR-10B

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

### **Developer Application**

Zygo developers should be used to maximize the sensitivity of ZL-37. Aqueous developers are applied prior to drying; dry powder and nonaqueous developers after drying (140°F/60°C).

Recommended developers for use with ZL-37 are:

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

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

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

"E" Revision - Type I, Method D, Level 4 Penetrant with ZR-10B emulsifier (20%).

### **Specification Compliance**

MIL-I-25135	ASTM E 1417
MIL-STD-271	ASME B & PV Code, Sec. V
Boeing BAC 5423 PSD 6-46 or 8-4	AMS-3157
Garrett EMS 52309E	McDonnell Douglas PS-21202
Pratt & Whitney	AECL
PMC 4354-2	MIL-STD-2132
ASTM E 165	

### **Packaging**

1 gallon can  
5 gallon pail  
20 gallon drum  
55 gallon drum

### **Coverage**

1 gallon approximately 900 square feet