MAGNAFLUX

Product Data Sheet

ZYGLO® ZL-2C, ZL-27A, ZL-37

Post-emulsifiable Fluorescent Penetrants

General Description

ZYGLO® ZL-2C, ZL-27A and ZL-37 are general-purpose, post-emulsifiable fluorescent penetrants. They exhibit outstanding penetrating characteristics, offering maximum reliability in locating surface-open flaws and defects.

Applications

These penetrants are safe to use on most engineering and aerospace alloys including aluminium, steel, nickel and titanium. They are typically used to find cracks, seams, laps, laminations and porosity on castings, turbine components, welds, forgings, and rough and machined surfaces.

Benefits

- Wide range of medium to high sensitivity applications
- Immiscible with water, which protects against over-washing and allows the penetrants to separate easily from water. Can be used in conjunction with a hydrophilic or lipophilic emulsifier to render them washable with water.

Composition

These ZYGLO penetrants are made of a blend of petroleum distillates, oils, alkyl aryl phosphate and fluorescent dyes.

Specification Compliance

Specification	ZL-2C	ZL-27A	ZL-37
AMS2644	✓	✓	✓
ASME B & PV Code, Sec V	✓	✓	✓
ASTM E1135		✓	
ASTM E165/E165M	✓	✓	✓
ASTM E1417/E1417M	✓	✓	✓
EN ISO 3452-2		✓	
MIL-STD-2132D	✓	✓	✓
MIL-STD-271F	✓	✓	✓
Pratt & Whitney PMC	4352-2	4353-2	4354-2
Rolls Royce RRP 58003 (CSS 232)	✓	✓	✓
SAFRAN Pr 5000/In 5000	✓	✓	✓

Typical Properties (not a specification)

Property	ZL-2C	ZL-27A	ZL-37
Odour	Bland	Bland	Bland
Flash point	> 93°C	> 93°C	> 93°C
Density (g/cm^3)	0.89	0.93	0.95
Viscosity at 38°C (mm^2/s)	6.0	9.2	13.5
Corrosion	Meets AMS 2644	Meets AMS 2644	Meets AMS 2644
Sulphur content	< 300 ppm	< 300 ppm	< 300 ppm
Chloride content	< 300 ppm	< 300 ppm	< 300 ppm
Fluoride content	< 50 ppm	< 50 ppm	< 50 ppm
AMS 2644 class	Type 1, Method B/C/D	Type 1, Method B/C/D	Type 1, Method B/C/D
AMS 2644 sensitivity	Level 2 - Medium	Level 3 - High	Level 4 - Ultra-high
EN-ISO 3452 sensitivity	-	Level 3 - High	-
Storage temperature	10°C to 30°C	10°C to 30°C	10°C to 30°C
Usage temperature	5°C to 55°C	5°C to 55°C (bulk) -5°C to 50°C (aerosol)	5°C to 55°C
Coverage	20 - 30m^2 per litre	10 - 15m^2 per 400ml aerosol 20 - 30m^2 per litre	20 - 30m^2 per litre

Like all Magnaflux materials, these ZYGLO penetrants are closely controlled to ensure batch-to-batch consistency, optimum process control and inspection reliability.

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General Method of Use

Pre-clean the test part and allow to dry. The surface must be free from oil, grease and any other contaminant.

Apply the penetrant by immersion dip, brush, flow on, conventional or electrostatic spray. The test area must be completely covered with penetrant.

Allow contact time of 2 - 5 minutes minimum. 10 minutes should be adequate for most situations, although specific process specifications may require longer - check the controlling process specification (where applicable).

If you're using a **hydrophilic emulsifier**, pre-rinse the test part with plain water* before appying the emulsifier by spray (hydrophilic) or immersion (lipophilic). Leave for the required length of time then wash with a water spray.

* The run-off from a pre-rinse can be treated to separate out the water, which can then be re-used for other pre-rinses. Dye penetrant process rinse waters should not be discharged to local authority waterways or sewers without some form of effluent treatment. We can advise on suitable equipment for this purpose; for more information, please contact us.

Dry the test part by placing in a controlled recirculating warm air dryer at a temperature of 50°C - 70°C.

Apply a developer to maximise the sensitivity of the penetrant and to provide a white contrasting background. There are three types of suitable developer (see opposite for our recommendations):

- **Dry powder:** free-flowing, lightweight powders which are applied to the dry component by powder storm, dusting, electrostatic spray or puffer.
- **Solvent-based:** quick-drying materials which are applied to the dry component by spraying.
- **Aqueous or water-based:** applied before drying by dipping or spraying. NB: To maximise penetrant sensitivity, do NOT leave parts in aqueous developers for any length of time.

Inspect your test part using a suitable UV source. Any defect indications will fluoresce a bright green-yellow when exposed to UV(A) light at a peak wavelength of 365 nm.

If required, you can **clean your test part** after inspection. Developer residues can be removed either by wiping with a cloth or by a water and detergent wash. Penetrant residues can be removed by vapour degreasing or solvent soak.

Recommended Products

Product type	Product Name(s)	Description
Pre-cleaner	SPOTCHECK® SKC-S	Solvent-based
Emulsifiers	ZYGLO® ZR-10C	Hydrophilic
	ZYGLO® ZE-4B	Lipophilic
Developers	ZYGLO® ZP-4B	Dry
	SPOTCHECK® SKD-S2 or ZYGLO® ZP-9F	Solvent-based
	ZYGLO® ZP-14A or ZYGLO® ZP-5B	Aqueous/water-based
UV lamps	MAGNAFLUX® EV6000 or MAGNAFLUX® UV-LED miniSpot	

Health and Safety

Read the relevant Safety Data Sheet for this product before use. Safety Data Sheets are available on request from your Magnaflux distributor or via the Magnaflux website:

www.eu.magnaflux.com

Availability and Part Numbers

ZL-2C		ZL-27A			ZL-37	
						
056C079	056C080	008A002 (x 10)	066C017	066C016	066C020	066C019

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