

# ZL-440

## Level 2 Water-Based, Water-Washable Fluorescent Penetrant

ZL-440 is a water-based, water-washable fluorescent penetrant used for finding indications in castings, forgings, extrusions and other materials with rough surfaces commonly found in automotive part applications. ZL-440 is an ideal solution when waste water produced during the inspection process is a concern for the operation. ZL-440 is water based and contains no petroleum distillates which may allow its rinse water to be disposed of directly into the sewage system depending on local regulations.

The penetrant features excellent rinse removability and is self-developing which means that separate developer may not be necessary depending on the application.

ZL-440 is designed to be environmentally sensitive while meeting industry approvals, including EN ISO 3452-2 and AMS 2644, and can be used in place of any conventional water-washable fluorescent penetrant.



### BENEFITS

#### Reduce environmental footprint and waste-water pollutants

- Reduce water treatment costs and discharge waste process water directly into the sewage system (depending on local regulations) due to minimal water-based contaminants.
- Meet or exceed local discharge regulations with low Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) levels.
- Support a healthy environment with water-based penetrants that have minimal occupational health and safety impacts.

#### Reliably speed up inspection and wash processes

- Identify bright indications with superior sensitivity and low fluorescent background interference.
- Increase throughput and reduce costs by eliminating the developer step of inspection processes depending on procedures and requirements.
- Rapid rinse and post inspection washing of parts thanks to excellent washability properties, due to trade secret chemistry.

## FEATURES

- Level 2, medium sensitivity
- Hydrocarbon-free
- Biodegradable
- Excellent water wash removability
- Developer is not required

## SPECIFICATION COMPLIANCE

- ASME BPVC
- ASTM E165 / E165M-18
- ASTM E1417 / E1417M
- ISO 3452-2
- MIL-STD-2132D
- NAVSEA T9074-AS-GIB-010/271
- QPL SAE AMS 2644G

## APPLICATIONS

**Defect location:** open to surface

**Industry types:** automotive, general industrial

**Ideal applications:**

- Castings
- Forgings
- Extrusions
- Rough surfaces
- Ferrous and non-ferrous

**Material types:**

- Aluminum
- Steel
- Nickel
- Titanium
- Plastic
- Not ideal for magnesium. Testing for compatibility is required.

**Additional notes:**

- When converting from oil based penetrant it is recommended using a gravity feed if transferring product from a penetrant line
- Automated rinsing may require water pressure adjustments or re-positioning of angles

## USE RECOMMENDATIONS

<b>Dry developer</b>	ZP-4B, ZP-4D
<b>Solvent-based developers</b>	SKD-S2, ZP-9F
<b>UV lamps</b>	EV6000, EV6500, ST700
<b>Usage Temperature</b>	40 to 125°F / 5 to 52°C
<b>Storage Temperature</b>	50 to 86°F / 10 to 30°C

## PROPERTIES

<b>NDT Method</b>	Fluorescent Penetrant
<b>Type</b>	1
<b>Method</b>	A (W)
<b>Sensitivity Level</b>	2, medium
<b>Required Equipment</b>	UV light source
<b>Flash Point</b>	> 200°F / 100°C
<b>Density</b>	1.000 g/cc / 8.33 lb/gal (1.000 g/ml)
<b>Viscosity (at 100°F / 38°C)</b>	14.4 cst (14.4 mm <sup>2</sup> /s)
<b>Water Content</b>	50%
<b>Biochemical Oxygen Demand (BOD) (SM 5210 B-2001)</b>	380,000 mg/L
<b>Chemical Oxygen Demand (COD) (SM 5220D-1997)</b>	985,000 mg/l
<b>NPE-Free</b>	Yes

**PART NUMBERS & PACKAGING**

Packaging	Country of Origin	Part Number
55 gal / 208 L drum	United States	01-3440-45
275 gal / 1,040 L tote		01-3440-67
25 L drum	United Kingdom	056C229
200 L drum		056C230
1,000 L tote		056C231

**HEALTH AND SAFETY**

Review all relevant health and safety information before using this product. For complete health and safety information, refer to the product Safety Data Sheet, which is available at [www.magnaflux.com](http://www.magnaflux.com).