

Product Data Sheet

ZP-5B Water Suspensible Developer

General Description

ZP-5B is a powder concentrate which is mixed with water to form a suspendable developer solution. The unique formula of ZP-5B allows it to disperse easily in water.. The material must be **continually agitated** during use to ensure uniformity of mix as developer particles will settle out on standing. On drying ZP-5B forms a uniform white coating which enhances fluorescent indications formed by Zyglo penetrants. At higher concentration, ZP-5B forms an enhanced opaque white coating which provides a good contrasting background for Spotcheck indications.

Composition

ZP-5B is composed of a blend of inert mineral pigments, surface active agents and corrosion inhibitors.

Advantages

- ✓ Easy to prepare and control
- ✓ Cost effective & easy to use
- ✓ Good Colour Contrast with Spotcheck penetrants

Typical properties (Not a specification)

Property	ZP-5B
Physical Form	White powder
Bath Concentration (Zyglo)	60 g per litre
Bath Concentration (Spotcheck)	180 g per litre
Density	0.6 g/ml
PH of bath	10.3
Corrosion	Meets AMS 2644
Sulfur Content	< 1000 ppm
Halogen Content	< 1000 ppm
AMS 2644 Class	Form C – Type 1 & 2 Systems
AMS 2644 Sensitivity	N/A

Like all MAGNAFLUX materials, ZP-5B is closely controlled to provide unique batch to batch consistency & uniformity to assure optimum process control and inspection reliability.

Developer Bath Make Up

The recommended bath make-up concentration for Zyglo fluorescent penetrant inspection is 60 g per litre of water.

For Spotcheck applications where a whiter background coating is desirable use 180 g per litre of water. Ensure that the developer tank is clean before starting. Wear a suitable filter face mask when handling the dry product to minimise product dust inhalation.

Fill the tank with the appropriate amount of water. Slowly add the required amount of ZP-5B powder to the water with agitation. Continue mixing until the powder is fully dispersed. ZP-5B developer bath requires mild agitation prior to and during use to keep the powder particles in suspension. Developer bath temperature should not exceed 50 °C

Concentration Control

The concentration of the developer bath should be monitored on a regular basis to ensure that the correct working strength is maintained

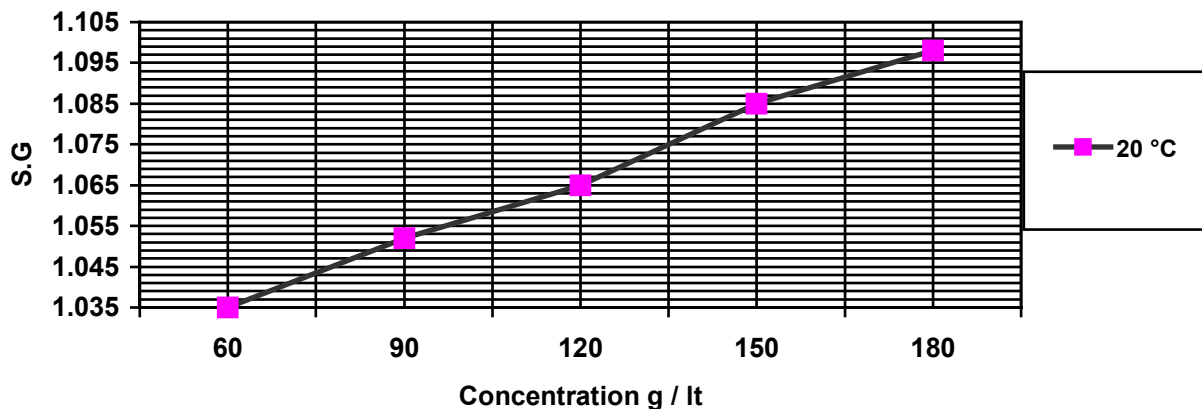
This can be achieved by the following method.

Take a known volume of the bath, evaporate off the water and weigh the residue. The concentration can be calculated from the readings obtained as follows :-

For a 50 ml sample volume $\text{Weight of residue (g)} \times 20 = \text{Conc (g per lt)}$

Alternatively, a less accurate method is to measure the specific gravity of the bath and cross-reference with the table below

Graph of ZP-5B bath Specific Gravity vs Concentration at 20 °C



Method of application

The developer is applied to the part after the surface penetrant has been removed. ZP-5B can be applied by immersion dip, spray or flow on techniques.

If immersion dip application is used, care must be taken to avoid transferring penetrant into the developer bath. Incomplete removal of surface penetrant from the component surface will shorten the developer bath life.

If the developer is applied by spray or by flow-on, care should be taken to avoid foaming. Foam bubbles in the developer film can cause voids in the dried coating.

The application time should just be long enough to completely cover the part. Excessive developer bath contact time should be avoided since this may reduce the sensitivity of the system by removing penetrant from shallow discontinuities

For best results forced warm air drying at around 60°C is recommended. The test piece should be removed from the dryer once the developer is dry, as prolonged drying will not enhance performance and can bake on the developer making post inspection removal difficult.

Allow a minimum of 10 minutes development time before inspecting the component.

With Zyglo fluorescent penetrant applications, cracks will appear as bright yellow green lines, porosity as spots. A general greenish developer film indicates incomplete removal of surface penetrant.

With Spotcheck visible dye applications, cracks will show as vivid red indications against the white contrasting background formed by developer.

After inspection the developer film can be washed off using a water spray.

If the coating has been baked on or does not wash completely, brushing should be employed together with the water spray to give a more efficient cleaning action.

Specification compliance

Specification	ZP-5B
<input type="checkbox"/> AMS 2644	✓
<input type="checkbox"/> Boeing BAC-5423 PSD 6-46 or 8-4	✓
<input type="checkbox"/> ASME B & PV Code, Sec V	✓
<input type="checkbox"/> EN 571-1	✓
<input type="checkbox"/> ASTM E 1417	✓
<input type="checkbox"/> ASTM E-165	✓
<input type="checkbox"/> MIL STD 271	✓

ZP-5B is available in 5 kg packs

Safety

Safety data sheets for this product are available on request.
Read the relevant safety data sheets before use.

Avoid contact with skin and eyes.

Avoid breathing spray mists.

Wear suitable gloves and eye protection if there is a risk of skin or eye contact.