

Product Data Sheet

ZP-14A Water Soluble Developer

General Description

ZP-14A is a white free-flowing powder, which dissolves in water to form a clear, colourless biodegradable developer solution. ZP-14A is used as a general-purpose water-soluble developer for the enhancement of indications formed by Zyglo penetrants. ZP-14A produces a uniform white porous coating when it dries. The developer film is easily removed in post inspection cleaning by a water spray. Once the developer bath has been made up, no in use agitation is required to maintain developer uniformity. ZP-14A can be used in open tanks without ventilation as the bath is non flammable and no hazardous fumes are produced. ZP-14A baths may sometimes show a trace of fluffy sediment if the water used is hard. This sediment does not interfere with the developing or removability of the product. For a clear solution, soft water or de-ionized water is recommended.

Composition

ZP-14A is composed of a blend of organic salts, surface active agents and corrosion inhibitors.

Advantages

- ✓ Easy to prepare and control
- ✓ Cost effective & easy to use
- ✓ Chromate and Nitrite free

Typical properties (Not a specification)

Property	ZP-14A
Physical Form	White powder
Bath Concentration (Zyglo)	120 g – 200 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 B – Type 1 Systems
AMS 2644 Sensitivity	N/A

Like all MAGNAFLUX materials, ZP-14A 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 120 g to 200 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-14A powder to the water with agitation. Continue mixing until the powder is fully dissolved. ZP-14A developer once made up requires no further agitation before use.

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

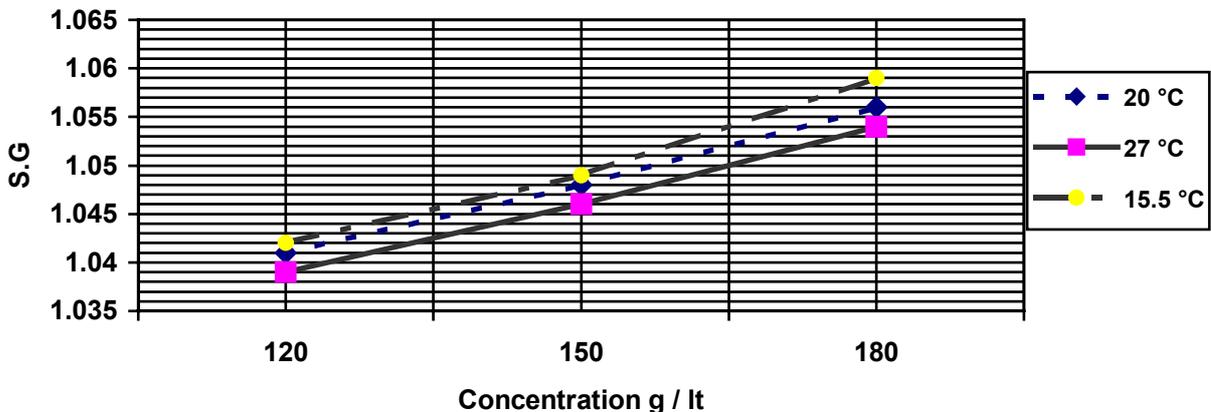
This can be achieved by the following method.

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-14A bath Specific Gravity vs Concentration at various temperatures



Method of application

The developer is applied to the part after the surface penetrant has been removed. ZP-14A 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.

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 a water spray to give a more efficient cleaning action.

Specification compliance

Specification	ZP-14A
<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	✓
<input type="checkbox"/> General Electric P3TF2	✓

ZP-14A 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.