

ZP-5B

Water Suspendible Developer

As a complementary developer for penetrant inspections, ZP-5B forms an opaque white coating that makes a contrasting background for indications. It is typically used for a wide variety of testing materials such as automotive, off-highway equipment and farm equipment. Typical parts include welds, castings, forgings, leak testing, pressure vessels, aircraft, marine, construction, maintenance, petroleum pipelines, power plant components, and general metalwork. The developer tank must be agitated during the penetrant testing process.

ZP-5B is listed on the QPL SAE AMS 2644 Qualified Product List.



BENEFITS

- Non-flammable

APPLICATIONS

Defect location: open to surface

Ideal for:

- Castings
- Forgings

Defect examples:

- Cracks
- Seams

SPECIFICATION COMPLIANCE

- AECL
- AMS 2644
- AMS 2647
- ASME
- ASTM E1417
- ASTM E165
- Boeing BAC 5423 PSD 6-46 or 8-4
- GE P3TF2
- MIL-STD-2132
- MIL-STD-271
- QPL SAE AMS 2644

PROPERTIES

Density	30 lb./ft. ³ (481 kg/m ³)
NPE-Free	Yes

USE RECOMMENDATIONS

NDT Method	Penetrant Testing
Form(s)	c
Recommended Concentration Range	Fluorescent Testing: 0.5 to 1 lb/gal / 60 to 120 g/L Visible Testing: 1 to 2 lb/gal / 120 to 240 g/L
Usage Temperature	40 to 125°F / 5 to 52°C
Storage Temperature	50 to 86°F / 10 to 30°C

INSTRUCTIONS FOR USE

ZP-5B developer bath can be applied by immersion dip, spray or flow on techniques and must be continuously agitated during use to ensure the developer particles remain suspended during processing. If the immersion dip application is used, care must be taken to avoid transferring penetrant into the developer bath. Complete removal of surface penetrant will prolong the developer bath life. The developer bath temperature should not exceed 120°F / 48°C. If spray or flow-on techniques are used, care should be taken to avoid foaming as foam bubbles will create holes in the developer film. Use ZAF-2 anti-foaming additive if necessary.

Developer bath is applied after the surface penetrant has been removed. Complete coverage of the part is essential to quality inspection. The application time is only long enough to cover the part completely. Additional contact with the developer bath may result in reduced sensitivity due to removal of penetrant from shallow discontinuities by detergent action. For best results, forced warm air drying (140°F / 60°C) is recommended after developer application. Once the developer is dry, the part should be removed from the dryer to prevent degrading the penetrant's visibility.

The developer film can be washed off with water spray. If the coating has been baked on or does not wash completely, brushing should be employed along with the water spray to remove the developer completely.

Maintenance Recommendations:

Developer bath concentration can be monitored using a hydrometer or by taking a known volume of the bath, evaporating off the water and then weighing the residue. When using a hydrometer, refer to the table provided below. Density measurement of aqueous suspensions to check concentration is not very accurate but is provided as a convenient guide to estimate concentration of bath. Mix until particles are fully dispersed before measurement.

Concentration (lb/gal)	Concentration (g/L)	Specific Gravity at 70°F / 21°C
0.50	60	1.035
0.75	90	1.052
1.00	120	1.065
1.25	150	1.085
1.50	180	1.098
2.00	240	1.120

PREPARATION INSTRUCTIONS

Developer tank should be clean before developer bath is mixed. Fill the tank with the appropriate amount of water and slowly add the appropriate amount of developer powder to the water while stirring or agitating bath until it is completely dissolved. To speed up bath preparation, warm water can be used, however developer bath temperature should never exceed 120°F / 48°C. Developer powder is dusty and use of a simple filter mask may be desirable during handling.

PACKAGING

25 lb / 11.3 kg pail 01-3341-81



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