



Penetrant Professor Approved

Product Data Sheet

D-78B Water Suspendable Developer



Met-L-Chek manufactures a complete line of developers used in the fluorescent (Type 1) and visible (Type 2) dye penetrant inspection process. All Met-L-Chek developers are qualified to AMS-2644 and are sold under the Met-L-Chek® and Pen-Chek® trademarks.

The use of a developer is required by most penetrant inspection specifications. The developer draws the penetrant from the flaw and creates a uniform surface on which to view the penetrant indication. D-78B is used with fluorescent (Type 1), and visible (Type 2) penetrants as a form “c” developer per AMS-2644 and ASTM E-1417. This form of developer powder is dispersed in water and applied to the inspection surface after the surface penetrant has been removed and before the part is dried. This form of developer is generally applied by immersion dip, flow on, or gentle air less spray, prior to the drying process. A uniform film will form during the drying. The developer particles will settle out of solution upon standing and as such will require continuous agitation during use.

BATH PREPARATION: Use a tank that has little or no plumbing in it. The nooks and crannies in piping are a favorite place for bac-teria to breed and to hide. It is difficult to get into these spots to clean them, and once they become infected they will continue to give trouble. Clean and sterilize the tank before you use it. Cleaning can be done with detergent and a brush, and many users follow this with steam cleaning. Once the tank is clean, sterilize it with swimming pool bleach, by making up the solution, filling tank, and letting it sit overnight. Drain the tank and rinse it with fresh water. This must be done to be sure that the bleach is gone. The bleach contains chlorine, which is harmful to many metals.

Weigh out the amount of developer powder that is required. D-78B is qualified at a concentration of 1/2 lb/gl(60 g/L) for fluorescent penetrants and 2 lb/gl(240 g/L) for visible penetrants. If at all possible use distilled or deionized water to minimize mineral and bac-teriological problems. Agitation of the bath during make up and during use will ensure uniform dispersion of the developer powder, which will settle upon standing. Add the water to the tank, then add the powder: The solution concentration can be checked by using a hydrometer that has a range of 1.000 to 1.200. Evaporation causes the concentration to rise and this can be corrected by adding water, stirring and rechecking the hydrometer reading.

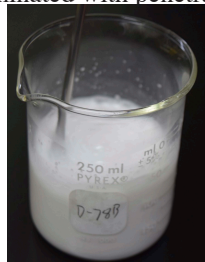
Check the solution daily for color and clearness. The solution should be milky but free of discolored objects, strings of algae or other obvious growths. This daily check is especially important if the inspection process involves the processing of baskets of parts that are made of dissimilar metals. These metals can set up an electrical current that can produce discoloration of the solution. This color change is a sign that the developer constituents are becoming contaminated and indication detection interference may be encountered. Biologi-cally bad developer solution will absorb fluorescence causing false indications or even masking relevant indications. The growths will also begin to evolve noxious odors which makes continued use unpleasant. Biologically contaminated solutions will need to be disposed of and the tank & plumbing sterilized before making a fresh bath.

After parts have been dipped into the developer, put them immediately into the dryer. Allowing part to remain in the wet developer, or to sit while wet for a period of time before drying can cause the penetrant to bleed from the defects, resulting in dim blurry indications. Im-mediate drying produces the best results. The dryer temperature should be set at the maximum allowable temperature of 160°F(71°C). If the surface of the part looks bluish under ultra violet light (UV-A) , or pinkish it is an indication that the parts have been in the developer

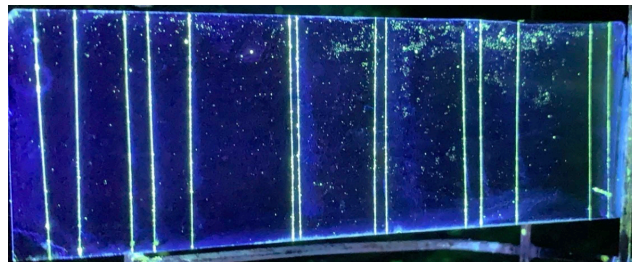
bath too long and the bath is becoming contaminated with penetrant.



D-78B developer powder



D-78B developer solution



Fluorescent penetrant indication with D-78B



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D-78B Water Suspensible Developer



Typical Physical Properties

- Form: white coarse powder
Density: 313 g/L
Flash Point: none
Fluorescence: none
Coating: white film
Removability with water: complete
Corrosion of aluminum: none
Corrosion of carbon steel: none
Corrosion of magnesium: none
Corrosion of stainless steel: none
Corrosion of titanium: none
Chloride content: < 10000 ppm (1%)
Sulfur content: < 10000 ppm (1%)
Chromate: none
Asbestos: none
Mercury: none
VOC's: 0 g/L
Ozone layer depleting substances: none
PCB's: none

Specifications

- AMS 2644 AMS 2647
ASTM E-165 ASTM E-1417
ASME B & PV code sec V

Product Availability

- 10 lb.(4.5K) box
25 lb.(11.3K) box
50 lb.(22.7K) box

NSN #'s

10 lb. 6850-01-264-8684

Concentration Control @ 15.5°C(60°F)

- 2.00 lb/gl(240g/L) -1.130
1.75 lb/gl(210g/L) - 1.113
1.50 lb/gl(180g/L) - 1.096
1.25 lb/gl(150g/L) - 1.080
1.00 lb/gl(120g/L) - 1.065
0.75 lb/gl(90g/L) - 1.047
0.50 lb/gl(60g/L) - 1.032

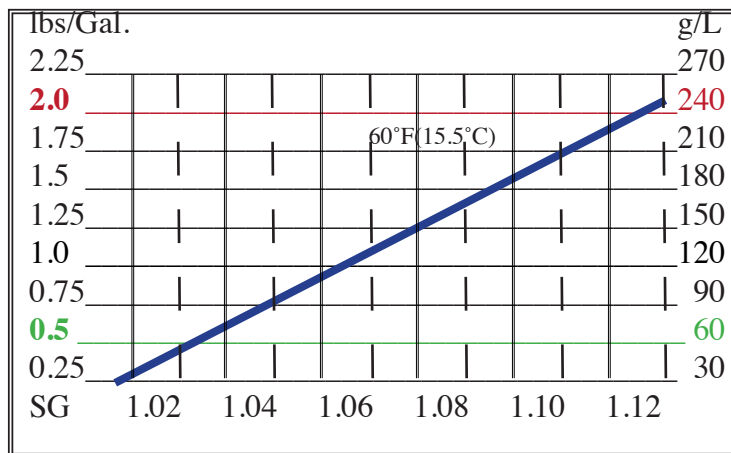


Chart is not precise and is provided as a guide only. Specific Gravity readings are effected by temperature. For uniform comparisons make all readings at the same temperature.

BEFORE USING ANY OF THESE PRODUCTS, YOU MUST BECOME COMPLETELY FAMILIAR WITH THE INFORMATION CONTAINED IN MCGEAN'S SAFETY DATA SHEETS. All information contained therein or in this document regarding handling, personal protection, and other safety measures must be followed during use.

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