Met-L-Chek®

Penetrant Professor Approved

Product Data Sheet

# D-76B Water Soluble 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-76B** is used with fluorescent (Type 1), **Method B & D** penetrants as form **"b"** developer per AMS-2644 and ASTM E-1417. This form of developer powder is dissolved 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. Most specifications do not allow the use of this form of developer with Method A (water washable) penetrants.

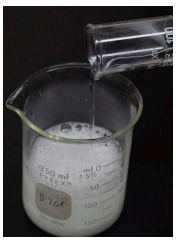
**BATH PREPARATION**: Use a tank that has little or no plumbing in it. The nooks and crannies in piping are a favorite place for bac-teria to breed and to hide. It is difficult to get into these spots to clean them, and once they become infected they will continue to give trouble. Clean and sterilize 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-76B** is qualified at a concentration of **2 lb/gl(240g/L)**. Lower concentra-tions will form thinner films and result in shorter bath life. If at all possible use distilled or deionized water to minimize mineral and bacteriological problems. If warm water can be used it will dissolve the developer powder faster. Agitation of the bath during make up will also make the powder dissolve faster. 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. This should be done daily. A rough control guide is 1/4 lb/gl (30g/L) of developer will cause roughly a 0.008 change in the specific gravity.

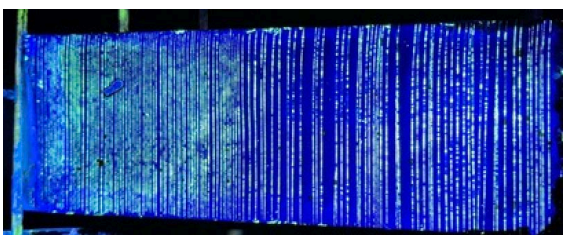
Check the solution daily for color and clearness. The solution should be clear and transparent. There should be no suspended material, strings of algae or other obvious growths or cloudiness. This daily check is especially important if the inspection process involves the processing of baskets of parts that are made of dissimilar metals. These metals can set up an electrical current that can produce cloudiness of the solution. This color change is a sign that the developer constituents are becoming contaminated and indication detec-tion interference may be encountered. Biologically 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. Immediate 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) , it is an indication that the parts have been in the developer bath too long and the bath is becoming contaminated with penetrant.

**D-76B developer powder**



**D-76B developer solution**



**Fluorescent penetrant indication with D-76B**

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## Typical Physical Properties

Form: white grainy powder
Density: 717.1 g/L
Flash Point: none
Fluorescence: none
Coating: thin 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: < 1000 ppm (0.1%)
Sulfur content: < 1000 ppm (0.1%)
Chromate: none
Asbestos: none
Mercury: none
VOC's: 0 g/L
Ozone layer depleting substances: none
PCB's: none

## Specifications

**AMS 2644** **ISO 3452**
**AMS 2647**
**ASTM E-165**
**ASTM E-1417**
**ASME B & PV code sec V**

## Product Availability

**10 lb.(4.5K) box**
**20 lb.(9K) box**
**25 lb.(11.3K) box**
**50 lb.(22.7K) box**

## NSN's

**10 lb. 6850-01-121-0952**
**20 lb. 6850-00-782-2720**
**50 lb. 6850-01-121-0953**

## Concentration Control @ 15.5˚C(60˚F)

**2.00 lb/gl(240g/L) -1.068**
1.75 lb/gl(210g/L) - 1.060
1.50 lb/gl(180g/L) - 1.052
1.25 lb/gl(150g/L) - 1.044
1.00 lb/gl(120g/L) - 1.036

0.25 lb/gl(30g/L) addition will shift specific gravity by 0.008.

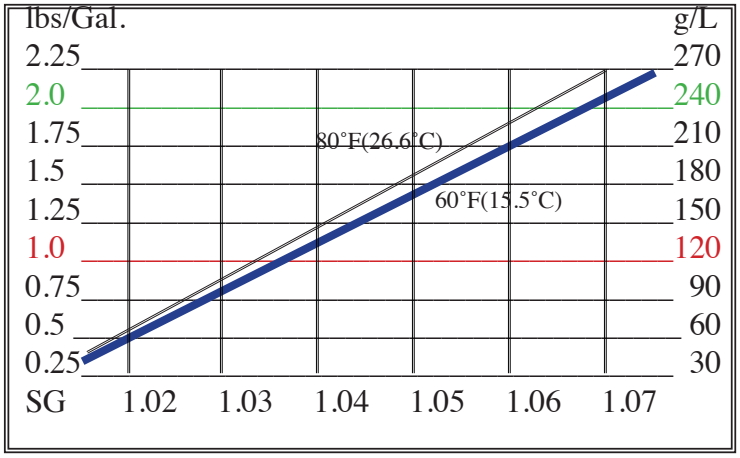


Chart is not precise and is provided as a guide only.
Specific Gravity readings are effected by temperature.
For uniform com-parisons make all readings at the same temperature.



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