Met-L-Chek®

Penetrant Professor Approved

Product Data Sheet
VP-302 High Temperature Penetrant

Met-L-Chek manufactures a complete line of penetrants used in the fluorescent (Type 1) and visible (Type 2) dye penetrant inspection process. Met-L-Chek high temperature penetrant, VP-302, is qualified to MIL-I-25135 as a special application penetrant and is sold under the Met-L-Chek® and Pen-Chek® trademarks.

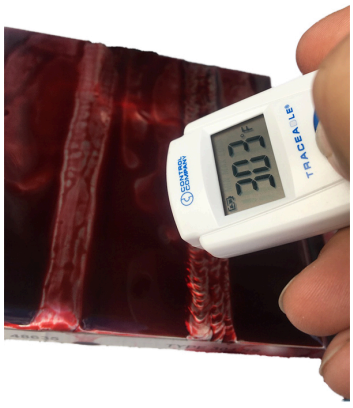
VP-302 is a special application high temperature inspection penetrant. The use range is 51.6 ˚C - 176.6 ˚C (125˚F -350˚F). VP-302 is listed on the approved products list for MIL-I-25135C. It is low in Sulfur, Chlorine, Fluorine and other Halogens, making it safe for use on Titanium and high Nickel alloys found in nuclear components.

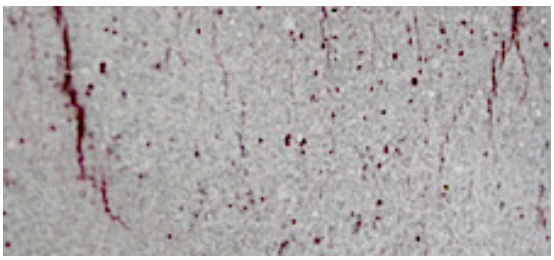
VP-302 finds wide use in field weld and weld repair inspection. It is used in the inspection of refinery processing equipment that is at elevated temperatures, speeding up the inspection process time by eliminating the cool down required for standard penetrant processing. Protective gloves should be worn while working on hot surfaces to avoid burns.

PENETRANT APPLICATION: Before proceeding with the use of VP-302, it is important to be sure that the temperature of the part is not too hot. To test this, apply a small amount of penetrant to the area to be tested, and observe it after 10 minutes. If the penetrant has good red color, you may proceed. But if there is any indication of fading, or of the color turning brown, then the part is too hot and it must be cooled until the penetrant will function properly without color loss. After making this test, the VP-302 penetrant is applied to the hot surface to be tested with a brush or other applicator. At this elevated temperature the penetrant thins and penetrates the flaws rapidly. Penetration time will depend on temperature, but at 93.3˚C (200˚F) two to five minutes is usually sufficient for coarse cracks. Penetrant should only be applied to a small portion of the part to be tested at one time to minimize excessive dwell time, which can evaporate part of the penetrant. Inspect a small area at a time, and complete the inspection of the area within 10 minutes. Longer dwell time may result in the penetrant not functioning properly.

REMOVAL OF EXCESS SURFACE PENETRANT: Remove excess penetrant with a cloth or paper toweling, then clean the sur-face with a cloth moistened with R-502 remover. The hot surface will then dry rapidly.

DEVELOPER APPLICATION: D-702 developer should be agitated and then applied with a pressurized spray gun, such as a paint sprayer or “Sure Shot” ™ type sprayer. Apply in a thin even coat, making several passes if necessary. If a paint sprayer is not available, a simple hand pump sprayer, such as is used for household products, and available in supermarkets, may be used, although the developer coat will not be as smooth or uniform. Be careful not to build up a thick coat, since this may mask defect indications. Flaw indications form quickly and appear as red marks on the white developer. After inspection, the D-702 developer coating may be removed by wiping with a cloth moistened with R-502 remover, or by flushing with water.





High temperature penetrant **VP-302** crack indication on **D-702** developer film.

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Typical Physical Properties

Form: Red viscous liquid
Density: 980 g/L
Flash Point: > 148.8˚C (> 300˚F)
Corrosion of aluminum: none
Corrosion of carbon steel: none
Corrosion of magnesium: none
Corrosion of stainless steel: none
Corrosion of titanium: none
Chloride content: < 100 ppm (0.01%)
Fluoride content: < 50 ppm (0.005%)
Sulfur content: < 100 ppm (0.01%)
Mercury: none
VOC's: 0g/L
Ozone layer depleting substances: none
PCB's: none

Specifications

ASTM E-165
ASTM E-1417
MIL-I-25135C, Interim AM-4
NAVSEA-250-1500-1, Rev16, ACN-5
ASME B&PV Code Sec V

Product Availability

4 x 1 pint (0.47L) metal can with dauber
1 gallon (3.7L) plastic jug
5 gallon (18.9L) plastic jug

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