



Penetrant Professor Approved

Product Data Sheet

VP-31A

Visible Penetrant



Met-L-Chek Company manufactures a complete line of penetrants used in the fluorescent (Type 1) and visible (Type 2) dye penetrant inspection process. All Met-L-Chek Company penetrants are qualified to AMS-2644 and are sold under the Met-L-Chek® and Pen-Chek® trademarks. Met-L-Chek Company products are manufactured under license in The Netherlands by NDT Europa.

VP-31A is a visible (Type 2), post emulsifiable (Method B) and solvent removable (Method C) inspection penetrant. It is designed for use in general metalworking, welding, nuclear and automotive applications for surface flaw and through leak detection. VP-31A is used with E-50 emulsifier for Method B processing which renders the penetrant water washable. Visible penetrants are not rated by sensitivity levels per AMS-2644 but are considered approximate to level 1 fluorescent penetrants. 50µ discontinuities are readily detected and under controlled conditions 30µ size defects may be highlighted by visible penetrants. ISO-3452 does rate visible penetrants by sensitivity level with #2 being the most sensitive. VP-31A is a level 2 per this specifications requirements.

VP-31A is listed on the Qualified Products List for AMS-2644. It meets the requirements of ASME Boiler and Pressure Vessel Code Section V, ASTM E-165, ASTM E-1417, and ISO- 3452 for penetrant inspection materials. It is low in Sulfur, Chlorine, Fluorine and other Halogens, making it safe for use on Titanium and high Nickel alloys found in aerospace, medical and nuclear components.

Guide to METHOD "B" (lipophilic) processing per ASTM E-1417

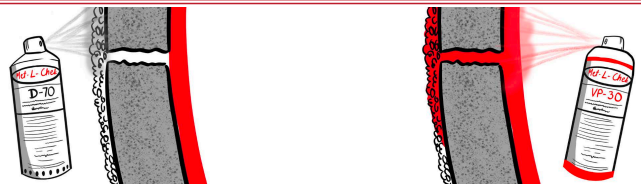
Guide to METHOD "C" wipe off processing per ASTM E-1417

- 1. Part must be clean, dry and at a temperature of 4.4°-52°C (40°- 125°F) before penetrant is applied.
2. Apply VP-31A penetrant using spray, immersion, or wipe on.
3. Wait a minimum of 10 minutes; 20 minutes if temperature is 4.4°-10°C (40-50°F).
4. Spray on E-50 emulsifier, or flow on; drain time < 2 minutes.
5. Wash part; water temperature 10°-38°C (50°-100 °F). Water pressure < 275kPa (< 40 psi). Distance >30cm (>12 inches). Wash time- only long enough to remove surface color .
6*. Dry part.
7. Apply non-aqueous developer, D-70, form "f", by spraying.
7A*. If water based developer form D-78B, "c" is used, it is applied by immersion or spray, prior to step 6 drying.
8. Wait a minimum of 10 minutes before inspection. Maximum time is 1 hour for form "f" (non-aqueous), maximum 2 hours for form "c" (aqueous). If times are exceeded, clean part and reprocess. Use illumination of >1100 lux/m² (>100 foot candles) to inspect.

- 1. Part must be clean, dry and at a temperature of 4.4°-52°C (40°- 125°F) before penetrant is applied.
2. Apply VP-31A using spray, immersion, or wipe on.
3. Wait a minimum of 10 minutes; 20 minutes if temperature is 4.4°-10°C (40-50°F).
4. Moisten cloth with remover E-59, E-59A, R-503 or R-504 and wipe penetrant from surface. Do not spray remover on surface to remove penetrant, as sensitivity will be impaired.
5. Apply nonaqueous developer D-70, by spraying.
6. Wait a minimum of 10 minutes before inspection.
7. Use lighting of 1100 lux/m2 (100 footcandles) minimum.

Through Leak Method

For through leak testing the penetrant is applied to one side of the component and then developer is applied to the opposite side. Thickness of the component will effect the dwell time which may range from 10 minutes to 2 hours.





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Typical Physical Properties

Form: red liquid
Density: 880 g/L
Flash Point: > 93.3°C (> 200°F)
Viscosity: 6.2 mm²/s
Water Tolerance: > 5%
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: < 150 ppm (< 0.015%)
Mercury: none
VOC's: 0 g/L
Ozone layer depleting substances: none
PCB's: none

Specifications

ISO 3452
PMUC
AMS 2644
ASTM E-165
ASTM E-1417
MIL-STD-271
MIL-STD-2132
RCC-M rev 2000
Dassault IQ-1-0-1-20
ASME B&PV Code Section V
NAVSEA-T9074-AS-GIB-010/271

Product Availability

12 x 400mL(16oz) vol. aerosol net wt 310g (10.9oz)
6 x 1 pint (0.4L) can with dauber
1 gallon (3.7L) metal can
5 gallon (18.9L) metal pail
55 gallon (208L) metal drum

NSN #'s

5 gallon 6850-01-264-8677



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