



HM-412 FLUORESCENT PENETRANT

Technical Data Sheet

Description: **HM-412** is a level 2, Method A water washable fluorescent penetrant for inspecting castings, extrusions and similar parts. **HM-412** is a versatile, general purpose penetrant for use on a variety of materials, including aluminum and magnesium. Complies with low sulfur and low halogen requirements.

Chemical Properties

| | | | |
|---------------|---------------|------------------|-----------------|
| Color: | Green | Viscosity: | 8.8 cSt @ 100°F |
| Fluorescence: | Yellow/Green | Water Tolerance: | 15.6% |
| Flash Point: | 230°F (110°C) | | |

Companion Products

| | |
|-----------------------------|------------------------------------|
| D-90G Dry Powder Developer | D-110A Water Suspendable Developer |
| D-100 Non-Aqueous Developer | DR-60 Solvent Remover |
| D-106 Non-Aqueous Developer | DR-62 Solvent Remover |

Packaging

| | |
|------------------|-----------------|
| One Gallon Cans | 55 Gallon Drums |
| Five Gallon Cans | |

Storage /Shelf Life

Keep away from moisture and sunlight.
Temperature limit: 40°F to 125°F (0-50°C)
Keep the container closed when not in use.
Shelf life from invoice date: Bulk Container – 36 months

Specifications

| | |
|--|----------------------|
| SAE AMS 2644 & QPL – Type 1, Method A, Level 1 | |
| MIL-I-25135 Revisions D, & E | ASME Code NDT, Sec V |
| Lockheed Martin | Northrop Grumman |
| Boeing | Rolls Royce |
| Honeywell | Turbomeca |
| Airbus | General Electric |



Special Features

1. Low to near zero background for assured indication visibility.
2. Sharp, precise flaw indication for rapid interpretation.
3. Excellent electrostatic spray capability.
4. Long material tank life due to formula stability and nonvolatility.
5. Low material consumption (low drag out) due to low viscosity.
6. Clean, odorless product, vapor free atmosphere.

Instructions

Note: These instructions describe the basic process, but they may need to be amended by the user to comply with applicable specification and/or inspection criteria provided by the contracting agency.

1. **Application:** Apply **HM-412** only to clean, dry surfaces by spraying, flowing, brushing or dipping.
2. **Dwell Time:** A 10 minute dwell time is suggested, although in many cases five minutes will suffice. When particularly tight cracks are suspected, or the part is especially critical, the dwell time may be extended to 30 minutes, or longer. Allow the penetrant to drain from the part surface back into the penetrant tank to conserve material.
3. **Removal:** Use ambient temperature water to rinse **HM-412** from the part surface. To avoid washing entrapped penetrant from surface flaws, do not use high water pressure or temperatures and avoid prolonged washing times.
4. **Drying:** A recirculating oven set no higher than 160°F (71°C) is suggested. Leave the part in the oven just long enough to evaporate surface moisture. Drying is improved by using pressurized air to disperse and remove as much excess water as possible before placing the part in to the oven.
5. **Developing:** Apply the developer by cloud, dusting, spray or dip using the appropriate developer. Flaw marks are visible under black light almost immediately, but allow sufficient developing time to enhance the flaw visibility.
6. **Inspection:** Inspect parts under appropriate UV-A light intensity and minimal visible light.

Health & Safety

HM-412 is a combustible liquid. Use with adequate ventilation and away from sparks, fire, or open flames. Avoid prolonged or repeated contact with skin. Do not take internally. Consult the MSDS for more safety and health information.