

D-110A.1 DEVELOPER WATER SUSPENDABLE

Approved Type 1, form c, MIL-I-25135 Rev. D & E, and AMS-2644



PRODUCT INFORMATION

Description: D-110A.1 is a powdered mixture of white particles, inhibitors and wetting agents which is mixed before use with water to form a suspension of white particles. After application, it dries to a uniform white powder coating, and, under black light inspection, reveals the location of cracks, pores, and similar surface flaws.

The product meets low-sulfur and low-halogen requirements. D-110A.1 meets MIL-I-25135 and AMS-2644 requirements.

Special Features: In addition to increasing the visibility of flaw indications, D-110A.1 fixes flaw indications to provide sharp, well defined flaw images.

D-110A.1 washes easily from part surfaces with pressurized water when inspection is complete.

D-110A.1 works well on smooth or rough surfaces as well as on machined or coated surfaces.

Companion Materials:

Penetrants -	All Sherwin Type I, Method A, B, C and D equivalent MIL-I-25135/AMS-2644 penetrants
Emulsifiers -	Sherwin ER-83A (Method D) Sherwin ER-85 (Method B)
Removers -	Sherwin DR-60 (Class 2) Sherwin DR-62 (Class 2) equivalent MIL-I-25135/AMS-2644 removers

Container Sizes: 25 pound container

Basic Instructions: (These instructions describe the basic process. They may be amended by the user to comply with applicable specifications and/or inspection criteria provided by the contracting agency.)

1. **Mixing:** Mix the dry powder with water using one pound per gallon of water. Always add the powder to water while stirring the water. Warm water speeds the dissolution. Allow 3-4 hours for complete dissolution.

Solution Maintenance: Monitor solution concentration with hydrometer readings. The specific gravity for 1/3-lb. of D-110A.1/gallon at 60/60°F equals 1.025, for 1/2-lb./gallon equals 1.038, and for 1-lb./gallon equals 1.070. The suspension can be adjusted by adding more D-110A.1 powder or by adding more water. Some water loss through evaporation is inevitable so the solution will require monitoring and periodic adjustment.

Avoid contaminating the D-110A.1 suspension with fluorescent penetrant. To prolong solution life, it is important to remove as much excess surface penetrant as possible before immersing a part in the D-110A.1 suspension.

Under certain conditions, micro-organisms may attack the D-110A.1 suspension. Micro-organism growth can be rapid and will destroy the suspension's effectiveness in only a few hours, requiring the dumping, cleaning, and recharging of the developer tank. Adding a bactericide at the time of charging is suggested. (Some users add sodium propionate to the tank by mixing 1/2-lb. of sodium propionate in one gallon of water and then mixing 1-lb. of this solution to each 100 gallons of developer solution.)

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2. **Use:** Briefly immerse parts in **D-110A.1** suspension immediately following the removal of excess surface penetrant, and before drying. Brief immersion is especially critical with water washable penetrants. Allow excess developer to drain for a few seconds before drying.
3. **Drying:** After immersion, completely dry the part in a recirculating oven set no higher than 160°F, or according to governing specifications. Allow the parts to remain in the dryer somewhat longer than it actually takes to dry the developer — heat helps drive flaw-entrapped penetrant to the developer-coated surface.
4. **Removal:** After the parts have been examined under black light for flaws, **D-110A.1** powder may be removed with a pressurized water wash.

Applicable Specifications:

MIL-I-25135 Revision D & E
Navships 250-1500
ASTM-E-165
ASTM-E-1417

AECL
AMS-2647
AMS-2644
MIL-STD-271 E

MIL-STD 6866
RDT-F3-6T
ASME B & P Vessel Code

PRECAUTIONARY INFORMATION

D-110A.1 is an alkaline product and may cause irritation. Avoid contact with eyes, skin, and clothing. Harmful if inhaled or swallowed; avoid breathing dust. Store in cool, dry place. Wash skin thoroughly after handling. **FIRST AID:** Eyes — flush with water for 15 minutes; call physician. Skin — flush with water.