AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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FLUORESCENT PENETRANT INSPECTION

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

2. APPLICATION: Detection of surface discontinuities, such as cracks, laps, porosity, cold shuts, lack of bond, and similar defects.

3. MATERIALS:

3.1 Penetrant: The penetrant shall be a highly fluorescent liquid capable of penetrating fine discontinuities and, unless otherwise permitted, shall be made up from a water soluble base. It shall also be non-toxic, and non-corrosive.

3.2 Developer: The developer shall be a highly absorbent, non-fluorescent and non-toxic powder, capable of being used either dry or suspended in water. When the suspension is used, the powder shall be thoroughly mixed with water in the ratio of one pound to four gallons or one pound to five gallons for special application, and a uniform distribution maintained through mechanical agitation.

4. PREPARATION OF PARTS: Parts shall normally be fluorescent penetrant inspected prior to all surface treatments such as plating, anodizing, dichromating, peening or similar treatments which would tend to close or mask surface defects. If machined surfaces are to be inspected they shall be finished with a clean cut to prevent flowing or burnishing of the surface layer or shall be etched with a suitable etchant to remove flowed or burnished layers which might mask defects. Parts shall not be etched indiscriminately since etching itself tends to mask surface defects. All parts shall be cleaned in such a manner as to leave the surfaces free from grease, oil, soaps, alkalies and other substances which would interfere with inspection. Vapor degreasing is suitable for this purpose. This paragraph shall not be interpreted as prohibiting additional fluorescent penetrant inspections after further processing or after use of parts.

5. PROCEDURE: After preparation, the parts shall immediately be subjected to the following operations:

5.1 Unless other methods of applying penetrant are permitted, the parts shall be immersed in the penetrant for a sufficient length of time to allow satisfactory penetration into all discontinuities. The time of immersion will depend upon the character and fineness of the defects, the effectiveness of the penetration increasing with the time of immersion.

5.2 Parts shall be removed from the penetrant and cleaned thoroughly using a medium which will remove penetrant from the surfaces of parts; washing in water at a temperature of 120 F ± 20 shall be used when the penetrant is water soluble. When other than water soluble penetrants are used, the penetrants shall be removed with a suitable cleaner. During cleaning, the parts may be viewed under a suitable "black light" to ensure complete removal of the penetrant from the surface of the part. Excessive cleaning which would remove the penetrant from defects shall be avoided.