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400 COMMONWEALTH DRIVE WARRENDALE, PA 15096

AEROSPACE MATERIAL SPECIFICATION

AMS 2601D
Superseding AMS 2601C

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PRESSURE TESTING
10 psig

1. SCOPE: This specification provides requirements and procedures for air-pressure leak testing of parts.

2. APPLICABLE DOCUMENTS: None.

3. TECHNICAL REQUIREMENTS:

3.1 Equipment:

3.1.1 Fixtures: Test fixtures shall not seal off areas of possible leakage or create excessive stresses on parts.

3.1.2 Gaskets: Suitable gasket material shall be used with plugs or blanking plates to prevent damage to finished surfaces.

3.1.3 Valves: Bleeder valves shall be provided to release entrapped air.

3.1.4 Gauges: Pressure gauges shall have sufficient dial divisions to permit monitoring of pressure specified.

3.1.5 Compressed Air Source: The source of compressed air shall provide the required pressure and shall be equipped with a pressure regulator to control the pressure.

3.1.6 Safety Tank or Screen: A suitable tank or screen shall be provided to protect the operator in case of failure of a part.

3.1.7 Drying Oven: A circulating-air oven is required for drying corrodible parts.

3.2 Test Media: Shall be compressed air for applying internal pressure to the part. In addition, a tank of tap water or other transparent liquid shall be provided for parts tested by immersion or liquid soap solution shall be used on parts not immersed during test.

3.3 Preparation:

3.3.1 Cleaning: The part shall be thoroughly cleaned before testing, so that any leaks will be visible. Loose particles, machine shop chips, oils, and other foreign materials shall be removed before pressure testing.

3.3.2 Processes: The part or subassembly shall be tested following all machining, forming, straightening, welding, brazing, anodizing, etc, and prior to application of protective finishes such as paint, plating, coating, or surface finishes that may mask or blank off areas of possible leakage.

3.3.3 Impregnation: Impregnation of castings shall not be permitted except as authorized by purchaser and then only to correct general seepage leaks. Impregnants shall not be used to correct poor foundry techniques, visible holes, or excessive porosity. Impregnation, when permitted or authorized, shall be conducted after all heat treatment, brazing, and welding have been completed.

3.3.4 Preliminary Tests: Tests may be performed at any stage of manufacture in order to establish in-process integrity.

3.3.5 Material Removal: Sand blasting, pickling, or any other operation which may remove metal from surfaces shall be done before final pressure tests.

3.4 Procedure: All parts to be tested shall be fitted up for test and, while subjected internally to an air pressure of 10 - 15 psig, shall be submerged in tap water or other transparent liquid or shall have the surfaces to be tested completely coated with liquid soap.

3.4.1 Duration: Parts, other than castings, shall be held under pressure for not less than 3 min. to permit complete visual inspection while at the specified pressure. Unless a specific time is specified, castings also shall be held for not less than 3 min. at the specified pressure.

3.4.2 Magnesium Alloy Castings, Optional Method: The casting shall be fitted up for test, the surfaces opposite those under pressure shall be dried, and water under pressure of 10 - 15 psig applied and held for not less than 5 minutes. All air shall be excluded by the water from the pressure side. This method does not apply to surfaces of parts leading to the induction system or when air only is against the surface assembled.

3.4.3 Cleaning: Parts which have been tested with water or hydraulic fluid shall be cleaned and dried, immediately after test, to prevent corrosion due to entrapment of moisture. Visible moisture shall be removed by air blast. Parts containing areas of entrapment and all magnesium parts shall be dried in a circulating-air oven at 250°F ± 25 for at least one hour.

3.4.4 Orientation: The part shall be exposed to permit overall visual inspection during static pressure application.

3.5 Acceptance Standards:

3.5.1 Leakage: Parts shall not leak under pressure. The effect of any slight leakage of parts shall be considered by cognizant personnel and the parts accepted, repaired, or rejected.

3.5.2 If slight leakage from a casting or forging appears in a line as if indicating a crack or a cold shut, the part shall be rejected.

3.5.3 Magnesium alloy castings which leak in a 2-in. diameter area more than 25 drops of test fluid per min. or more than 180 mL of air per min. shall be rejected but those that leak less may be impregnated, when so specified and the method to be used is approved by purchaser.

3.5.3.1 Those sections of magnesium alloy castings, impregnated or not, which leak in a 2-in. diameter area less than 5 drops of test fluid per min. or less than 40 mL of air per min. are acceptable unless the leakage is into the induction system of parts or through an external surface, in which case leakage is not desirable but acceptable to the extent of 0.1 mL of air per min. in a 2-in. diameter area.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Reports: The pressure test vendor shall furnish with each shipment three copies of a report stating that the parts have been tested in accordance with this specification and that they conform to the technical requirements. This report shall include the purchase order number, AMS 2601D, part number, and quantity.

5. PREPARATION FOR DELIVERY:

5.1 Preservation: Parts which are subject to corrosion shall be suitably preserved prior to shipment.

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

7. REJECTIONS: Parts that do not meet the requirements of this specification or modifications authorized by purchaser will be subject to rejection.