



Brake Fluid Reservoir

1 Scope

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose. This standard defines the test procedures and requirements for plastic brake fluid reservoirs.

1.2 Foreword. Samples of components or material released to this standard shall be tested for conformity with the requirements of this standard and approved by the responsible GM Department prior to the start of delivery of production level components or materials.

Any change to the component or material, e.g., design, function, properties, manufacturing process and/or location of manufacture, requires a new release of the product. It is the sole responsibility of the supplier to provide the customer, unsolicited, with documentation of any change or modification to the product/process, and to apply for a new release.

If not otherwise agreed to, the entire verification test shall be repeated and documented by the supplier prior to start of delivery of the modified or changed product. In some cases, a shorter test can be agreed to between the responsible GM department and the supplier.

1.3 Applicability. This standard is applicable to reservoirs for passenger cars, light trucks, and crossover vehicles

1.3.1 Type. Two material classifications are defined based on the range of operating temperatures tolerated.

Note: If there is any doubt about which classification should be used, vehicle testing should be performed to confirm it.

1.3.1.1 Type A: Standard Type. The operating temperature range is -40 °C to +120 °C with peak temperatures up to +140 °C.

1.3.1.2 Type B: Type for Higher Temperatures. The operating temperature range is -40 °C to +140 °C with peak temperatures up to +150 °C.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

DIN 53383

2.2 GM Standards/Specifications.

GMW3059

GMW14093

3 Resources

3.1 Facilities. Testing shall be conducted in a GM approved laboratory. Equipment, measuring instruments, appliances, and auxiliary items used for the testing shall provide the degree of accuracy requested in this standard.

3.1.1 Calibration. The test facilities and equipment shall be in good working order and shall have a valid calibration label.

3.1.2 Alternatives. Alternative test facilities and equipment may also be used. However, all measuring variables as specified in this standard shall be determined correctly with respect to their physical definition.

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3.2 Equipment. Testing equipment to apply, monitor or verify testing conditions or testing results is required. All equipment shall have a valid calibration certificate.

3.3 Test Piece.

3.3.1 Test Samples.

3.3.1.1 The test samples shall be in delivery condition, without any pretreatment or conditioning.

3.3.1.2 The reservoir material shall be polypropylene, heat stabilized according to the parts drawing. The upper and lower shells of the brake fluid reservoir manufactured by injection molding shall be free of cavities and other defects and shall be welded liquid-tight in assembly.

3.3.1.3 Local white discoloration due to overstressing, as a result of pressure testing conducted by the supplier, is permissible provided that it does not affect stability.

3.3.1.4 Defects which may impair the function and can be attributed to processing faults are not permissible.

3.3.2 Number of Test Samples for Design Validation. Unless otherwise specified, at least five test samples shall be supplied for initial sampling and official arbitration purposes.

3.3.3 Number of Test Samples for Quality Monitoring. Unless otherwise specified, at least three test samples shall be supplied for quality monitoring.

3.4 Test Time. Test times for the procedures in Section 4 have not been documented.

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Engineers or technicians trained to perform the procedures in this standard are required.

4 Procedure

4.1 Preparation. Preparation shall be included, when applicable, in each test procedure instructions.

4.2 Conditions.

4.2.1 Environmental Conditions. Unless otherwise specified, the tests shall be conducted at $+23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$.

4.2.2 Test Conditions. Deviations from the requirements of this standard shall have been agreed upon. Such requirements shall be specified on component drawings, test certificates, reports, etc.

4.3 Instructions. The tests shall be performed according to the test plan in Table 1. The specified sequence shall be maintained during the testing of the samples in order to ensure that comparable results are achieved. Each test sample shall be tested per an assigned test sequence.

Table 1: Test Plan

Test Title	Paragraph	Test Sequence		
		1	2	3
Vacuum Leak Test	4.3.1	X	X	X
Excess Pressure Leak Test	4.3.2	X	X	X
Press-out Test	4.3.3	X	X	X
Oscillation Test	4.3.4		X	
Bursting Pressure Test	4.3.5	X		
Temperature Resistance	4.3.6		X	X
Impact Strength	4.3.7		X	X
Oxidation Stability Test	4.3.8	X	X	
Environmental Protection	4.3.9	X		

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