



Weld Strength of Non-metallic Fuel Tank Components

1 Introduction

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 is used to determine the strength of welded components such as nipples, clamps, hoses, reservoir and retention rings attached to non-metallic fuel tanks.

1.2 Applicability. Fuel tanks.

1.3 Remarks. Not applicable.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

None

3 Resources

3.1 Facilities.

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.

3.2 Equipment.

3.2.1 Tensile machine with 22 000 N capacity.

3.2.2 Test fixture capable of restraining test sample in tensile machine.

3.3 Test Vehicle/Test Piece. Production fuel tank cut to allow strength testing on the welded components.

3.4 Test Time. Not applicable.

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Not applicable.

4 Procedure

4.1 Preparation. See paragraph 4.3.

4.2 Conditions.

4.2.1 Environmental Conditions. Not applicable.

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.

4.3.1 Secure the sample in the test fixture.

4.3.2 Pull the welded component in a direction normal to the surface of the fuel tank at a rate of 50 mm/minute following the manufacturer's suggested operating procedures.

4.3.3 Record the tensile strength (in N) required to separate the welded component from the body of the fuel tank.

4.3.4 Test is terminated when the component weld fractures.

5 Data

5.1 Calculations. The maximum recorded strength (the strength when the weld fractures) shall be compared with the strength requirement of the component (see component specification).

5.2 Interpretation of Results. If the maximum recorded strength is higher than the strength required for the component, test is passed.

5.3 Test Documentation. Report the maximum (strength to break) in MPa (Megapascal). If tensile machine is equipped with print, add the strength vs. strain diagram to the test report.

6 Safety

This Engineering Standard may involve safety requirements for hazardous materials, the method of operations and equipment. This standard does not propose to address all the safety issues associated with its use. It is the responsibility of the user of this standard to ensure compliance with all appropriate safety and health practices. This would include any specific training that may be required. The safety and health standards include site specific rules and procedures, company rules and procedures, and Government Standards. Contact shall be made with the appropriate site Safety and Health personnel for further direction and guidance in these matters.

7 Notes

7.1 Glossary. Not applicable.

7.2 Acronyms, Abbreviations, and Symbols. Not applicable.

8 Coding System

This standard shall be referenced in other documents, drawings, etc., as follows:

Test to GMW15451

9 Release and Revisions

This standard was originated in October 2006. It was first approved by the Global Plastics Committee in November 2006. It was first published in April 2007.

Issue	Publication Date	Description (Organization)
1	APR 2007	Initial publication.
2	SEP 2012	Five year refresh of standard. (Plastics Global Subsystem Leadership Team)
3	JUL 2017	5 year refresh update. "Torque" and "force" replaced by "strength" Paragraph 5.3 modified (Plastics GSSLT)