Non Metallic Fuel Tank Resistance to High Temperatures - UN ECE

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. The purpose of this standard is to evaluate the resistance to high temperatures of non-metallic primary and secondary diesel and gasoline fuel tanks.

1.2 Applicability. This procedure applies to all vehicles in Category M, N, or O which have a primary or secondary non-metallic diesel or gasoline fuel tank. The vehicle categories defined by United Nations Economic Commission for Europe (UN ECE) are:

- Category M: Power-driven vehicles having at least four wheels and used for the carriage of passengers.
- Category N: Power-driven vehicles having at least four wheels and used for the carriage of goods.
- Category O: Trailers (including semi-trailers).

1.3 Remarks. This procedure can be used to show compliance with UN R 34.03 Annex 5, Section 6 regulations.

2 References

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

2.1 External Standards/Specifications.

UN R 34.03

2.2 GM Standards/Specifications.

None

3 Resources

3.1 Facilities. A test chamber with a fuel tank holding fixture defined in 3.2.1 able to maintain the fuel tank under test at 95 °C ± 2 °C (203.0 °F ± 3.6 °F) for 1 h.

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 Tank Holding Fixture. A fuel tank holding fixture for simulating in-vehicle installation position.

3.2.2 Temperature Equipment. Equipment to verify the fuel tank has reached 95 °C ± 2 °C (203.0 °F ± 3.6 °F).

Note: All instrumentation is to be calibrated as required; record instrumentation details and date of calibration on Data Sheet A1 in Appendix A, unless the information is otherwise preserved in the testing laboratory records.

3.3 Test Vehicle/Test Piece. Fuel system under test includes the fuel tank and all attached accessories including the way in which the venting works.

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3.4 Test Time.

Calendar time:	1 d
Test time:	1 h
Coordination time:	4 h

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Trained personnel to operate the test chamber and temperature measurement equipment. The UN R 34.03 Annex 5 tests for UN ECE type approval require witness presence, which shall be arranged with the regulatory agency.

4 Procedure

4.1 Preparation.

4.1.1 Install the fuel tank onto the fuel tank holding fixture.

4.1.2 Install the temperature equipment as applicable.

4.1.3 Fill the tank to 50% rated capacity with a water at room temperature (20 °C) through the fuel cap opening and install the fuel cap.

4.2 Conditions.

4.2.1 Environmental Conditions. Test at 95 °C ± 2 °C (203.0 °F ± 3.6 °F).

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 With the fuel tank in simulated in-vehicle installation position, filled with water to 50% rated capacity, raise the test chamber temperature to 95 °C ± 2 °C (203.0 °F ± 3.6 °F) and soak until the tank and water achieves 95 °C ± 2 °C (203.0 °F ± 3.6 °F).

4.3.2 Once the temperature is achieved, maintain it for 1 h.

4.3.3 Inspect the fuel tank for any cracks, leaks or deformation. Record the test conditions, results and posttest observations on Data Sheet A2 and Data Sheet A3 in Appendix A.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. The fuel tank shall not leak or crack, however, it may be deformed, but not seriously specifically due to the temperature.

5.3 Test Documentation. Record all pertinent test results on the Data Sheet A1 through Data Sheet A3 in Appendix A.

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.

GSSLT	Global Subsystem Leadership Team
UN ECE	United Nations Economic Commission for Europe

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