Test Procedure for Underhood Fluid Exposure

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 test procedure is to determine the robustness of underhood components to withstand exposure to underhood fluids. This robustness may include characterizations such as color change, adhesion, lamination, erosion, and appearance.

1.2 Applicability. This test procedure applies to underhood components which may experience in-vehicle field exposure to underhood fluids. This component exposure shall be considered in proper vehicle installed position and orientation. Typically, these components may be considered as those located in upper regions of the engine compartment, which may be more easily and directly accessed by spilled fluids.

1.3 Remarks. None.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW14334 GMW16955

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. A vessel capable of retaining a liquid for an extended period, of time and large enough to also contain sample that is being tested.

3.3 Test Vehicle/Test Piece. Multiple component samples may be in fixture, in effort to test multiple samples at once through same cycles.

3.4 Test Time. Reference the lab test procedure(s) in Method A, Method B, and Method C in 4.3.1 through 4.3.3for timing details.

3.5 Test Required Information. See 5.3.

3.6 Personnel/Skills. Test technicians skilled to prepare and meet requirements.

4 Procedure

4.1 Preparation. Test sample(s) must be representative of intended design, subassembly, finishes, and coatings. Test samples must be clean and free of debris prior to initiation of exposure.

4.2 Conditions. The test sample size shall be three (3), unless GM Engineering specifies otherwise.

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4.2.1 Environmental Conditions. Room temperature at 23 °C ± 3 °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.

4.2.3 Sample Conditioning.

4.2.3.1 The test sample(s) are to be conditioned at same ambient test conditions for a minimum of 4 h.

4.2.3.2 Paints, inks, and other similar coatings must cure a minimum of 72 h, prior to the previously defined test sample conditioning.

4.2.3.3 If acrylic adhesives are utilized within any portion of a sample subassembly, condition at room temperature for a minimum of 24 h, prior to the previously defined test sample conditioning.

4.3 Instructions.

4.3.1 Method A. Immerse samples in fluid(s) per Appendix A, Table A1 for 24 h, remove and wipe clean.

4.3.2 Method B. Immerse samples in fluid(s) per Appendix A, Table A1 for 1 h, remove and wipe clean.

4.3.3 Method C. Rub sample with ten (10) double rubs using white cheesecloth saturated with the fluid(s) per Appendix A, Table A1. The length of a single rub shall be at least 50 mm. The force on the cloth shall be approximately 5 N and normal to the sample surface.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. Subjective damage must be identified by preferred method of physical sample review with GM Engineering. Alternatively, photographs of damage may be utilized in place of physical sample evaluation, pending GM Engineering approval.

5.3 Test Documentation. Test results, observations, and conclusions must be reported in typical laboratory report format. Test results shall be made readily available upon request from GM Engineering.

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.

OEM Original Equipment Manufacturer

8 Coding System

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

Test to GMW17013 - Method Y, Fluids Z

Y – Method to be used.

Z – Fluids used for sample exposure.

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