



SURFACE VEHICLE STANDARD

J240

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Life Test for Automotive Storage Batteries

RATIONALE

The test procedure has been modified as a result of a study completed to evaluate the correlation of this test to field failure modes and life for a broad range of current 12 V Automotive Lead-Acid Storage Battery manufacturing technology. This test was found to have an insufficient correlation to be used as a universal test.

INTRODUCTION

To shorten product development time and to support continuous improvement, the automotive industry requires accelerated testing methodology that allows reliable evaluation of changes in component design and technology. The designs of today's automobiles have significantly higher under hood temperatures at which the automotive storage battery must operate. The original J240 was established in 1971 and was later modified with an increased discharge duration to become J240b in 1982. In 2002, paragraph 3.11 was included to increase the test condition temperature (41 °C increased to 75 °C) to improve the correlation of failure modes observed in both the laboratory and the field.

In the current format the test is written with test conditions at 75 °C, with the option to be run at 41 °C.

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1. SCOPE

This SAE Standard applies to 12 V, flooded lead acid automotive storage batteries of 180 minutes or less reserve capacity using cast positive grid technology only. This life test simulates automotive service when the battery operates in a voltage regulated charging system. It subjects the battery to charge and discharge cycles comparable to those encountered in automotive service. Other performance and dimensional information is contained in the latest issue of SAE J537.

This document is intended as a guide toward standard practice, but may be subject to change to keep pace with experience and technical advances.

1.1 Purpose

This life test simulates high-heat automotive service when the battery operates in a voltage-regulated charging system. The test subjects the battery to charge and discharge cycles to produce failure modes similar to those found in batteries installed in high temperature applications.

NOTE: Caution must be exercised when using this test as a means to provide an absolute value for battery life. Recommendations for sample size are not contained in this procedure. Increasing the sample size will provide higher confidence in the test results; therefore, standard statistical practices should be incorporated with this test procedure.

2. REFERENCES

2.1 Applicable Publication

The following publication forms a part of this specification to the extent specified herein. Unless otherwise specified, the latest issue of SAE publications shall apply.

2.1.1 SAE Publication

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE J537 Storage Batteries

2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this document.

2.2.1 SAE Publications

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE 1999-01-1084 Hot Application Cycle Life Test for Automotive Storage Batteries

SAE 2007-01-0637 High Temperature Application Accelerated Cycle Life Test for 12 Volt Lead-Acid SLI Automotive Storage Batteries

3. TESTING PROCEDURE

3.1 Cycle life testing shall begin within sixty days of the final nondestructive test as shown in 3.3 of SAE J537 (Table 1).

3.2 The battery is tested in a water bath maintained at $75\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$ ($167\text{ }^{\circ}\text{F} \pm 5\text{ }^{\circ}\text{F}$).

3.3 Water level of the bath specified in 3.2 is to be maintained at a height equal to or greater than 75% of the overall height of the battery container or within 12 mm (1/2 in) of the metal bushing of side terminal batteries.