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IEEE Recommended Practice for Stationary Battery Electrolyte Spill Containment and Management

IEEE Power and Energy Society

Sponsored by the
Energy Storage and Stationary Battery Committee

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USA

IEEE Std 1578™-2018
(Revision of IEEE Std 1578-2007)

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Abstract: Descriptions of products, methods, and procedures relating to stationary batteries, battery electrolyte spill mechanisms, electrolyte containment and control methodologies, and firefighting considerations are provided.

Keywords: active neutralization, battery, battery container, battery room, battery string, battery system, caustic, cell, corrosive, electrolyte, electrolyte release, electrolyte spill, IEEE 1578™, irritant, lead-acid battery, lithium battery, Ni-Cd battery, passive neutralization, spill containment, spill control, stationary battery system, thermal runaway, toxic, valve-regulated lead-acid (VRLA) battery, vented battery

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Introduction

This introduction is not part of IEEE Std 1578-2018, IEEE Recommended Practice for Stationary Battery Electrolyte Spill Containment and Management.

Battery users have identified a need for guidance in response to an unplanned loss of electrolyte from a stationary battery. The intention of this recommended practice is to fulfill the need within the industry to provide common or standard practices for the design of battery spill containment systems and the proper handling of released electrolyte through to its proper documented disposal. This recommended practice also references the impact of electrolyte release mechanisms for battery spill containment design. Recommended safety and firefighting practices are also discussed.

This recommended practice can be used separately or with IEEE Std 450™, IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications, IEEE Std 484™, IEEE Recommended Practice for Installation Design and Installation of Vented Lead-Acid Batteries for Stationary Applications, and IEEE Std 1106™, IEEE Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications.[1]

[1]Information on references can be found in Clause 2.

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IEEE Recommended Practice for Stationary Battery Electrolyte Spill Containment and Management

1. Overview

1.1 Scope

This recommended practice discusses factors relating to electrolyte spill containment and management for vented lead-acid (VLA), valve-regulated lead-acid (VRLA), vented nickel-cadmium (Ni-Cd), and partially-recombinant Ni-Cd stationary batteries.

1.2 Purpose

This recommended practice is intended to educate those who are responsible for battery system design operation as it relates to environmental and health practices. It seeks to develop a full understanding of and describe some electrolyte spill containment and management issues related to stationary battery systems, and the ways in which battery chemistry and construction can influence requirements for spill containment and neutralization.

2. Normative references

The following referenced documents are indispensable for the application of this document (i.e., they must be understood and used, so each referenced document is cited in text and its relationship to this document is explained). For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments or corrigenda) applies.

IEEE Std 450™, IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications.[2,3]

IEEE Std 484™, IEEE Recommended Practice for Installation Design and Installation of Vented Lead-Acid Batteries for Stationary Applications.

IEEE Std 1106™, IEEE Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications.

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