This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

Designation: D4865 – 19

An American National Standard

Standard Guide for Generation and Dissipation of Static Electricity in Petroleum Fuel Systems[1]

This standard is issued under the fixed designation D4865; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

INTRODUCTION

Every year a number of fires and explosions in petroleum product systems are attributed to spark ignition from accumulated static electricity. Such fires require a flammable hydrocarbon/air mixture and an ignition source. Safety practices can concentrate on the elimination of either factor, but this guide provides a general background on how electrostatic charges are formed and how they may be prevented or dissipated.

A subtle and often misunderstood feature of these incidents is the possible accumulation of hazardous electrostatic charges in systems which are properly bonded and grounded. This can occur because refined hydrocarbon fuels have low electrical conductivities and electrostatic charges may be retained within the fuel and on its surfaces.

1. Scope*

1.1 This guide describes how static electricity may be generated in petroleum fuel systems, the types of equipment conducive to charge generation, and methods for the safe dissipation of such charges. This guide is intended to increase awareness of potential operating problems and hazards resulting from electrostatic charge accumulation.

1.2 This guide is not intended to provide specific solutions but indicates available techniques the user may wish to investigate to alleviate electrostatic charges. This guide does not cover the effects of stray currents or of lightning, either of which can also produce sparks leading to fires or explosions.

1.3 This guide is not intended to address detailed safety practices associated with static electricity in petroleum product systems.

1.4 The values stated in SI units are to be regarded as standard. The values given in parentheses after SI units are provided for information only and are not considered standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D56 Test Method for Flash Point by Tag Closed Cup Tester
D93 Test Methods for Flash Point by Pensky-Martens Closed Cup Tester
D323 Test Method for Vapor Pressure of Petroleum Products (Reid Method)
D396 Specification for Fuel Oils
D910 Specification for Leaded Aviation Gasolines
D975 Specification for Diesel Fuel
D1655 Specification for Aviation Turbine Fuels
D2276 Test Method for Particulate Contaminant in Aviation Fuel by Line Sampling
D2624 Test Methods for Electrical Conductivity of Aviation and Distillate Fuels
D2880 Specification for Gas Turbine Fuel Oils
D3699 Specification for Kerosine

[1] This guide is under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee D02.J0.04 on Additives and Electrical Properties.

Current edition approved July 1, 2019. Published July 2019. Originally approved in 1988. Last previous edition approved in 2014 as D4865 – 09 (2014). DOI: 10.1520/D4865-19.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

***A Summary of Changes section appears at the end of this standard**

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