

Clearing The Air On OSHA Requirements For Hazardous Locations

Introduction

There is often a misconception that a product must have either a UL or FM marking to be "legal" for use in hazardous locations across the U.S. and, furthermore, that the product must be certified using the division classification system. The common statement from safety or regulatory compliance personnel for petrochemical and pharmaceutical facilities is "your product must be UL or FM certified and it must meet requirements for a Class 1, Division 1 or 2 hazardous locations as defined in NEC 500. This White Paper is intended to provide guidance given NEC and OSHA rule changes (see excerpt below).

OSHA Approved Nationally Recognized Test Laboratory (NRTL)

The current list of all NRTL's can be found on OSHA's web site at the following link: <http://www.osha.gov/dts/otpc/nrtl/nrtllist.html>

As you will see there are many NRTL's. Ascom works with CSA for intrinsically safe certification which is one of the 10 NRTL's currently approved by OSHA for intrinsically safe testing to the standards in UL 913 and FM 3610. See the following link on OSHA's website for details: <http://www.osha.gov/dts/otpc/nrtl/csa.html>

Division vs. Zone System

Electrical inspectors must be cognizant of the zone classification system detailed in NEC 505, understand the explosion-protective techniques, and sort out the differences in equipment and installations.

In short, safety personnel across North America may now classify hazardous locations using the Zone classification system. The Ascom 9d24 EX already meets the IEX EX requirements for Class 1, Zone 1 and 2 environments and will be certified by CSA for use in North America during 1H08. The actual explosion protection rating is AEx ib IIC T4 and will be etched in the handset plastic housing.

The 9d24 will not be certified for Class 2 or 3 areas. Class 1 covers hazardous locations with gases and vapors while Class 2 addresses dust, and Class 3 fibers.

The paragraphs below were extracted from OSHA's website. Visiting the OSHA website link below will provide all the details required to fully understand the recent changes: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FEDERAL_REGISTER&p_id=19269

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Standard #: 1910

Title: Electrical Standard; Final Rule

SUMMARY

The Occupational Safety and Health Administration (OSHA) is revising the general industry electrical installation standard found in Subpart S of 29 CFR Part 1910. The Agency has determined that electrical hazards in the workplace pose a significant risk of injury or death to employees, and that the requirements in the revised standard, which draw heavily from the 2000 edition of the National Fire Protection Association's (NFPA) Electrical Safety Requirements for Employee Workplaces (NFPA 70E), and the 2002 edition of the National Electrical Code (NEC), are reasonably necessary to provide protection from these hazards. This final rule focuses on safety in the design and installation of electric equipment in the workplace. This revision will provide the first update of the installation requirements in the general industry electrical installation standard since 1981.

OSHA is also replacing the reference to the 1971 NEC in the mandatory appendix to the general industry powered platform standard found in Subpart F of 29 CFR Part 1910 with a reference to OSHA's electrical installation standard.

DATES

This final rule becomes effective on August 13, 2007.

ADDRESSES

In accordance with 28 U.S.C. 2112(a), the Agency designates the Associate Solicitor of Labor for Occupational Safety and Health, Office of the Solicitor of Labor, Room S4004, U.S. Department of Labor, 200 Constitution Avenue, NW., Washington, DC 20210, to receive petitions for review of the final rule.

FOR FURTHER INFORMATION CONTACT

For general information and press inquiries, contact Mr. Kevin Ropp, Director, Office of Communications, Room N-3647, OSHA, U.S. Department of Labor, 200 Constitution Avenue, NW., Washington, DC 20210; telephone (202) 693-1999. For technical inquiries, contact Mr. David Wallis, Directorate of Standards and Guidance, Room N-3609, OSHA, U.S. Department of Labor, 200 Constitution Avenue, NW., Washington, DC 20210; telephone (202) 693-2222.

For additional copies of this Federal Register notice, contact OSHA, Office of Publications, Room N-3101, U.S. Department of Labor, 200 Constitution Avenue, NW., Washington, DC 20210; telephone (202)

693-1888. Electronic copies of this Federal Register notice, as well as news releases and other relevant documents, are available at OSHA's Web page on the Internet at <http://www.osha.gov>.

SUPPLEMENTARY INFORMATION:

I. Introduction

This final rule revises OSHA's existing standard for electrical installations, which is contained in Sec. 1910.302 through 1910.308 of Subpart S, with relevant definitions in Sec. 1910.399. It applies, as the existing standard does, to employers in general industry and in shipyard employment, longshoring, and marine terminals.

OSHA undertook the project to revise Subpart S for two major reasons. First, the Agency wanted the standard to reflect the most current practice and technology in the industry. The existing standard is based on a national consensus standard, the 1979 edition of Part I of NFPA 70E, entitled Standard for Electrical Safety Requirements for Employee Workplaces. That consensus standard has been updated several times since OSHA last revised its electrical installation requirements in 1981. The final rule being published today is based on Part I of the 2000 edition of NFPA 70E. Second, in implementing this rule, OSHA is responding to requests from stakeholders that the Agency revise Subpart S so that it reflects the most recent editions of NFPA 70E and the NEC.¹ These stakeholders argued that interested members of the public have had substantial input into the content of NFPA 70E and that industry is complying with that consensus standard in its present form. The revised standard will be more flexible and efficient for stakeholders, including small businesses, while improving safety for employees.

N. ZONE CLASSIFICATION

Introduction: Existing Sec. 1910.307 contains OSHA's electrical safety requirements for locations that can be hazardous because of the presence of flammable or combustible substances. Hazardous locations are classified according to the properties of flammable vapors, liquids or gases, or combustible dusts or fibers that may be present. These locations are designated in the NEC and existing Sec. 1910.307 as one of six types: Class I, Division 1; Class I, Division 2; Class II, Division 1; Class II, Division 2; Class III, Division 1; and Class III, Division 2. This system is called the "division classification system,"

or the "division system." The NEC first addressed this system in 1920. The OSHA website has a short but informative paper on this topic, which is available at <http://www.osha.gov/doc/outreachtraining/htmlfiles/hazloc.html>.

The 2000 edition of NFPA 70E incorporates an alternative system (in addition to the division classification system) for installing electric equipment in Class I locations. (Class II locations continue under the division system.) This system is called the "zone classification system," or the "zone system." The zone system designates three classifications: Class I, Zone 0; Class I, Zone 1; and Class I, Zone 2.

The zone system is based on various European standards that were developed by the International Electrotechnical Commission (IEC).³⁰ A modified version of this system was first adopted into the NEC in the 1996 edition. Although the zone and division classification systems differ in concept, individual equipment can be approved for use under both systems when the equipment incorporates protective techniques for both systems (as determined by the nationally recognized testing laboratory that lists or labels the equipment). Based on the successful use of the zone system in European countries for many years and the acceptance of the zone system by the NEC and international standards, OSHA believes that an installation conforming to requirements for this system is as safe as one conforming to requirements for the division system.³⁰ The IEC prepares and publishes international standards for all electrical, electronic and related technologies. This global organization is made up of members from more than 60 participating countries, including the U.S.

The zone system incorporated in the final rule is an alternative method to the division system; employers may use either system for installations of electric equipment in Class I hazardous locations. OSHA will recognize the use of the zone system under Sec. 1910.307 and any other OSHA standard that references Sec. 1910.307.³¹ Article 505 of the 1996 NEC included requirements for the U.S. version of the zone system for the first time. The 2000 edition of NFPA 70E includes requirements for the

zone system based on the 1999 version of the NEC. OSHA is adopting zone system rules that are based on these NFPA 70E provisions. This will permit electric equipment approved for use in hazardous locations to be used in U.S. workplaces, under either the division or zone system.

There are differences between the division classification system and the zone classification system. The zone system can best be described by comparing it with the division system. Both systems characterize locations by the likelihood and circumstances under which flammable gases or vapors exist.

The systems both define the types of gases or vapors that may exist and categorize them under a number of groups. Each system specifies an allowable range of operating temperature, and corresponding requirements, for electric equipment used in a particular division or zone.

In contrast to the division system, however, the zone system is only used to classify areas that are hazardous because of the presence of flammable gases or vapors (Class I locations). The division system must be used to classify areas that may contain combustible dusts or easily ignitable fibers or flyings (Class II and III locations, respectively).

The zone system defines three types of Class I locations (Zones 0, 1, and 2) rather than two locations under the division system (Divisions 1 and 2). Zones 0 and 1 equate to Division 1, whereas Zone 2 equates to Division 2. In a Class I, Division 1 location, flammable gases or vapors are or may be present in the air in ignitable concentrations. In a Class I, Zone 1 location, ignitable concentrations of flammable gases or vapors are not always present, but such concentrations may exist periodically even under normal conditions. By contrast, in a Class I, Zone 0 location, such gases or vapors are present either continuously or for long periods. Thus, a Class I, Zone 0 location is, in essence, a worst-case Class I, Division 1 location.