



ATmosphere EXplosible (ATEX) An Overview

Introduction

The European Union's Atmosphere Explosibles (ATEX) Directives became law September 1, 2003. More commonly referred to as ATEX, there are two complimentary directives, intended to reduce the hazards created by potentially explosive atmospheres, primarily in the petrochemical, refining, and mining industries. Both are intended to facilitate free movement of products and equipment within the European Community. One directive applies to equipment, and the other applies to worker protection.

Directive 94/9/EC was established March 23, 1994 by the European Parliament and the Council of the European Union. Commonly referred to as ATEX 95, it applies to the placing on the market, putting into service and the design of equipment for use in potentially explosive atmospheres. Directive 99/92/EC, known as ATEX 137, was established December 16, 1999 and describes minimum requirements to improve safety and protect workers from explosions. It places specific requirements on employers for risk assessment and implementation of measures to reduce explosion hazards.

Scope

This RMA bulletin discusses ATEX 95, which applies to equipment and protective systems installed in potentially explosive environments within the Member States of the European Union. It also applies to safety-, controlling-, and regulating- devices intended for use outside a potentially explosive zone, if that equipment is required for the safe operation of equipment inside the potentially explosive zone.

A potentially explosive environment is defined as one in which flammable substances in the form of gases, vapors, mists or dusts are combined with air under atmospheric conditions, in which after ignition, combustion spreads spontaneously to the entire unburned mixture.

General Provisions

After June 30, 2003, all products introduced into the European market will be subject to compliance with Directive 94/9/EC. The directive applies to all products within the scope of previous European and member nation directives covering electrical equipment in potentially explosive atmospheres, but goes further by including non-electrical equipment and dust-laden atmospheres.

The specific scope of ATEX 95 covers:

- 1) Equipment.
- 2) Protective systems.
- 3) Components.
- 4) Safety, controlling or regulating devices.

Assemblies or machines intended for use in potentially explosive environments, which include the four categories listed above, fall into one of the following groups:

Group 1: Equipment intended for use in the underground parts of mines, and to those parts of surface installations of such mines, likely to become endangered by firedamp and/or combustible dust.

Group 2: Equipment intended for use in areas in which explosive atmospheres are present, caused by mixtures of air and gases, vapors or mists or by air/dust mixtures.

These two groups are further broken down into sub-categories, depending on where the equipment is intended to be used and whether the explosive environment is always present, or is likely to occur for long or short periods of time, or infrequently.

ATEX 95 applies to new products and systems whether they are manufactured inside or outside of the EU. It does not regulate the use of equipment in potentially explosive environments, which is covered by Directive 89/655/EEC, or the placement of suitable equipment in specific hazard zones, which is covered by ATEX 137. Rather, ATEX 95 applies to product at the time of placing on the market or putting into service.

Equipment manufacturers are required to conduct a risk assessment analysis according to European standard EN-1127-1 to determine which group and sub-category their equipment belongs to. This then determines which sections of the Directive apply to that equipment. Some equipment and systems are excluded from the ATEX 95 Directive, and manufacturers should consult the full text version to determine if exclusion is applicable in their case.

ATEX 95 provides manufacturers with the option of complying with its requirements by designing and manufacturing directly in accordance with the Essential Health and Safety Requirements, or by certifying to “harmonized standards” listed in Annex 5 of the Directive, and/or the standardization programs listed in Annex 6.

Equipment or systems meeting the requirements of ATEX 95 shall have the “Cx” marking affixed during the production control phase, either to the product or to its data plate. The manufacturer shall also produce a written statement of conformance with the essential requirements of the Directive. Components are excluded from this provision, and do not require the “Cx” marking. Components must however, be delivered to the manufacturer with a written attestation, stating the conformity with the provisions of the Directive by listing their characteristics and indicating how they are to be incorporated into either equipment or protective systems. Equipment must also carry a “CE” marking, which designates that it complies with all relevant EU Directives.

In general, ATEX 95 also pertains to used, reconfigured, refurbished, or reconditioned equipment, but there are exceptions. End users are encouraged to review the full text version of ATEX 95 to determine if the Directive applies in their particular installation. Workplaces already in use prior to July 1, 2003 have until June 30, 2006 to be in compliance.

Directive 94/9/EN as it Pertains to Belt Drives

Belt drives are classified as “components”, and as such do not require ATEX certification; they do not receive the “CE” and “Cx” marking. The Harmonized Standards and standardization programs that cover belts are shown in Annex 5 and Annex 6 of ATEX 95, respectively.

Belts themselves, when put in a potentially explosive environment are not a “source of ignition” according to European Standard **EN 1127-1:1997**, which is referenced in Annex 5 of ATEX 95. Belts are considered a non-electrical component, covered under European Standard **EN 13463-5: 2002 Non-electrical Equipment for Potentially Explosive Atmosphere - Part 5: Protection by Construction Safety**, listed in Annex 6 of ATEX 95.

Section 7.2 of EN-13463-5: 2002 states the following:

- 7.2.1 Belts shall be incapable of developing a dangerous electrostatic charge during operation (see ISO 1813 and CENELEC Technical Report - RO44-001).
- 7.2.2 The material used in the construction of the belts shall not readily support combustion when a naked flame is applied to it. The material shall meet the requirements of EC 60695-11-10, category FV-0.

Section 7.2.1 of EN-13463-5 references International Standard (ISO) **1813**, which specifically addresses requirements for electrically conductive belts and a method for testing. Pass/fail criteria are tabulated in the standard, relative to belt profile. The standard covers V-belts, multi-rib belts and joined V-belts.

Section 7.2.2 of EN-13463-5 references European Standard **EC 60695-11-10** regarding flame resistance. This standard details a test procedure for evaluating flame resistance. Two test methods are outlined; a vertical test and a horizontal test. Materials tested per either of these procedures are given a rating, based on the amount of time it takes for the sample to self-extinguish. Compliance with category **FV-0** is required, which corresponds to the vertical flame test.

NOTE: Although RMA IP-3-4 addresses electrical conductivity testing for belts, it is not a European standard, and 94/9/EN is specific in allowing only harmonized standards or existing European national standards or other European technical test procedures for assessing compliance to the Directive.

Summary

The ATEX 95 Directive applies to equipment, systems, and components of equipment that is to be used in potentially explosive environments, or used to control equipment located in potentially explosive environments. Power transmission belts are considered to be non-electrical components. They must be static conductive, per the test requirements of International Standard (ISO) 1813; they must be flame-resistant and self-extinguishing, per the requirements of European Test Standard EN-13463-5 and comply with an FV-0 rating.

For the complete text of the ATEX Directives go to europa.eu.int.

The Rubber Manufacturers Association is the U.S. trade association for the rubber products industry. Its members include more than 100 companies that manufacture tires, hoses, belts, seals, molded goods, and other finished products. RMA members employ over 120,000 workers and account for more than US \$21 billion in annual sales. The General Products Group of RMA represents manufacturers of non-tire products, both molded and extruded, along with suppliers to these companies. The content of this bulletin has also been approved by the member companies of the Mechanical Power Transmission Association; 6724 Lone Oak Blvd.; Naples, FL 34109; (239) 514-3441; www.mpta.org.

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