

Non-electrical equipment for potentially explosive atmospheres —

Part 8: Protection by liquid immersion 'k'

The European Standard EN 13463-8:2003 has the status of a
British Standard

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National foreword

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Non-electrical equipment for potentially explosive atmospheres -
Part 8: Protection by liquid immersion 'k'

Appareils non électriques destinés à être utilisés en
atmosphères explosibles - Partie 8: Protection par
immersion dans un liquide 'k'

Nicht-elektrische Geräte für den Einsatz in
explosionsgefährdeten Bereichen - Teil 8: Schutz durch
Flüssigkeitskapselung 'k'

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Foreword

This document (EN 13463-8:2003) has been prepared by Technical Committee CEN/TC 305 "Potentially explosive atmospheres - Explosion prevention and protection", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2004, and conflicting national standards shall be withdrawn at the latest by March 2004.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of **EU Directive(s)**.

For relationship with **EU Directive(s)**, see informative Annex ZA, which is an integral part of this document.

This standard is to specify the requirements for the type of protection "Liquid immersion" for equipment intended for use in potentially explosive atmospheres and should be used in conjunction with EN 13463-1 "Non-electrical equipment for potentially explosive atmospheres - Part 1: Basic method and requirements".

The detailed drafting work was entrusted to Working Group 2 "Equipment for use in potentially explosive atmospheres".

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

Certain types of non-electrical equipment, intended for use in potentially explosive atmospheres of gas, vapour and/or dust, have their potential ignition sources rendered ineffective by either submersing them in a protective liquid, or by continuously coating them with a flowing film of protective liquid. In some equipment, the protective liquid is provided solely for the purpose of preventing the potential ignition sources from becoming effective. In other equipment, the protective liquid serves additional purposes, such as lubricating and/or cooling moving parts, or as in the case of hydraulic systems, for transmitting energy. In some equipment, the protective liquid may be the actual process liquid itself.

Examples of the kinds of equipment utilising this type of ignition protection are:

- a) oil immersed disc brakes, for example, on the wheels of vehicles used in potentially explosive atmospheres,
- b) diaphragm and other submersible pumps used for delivering flammable liquids, having their moving mechanisms immersed below the lowest allowable level of the flammable liquid being processed (e.g. petroleum product dispensers),
- c) hydraulic pumps and motors having their internal rotating parts continuously immersed in the flowing hydraulic fluid used to transmit the hydrostatic or hydrokinetic energy,
- d) oil filled gearboxes, having their gear wheels partially immersed, but continuously coated by a viscous film of lubricating oil. In this example the protective oil coating may be supplied by natural splashing of the wheels as they rotate in the oil, or by directing a continuously flowing stream of oil directly onto them from an oil pump in the gearbox sump,
- e) fluid couplings, torque converters, connected for example, between the output shaft of a driving motor and the input shaft of fully loaded machine, to allow it to be started gradually ('soft starting').

In all of the above, ignition protection is achieved by the fact that protective liquid prevents the surrounding explosive atmosphere from coming into contact with the ignition source(s) by continuously coating, and/or lubricating and cooling the moving parts.

A similar type of ignition protection, known as oil immersion "o", has been used for many years for electrical equipment, where, in addition to the above, the liquid also acts as an electrical insulating medium. It is for this latter reason that this standard cannot be applied to electrical equipment, because it allows the use of liquids that conduct electricity.