
International Standard



6184/2

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Explosion protection systems — Part 2: Determination of explosion indices of combustible gases in air

Systèmes de protection contre les explosions — Partie 2: Détermination des indices d'explosion des gaz combustibles dans l'air

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 6184/2 was prepared by Technical Committee ISO/TC 21, *Equipment for fire protection and fire fighting*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Explosion protection systems —

Part 2: Determination of explosion indices of combustible gases in air

0 Introduction

0.1 The assessment of measures required to provide protection against explosion hazards involving combustible gas/air mixtures requires prior determination of the potential explosion severity of such mixtures, by the measurement of explosion indices. Conversely, the measurement of the effectiveness and performance of explosion protection systems requires that they should be tested against explosions of known severity.

The severity of a combustible gas explosion is a function of the following:

- a) the chemical properties of the combustible gas;
- b) the concentration of the combustible gas in the gas/air mixture;
- c) the homogeneity and turbulence of the combustible gas/air mixture;
- d) the type, energy, and location of the ignition source;
- e) the geometry of the container;
- f) the temperature, and pressure of the combustible gas/air mixture.

0.2 This part of ISO 6184 is one of a series dealing with explosion protection systems. The other parts are as follows:

Part 1: Determination of explosion indices of combustible dusts in air.

Part 3: Determination of explosion indices of fuel/air mixtures other than dust/air and gas/air mixtures.

Part 4: Determination of efficacy of explosion suppression systems.

0.3 The interpretation of explosion indices determined by the method specified in this part of ISO 6184 and their relation to the development of explosions in commonly encountered ex-

plosion hazards should be recognized. In particular, the degree of turbulence can influence the hazard significantly. In practice, the link between a given degree of turbulence and a specific type of hazard is the responsibility of specialists in the fields of explosions and explosion protection.

Two extremes of turbulence commonly encountered in industrial plants are:

- a) quiescent conditions prevailing in storage vessels;
- b) high turbulence conditions prevailing in the region of an extraction fan.

It should be realized that turbulence can arise in two ways:

- a) turbulence intrinsic to the plant, under normal operating conditions, as a consequence of perturbations to the air-flow;
- b) turbulence induced by obstructions within an installation on a gas which expands as the result of an explosion.

1 Scope

This part of ISO 6184 specifies a method for the determination of the explosion indices of combustible gases with air in an enclosed space. It gives the criteria by which results obtained using other test procedures can be correlated to yield explosion indices as determined by the method specified in this part of ISO 6184.

2 Field of application

This part of ISO 6184 is applicable only to the determination of explosion indices pertaining to the development of contained gas/air explosions after ignition of reactants. It does not apply to indices pertaining to the conditions necessary to cause