International Standard 8456

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Storage equipment for loose bulk materials — Safety code

Équipements de stockage de produits en vrac — Code de sécurité

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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 8456 was prepared by Technical Committee ISO/TC 101, *Continuous mechanical handling equipment*. It is based on the work carried out by "Section II — Continuous handling" of the European Mechanical Handling Confederation (FEM).

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.

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Storage equipment for loose bulk materials — Safety code

1 Scope

This International Standard gives, as an adjunct to the general safety rules laid down in ISO 1819, special safety rules for storage equipment for loose bulk materials such as hoppers, silos, storage bins and bunkers, and bin gates.

2 Field of application

The safety rules laid down in this International Standard apply regardless of the use for which the equipment is intended.

These safety rules limit the supplier's responsibility to continuous mechanical handling equipment proper, excluding the structures to which such equipment is affixed, unless these are built into the storage equipment.

3 References

ISO 1819, *Continuous mechanical handling equipment — Safety code — General rules.*

ISO 7149, *Continuous handling equipment — Safety code — Special rules.*

4 General rules

The construction and operation of storage equipment for loose bulk materials, such as hoppers, silos, storage bins and bunkers, and bin gates, shall meet

a) the legal and local requirements concerning safety in general;

b) the general safety rules laid down in ISO 1819;

c) the special safety rules laid down in ISO 7149;

d) the rules for the manufacture of pressure or vacuum vessels not submitted to the action of a flame[1];

e) the special rules laid down in clause 5.

5 Special safety rules

5.1 At the construction stage (design and manufacture)

5.1.1 Hoppers and silos

5.1.1.1 General

5.1.1.1.1 Components shall be determined so as to be able to withstand the loads (dead weights, materials stored, additional superstructures and supported machinery, and occasional operating overloads) expected under normal operating conditions, the climatic and geological conditions having been agreed upon between the contracting parties. Static and dynamic criteria shall be considered.

Stability shall be ensured under all load conditions defined in the contract.

5.1.1.1.2 If the stored materials are transported away by vehicles, the minimum distances between the substructures and the vehicles shall be the following :

a) 500 mm for fixed, isolated obstacles (posts, pillars columns, corners of building, etc.) of less than 300 mm measured in the operating direction of the appliance;

b) 700 mm for continuous, fixed obstacles (walls, warehouses, quays, buildings, etc.) and posts and pillars of 300 mm or more.

These minimum distances are not obligatory in the case of zones which are not working or movement zones.

5.1.1.1.3 Depending on the type of material, the design of hoppers and silos, and in particular sloping walls, and the position and dimensions of discharge openings shall allow satisfactory flow of the material due to gravity, with or without the help of auxiliary equipment.

Interior struts, interior ladders and other interior fittings likely to slow down the flow of material shall be avoided as far as possible.

1) Refer to the corresponding national regulations.