

# INTERNATIONAL STANDARD



# 2391

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

## Continuous mechanical handling equipment for loose bulk materials — Scraper conveyors and "en masse" conveyors — Safety code

**iTeh STANDARD PREVIEW**

First edition — 1972-06-15

**(standards.iteh.ai)**

[ISO 2391:1972](https://standards.iteh.ai/catalog/standards/sist/a1a9fd1d-cc5e-4ca2-bb43-caa910a02378/iso-2391-1972)

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UDC 621.867.2 : 614.8

Ref. No. ISO 2391-1972 (E)

**Descriptors** : materials handling equipment, conveyors, scraper conveyors, bulk handling, safety.

Price based on 2 pages

## FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

International Standard ISO 2391 was drawn up by Technical Committee ISO/TC 101, *Continuous mechanical handling equipment*.

It was approved in October 1971 by the Member Bodies of the following countries :

Belgium	Italy	Sweden
Czechoslovakia	Japan	Thailand
Egypt, Arab Rep. of	Netherlands	Turkey
Finland	New Zealand	United Kingdom
France	Poland	U.S.A.
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No Member Body expressed disapproval of the document.

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Printed in Switzerland

# Continuous mechanical handling equipment for loose bulk materials – Scraper conveyors and "en masse" conveyors – Safety code

## 1 SCOPE

This International Standard specifies, in addition to the general safety rules set out in ISO/R 1819, the special safety rules for the following continuous mechanical handling equipment for loose bulk materials : scraper conveyors and "en masse" conveyors.

## 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.

## 3 REFERENCE

ISO/R 1819, *Continuous mechanical handling equipment – Safety code – General rules.*

## 4 SPECIAL SAFETY RULES

The construction and operation for scraper conveyors and "en masse" conveyors shall meet

- the legal and local requirements relating to safety in general<sup>1)</sup>,
- the principles laid down in section 1 of ISO/R 1819,
- the general rules laid down in section 2 of ISO/R 1819,
- the following special rules :

### 4.1 In the construction stage (design and manufacture)

4.1.1 The opening of inspection covers or protective devices liable to expose the moving parts, while the appliance is in operation, is normally prohibited. Where the user informs the manufacturer in writing that he intends to allow persons to open inspection covers or protective devices which will expose the moving parts, fixed supplementary guards which will prevent access to the moving parts shall be provided. For example, a guard having openings of 40 mm x 40 mm shall be placed not less than 100 mm from the nearest moving part.

1) See Appendix Z of ISO/R 1819.

4.1.2 In cases where the appliances are required to convey dangerous or noxious materials, the user shall inform the constructor and specify what special safety measures are to be taken for the construction of the appliances.

4.1.3 In addition to rule 2.1.7 of ISO/R 1819, the chain tracks shall be guarded in areas which are normally accessible to personnel.

### 4.2 During the installation stage (design, commissioning and entry into service)

4.2.1 The casing shall be fitted with great care in order to be effectively sealed in relation to the material being conveyed.

4.2.2 The feeding and discharge chutes shall be so designed as to avoid any blockage or overflow of the conveyed material under normal operating conditions.

4.2.3 Operating personnel shall have easy access to the inspection holes.

4.2.4 The controls of the feeding and discharge flaps, either manually or mechanically operated, shall be easily accessible. They shall be placed so as to permit supervision of the flow.

4.2.5 The openings of feeding or transfer hoppers and chutes shall be guarded if normally accessible to operating personnel. It is recommended that inspection doors on large hoppers and chutes be provided.

### 4.3 During the utilisation stage (operation and maintenance)

4.3.1 No inspection hole shall be opened while the appliance is in operation.

4.3.2 In addition to rule 2.3.3 of ISO/R 1819, it is recommended that special care be taken for maintenance and cleaning of movable parts.

The frequency of maintenance and cleaning operations will depend on the nature of the conveyed materials. These operations shall only be undertaken when the conveyor is at rest, and after rendering the starting devices inoperative.

**4.3.3** In compliance with the present regulations in force it is forbidden for personnel to proceed with the removal of build-up, or to undertake any other operation inside the casing, without previously stopping the appliance and taking the necessary precautions to prevent any accidental starting.

**4.3.4** Access to the unprotected moving parts of the appliance is prohibited to all persons other than the supervisory and maintenance personnel. No action shall be undertaken by the latter before they have stopped the appliance and taken all precautions to prevent it from starting accidentally.

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