Troughed belt conveyors — Specification

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British Standard

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This British Standard has been prepared by Technical Committee MHE/9. It supersedes BS 2890:1989 and BS 5934:1980 which are withdrawn.

BS 8438:2004+A1:2010 supersedes BS 8438:2004, which is withdrawn.

The start and finish of text introduced or altered by amendment No. 1 is indicated in the text by tags $\boxed{\text{A}}$ $\boxed{\text{A}}$. Minor editorial changes are not tagged.

This standard incorporates information previously contained within BS 2890 and BS 5934 and includes requirements with regard to basic conveyor and component selection, typical values for basic calculation purposes and typical conveyor calculation examples. The relationship between the dimensions specified in this British Standard and those published by the International Organization for Standardization (ISO) is also given.

This standard applies to the mechanical parts of troughed belt conveyors on which belts conforming to BS 490-1 are used.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 57 and a back cover.

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1 Scope

This British Standard specifies the mechanical design, dimensional requirements and methods for calculating the operating power requirements for non-mobile troughed belt conveyors incorporating carrying idlers. The standard also specifies methods for calculating the forces exerted on the belt.

This standard applies to conveyors using either rubber or plastic belting, with textile reinforcement (conforming to BS 490-1), carrying loose bulk materials, having a maximum speed of 6 m/s.

This standard does not cover the safeguarding of hazard points. BS EN 620:2002 covers the safeguarding of hazard points on fixed troughed belt conveyors and BS EN 618:2002 deals with safeguarding of hazard points on fixed belt conveyors that are built into or attached to machines.

This standard does not apply to the following categories:

a) underground mining conveyors;

b) conveyors handling materials that do not behave as bulk solids.

NOTE 1 Annex A provides guidance on the information to be supplied by the purchaser at the time of enquiry and/order.

NOTE 2 Portable and mobile conveyors are covered in BS 4531.

NOTE 3 Belt speed in excess of 6 m/s might require analysis of forces not considered in this specification.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 490-1, Conveyor and elevator belting — Part 1: Specification for rubber and plastics conveyor belting of textile construction for general use.

BS 2890, Specification for troughed belt conveyors.

BS 5512, Method of calculating dynamic load ratings and rating life of rolling bearings.

BS 5934 (ISO 5048), Method for calculation of operating power and tensile forces in belt conveyors with carrying idlers on continuous mechanical handling equipment.

BS 6323-5, Seamless and welded steel tubes for automobile, mechanical and genearl engineering purposes — Part 5: Specific requirements for electric resistance welded and induction welded steel tubes.

ISO 3870, Conveyor belts (fabric carcass), with length between pulley centres up to 300 m, for loose bulk materials — Adjustment of take-up device.

ISO 5293, Conveyor belts — Formula for transition distance on three equal length idler rolls.

3 Terms and definitions

For the purposes of this British Standard, the following terms and definitions apply.

NOTE Typical forms of conveyors and their components are shown in Figure 1 and Annex B.

3.1 head of the conveyor discharge end of the conveyor

3.2

carrying idler

idler which supports the loaded belt

3.3

return idler

idler which supports the empty side of the belt

3.4

take-up device

device for taking up slack and applying tension to the belt