

STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 1334.12—1996

Methods of testing conveyor and elevator belting

Method 12: Determination of combustion propagation characteristics of conveyor belting

RECONFIRMATION NOTICE

Technical Committee RU-002 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 22 January 2016.

The following are represented on Technical Committee RU-002:

Australasian Institute of Mining and Metallurgy
Australasian Plastics and Rubber Institute
Australian Chamber of Commerce and Industry
Australian Industry Group
Bureau of Steel Manufacturers of Australia
Department of Industry, Skills and Regional Development (NSW)
Engineers Australia
SafeWork NSW
University of Newcastle

NOTES

Australian Standard®

Methods of testing conveyor and elevator belting

Method 12: Determination of combustion propagation characteristics of conveyor belting*

PREFACE

This Standard was prepared by the Standards Australia Committee on Conveyor and Elevator Belting, to supersede AS 1334.12—1986, and is one of a series for determining the properties of conveyor and elevator belting.

This edition of the Standard includes modifications to the test gallery dimensions to bring it into line with European test galleries, and preparation of the test samples in accordance with DIN 22100. The changes to the samples were considered necessary to cope with steel cord belting with thick covers which would not suffer damage to the core rubbers during the test. The trestle shown in Figure 2 has been stiffened to include a centre longitudinal bar to minimize deflection of the transverse round bars when large test pieces such as steel cord belts are placed on the trestle. A sketch showing the preferred method of restraining the test pieces during test is also provided.

This test has been adopted due to the proven inability of small laboratory scale flame tests to safeguard against propagation of fire along conveyor belting.

METHOD

1 SCOPE This Standard sets out a method for determining the flame propagation characteristics of a horizontally orientated specimen of conveyor belting.

2 APPLICATION This method is primarily used for type approval of conveyor belting for use in underground coal mines.

3 PRINCIPLE Large test pieces (approximately 2 m × 1 m) of belting are, in turn, located horizontally on the trestle of a test gallery in a controlled airstream and subjected (from underneath) to controlled flame from a propane burner for a specified period and then left on the trestle until all flame and glow have disappeared. Measurements of the undamaged length of each test piece are then taken.

4 APPLICATION TO THE ASSESSMENT OF FIRE HAZARD The fire hazard of the belting is a function of the characteristics of the belting. It is related to how belting is installed and how it is used. The environment in which it is present is also of major importance.

* Commonly referred to as the 'Propane Burner Gallery Flame Test'.

Consequently, no single test can give a full assessment of fire hazard under all conditions that may apply. Therefore, there has to be a constant awareness of these interrelated factors and the effects of important variables in using this test to assess the fire hazard in any particular situation.

5 APPARATUS The following apparatus is required:

- (a) A horizontal gallery consisting of a nominal rectangular section, 2.4 m high by 2.5 m wide (through which air current is drawn) and not less than 20 m long.
- (b) Trestle (see Figure 2) 2.20 m long $\times$ 1.25 m wide, with a framework of steel tubing having an external diameter of 10 mm to 25 mm. The upper sides of the frame shall be notched at 75 mm, 150 mm and multiples of 150 mm from the burner end of the frame in order to position and loosely retain 15 18/8 stainless steel bars. The bars shall be 10 mm diameter $\times$ 1.4 m long and shall form the frame on which the test piece rests. The upper surface of the bars shall be 350 mm from the floor.

A tray made from black mild steel in the condition as delivered from the mill may be placed at floor level under the trestle to collect belt debris. The tray may have longitudinal lips not exceeding 130 mm but shall not have any lips at the end.

- (c) Burner (see Figure 3) consisting of a 450 mm square frame, supported so as to have an overall height of 220 mm from the floor, and made of welded steel tubing having an external diameter of 22.5 ± 2.5 mm. The tubing shall have 52 holes, 1.5 ± 0.1 mm in diameter, drilled at 50 mm intervals.
- (d) Fuel supply consisting of bottled gas containing at least 85 percent propane fed through a pressure reducing valve and a length of high pressure hose having a minimum internal diameter of 6 mm. The gas cylinder shall not have been emptied at the end of a test by more than 90 percent of its gas mass capacity. The total mass of gas consumed (at a constant rate) during a 10 min test period shall be 1.30 ± 0.05 kg.

NOTE: This may be achieved by—

- (a) controlling the gas flow through a temperature-compensated mass flow controller which is inserted into the gas pipeline after the reducing valve and calibrated to ensure the correct mass of gas is consumed; or
- (b) controlling the gas pressure at a standard orifice.

The gas is passed through a coil which is immersed in a bath of water at a temperature of $25 \pm 3^\circ\text{C}$. The coil is inserted into the gas pipeline after the reducing valve. A regulator is used to control the gas pressure at approximately 160 kPa when the orifice plate which is 1.7 mm thick with a hole 2.5 mm in diameter, is fitted into the 'handle' of the burner (see Figure 3). A sensitized precision pressure gauge that has been calibrated to ensure consumption of the correct mass of gas is used to monitor the pressure in front of the orifice plate. Alternatively, the orifice plate and sensitive pressure gauge may be replaced by inserting a flowmeter, calibrated to ensure that the correct quantity of gas is consumed, into the gas pipeline after the reducing valve.

6 SAMPLING

6.1 Samples The length of the sample of belting with top and bottom covers of equal specified thickness shall be not less than 4 m. For conveyor belting with top and bottom covers of unequal specified thickness, the length of the sample shall be not less than 6 m.

The width of the sample shall be between 1050 mm to 1200 mm.