

Methods for

Field pressure testing of asbestos-cement pipelines

[ISO title: Asbestos-cement pipelines — Field pressure testing]

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This British Standard, having been prepared under the direction of the Civil Engineering and Building Structures Standards Committee, was published under the authority of the Executive Board and comes into effect on 30 June 1980

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Foreword

This British Standard has been prepared under the direction of the Civil Engineering and Building Structures Standards Committee and is identical with ISO 4483:1979 “*Asbestos-cement pipelines — Field pressure testing*” published by the International Organization for Standardization (ISO). ISO 4483 was produced as a result of international discussions in which the United Kingdom took an active part.

Terminology and conventions. The text of the International Standard has been approved as suitable for publication, without deviation, as a British Standard. Some terminology and certain conventions are not identical with those used in British Standards; attention is especially drawn to the following.

The comma has been used throughout as a decimal marker. In British Standards it is current practice to use a full point on the baseline as the decimal marker.

Where the words “International Standard” appear, referring to this standard, they should be read as “British Standard”.

Cross-references

International Standard	Corresponding British Standard
ISO 4482:1979	BS 5927 <i>Guide for laying asbestos-cement pipelines</i> ^a

^a In course of preparation.

The references to ISO 160, ISO 881 and ISO 2785, for which there are no corresponding British Standards, constitute informative matter only, and since no mandatory requirements are involved, the validity of this British Standard is not affected.

The related British Standard for ISO 160 is BS 486.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 6, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope and field of application

This International Standard applies to the field pressure testing of asbestos-cement pipelines, above or below ground, conveying fluids, with or without internal hydraulic pressure and consisting of pipes referred to in ISO 160¹⁾ and ISO 881¹⁾.

It outlines the basic methods of pressure testing these types of asbestos-cement pipelines.

2 References

ISO 160, *Asbestos-cement pressure pipes and joints*¹⁾.

ISO 2785, *Guide to the selection of asbestos-cement pipes subject to external loads with or without internal pressure*.

ISO 4482, *Asbestos-cement pipelines — Guide for laying*.

3 General

For pressure pipelines, two main types of tests are specified:

- **Type 1:** Pressure testing carried out as a single operation on individual test sections.
- **Type 2:** Testing of each coupling carried out progressively with pipe laying, followed by pressure testing of the completed pipeline as a whole (applicable only to diameters 900 mm and above).

4 Type 1 method for testing pressure pipelines in trench

4.1 Length of test section

The length of the section shall be indicated by the pipeline designer, taking into account local factors such as contour of the pipeline, weather conditions, traffic, time available before completion of the trench backfill, location of permanent concrete anchorage, availability of test water and of suitable anchorage for temporary end-closures, etc.

The length of the test section should normally be from 500 to 1 000 m. Longer sections may be permitted, always provided that, during the test, the pressure at the highest point of the section is not less than 0,8 times the pressure at the lowest point.

4.2 Preparation of the section to be tested

4.2.1 Backfilling before the test

4.2.1.1 Partial backfill

The pipes comprising the test section shall be anchored by partially backfilling the trench, according to the procedure of ISO 4482, to at least 300 mm above the crown of pipes not exceeding 200 mm diameter, and to about 500 mm for pipes of larger diameter.

The backfill shall be placed and compacted so that the internal pressure will not give rise to any transverse or vertical displacement of the pipes. The joints should remain uncovered for visual inspection during the test.

4.2.1.2 Complete backfill

As an alternative to partial backfill before testing, the pipeline installer, in agreement with the pipeline designer, may backfill the pipeline completely before pressure testing, provided that the pipeline installer undertakes to locate and uncover leakage indicated by testing.

4.2.2 Anchorage

The pressure test shall be carried out after all permanent anchor blocks have been placed (as required by ISO 4482 or specified by the pipeline designer) and, if of concrete, have developed adequate strength. Temporary anchorage for closure caps on test sections shall be designed to suit the magnitude of the test pressure and the load-bearing capacity of the supporting soil, as in the case of permanent anchorage.

4.2.3 Filling of the test section²⁾

The section of the pipeline to be tested shall be filled with water at a rate sufficiently slow to ensure that all air is expelled. The water should preferably be introduced at the lowest point of the section under test. Air vents shall be kept open during filling until there is no further escape of air.

Consideration may additionally be given to the removal of air by passing a suitable swab through the test section, provided that it has been constructed to allow the passage of such a plug.

¹⁾ At present at the stage of draft.

²⁾ The recommended rate of filling should be based on a flow velocity of 0,05 m/s, and calculated by the following formula:

$$Q = 0,05 \times \frac{\pi}{4} \times \frac{d^2}{1\,000}$$

where

Q is the rate of filling, in litres per second;

d is the internal diameter of the pipe, in millimetres.