## INTERNATIONAL STANDARD



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## Plastics piping systems — Multilayer pipes — Determination of the oxygen permeability of the barrier pipe

Systèmes de canalisations en plastiques — Tubes multicouches — Détermination de la perméabilité à l'oxygène de la couche barrière d'un tube



Reference number ISO 17455:2005(E)

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## Foreword

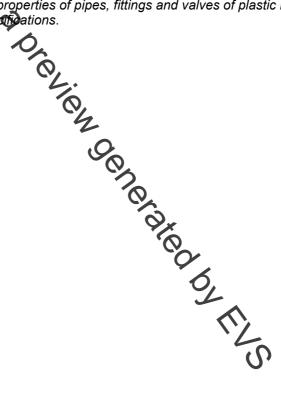
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ISO 17455 was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 5, *General properties of pipes, fittings and valves of plastic materials and their accessories* — Test methods and basic specifications.



## Introduction

In response to the worldwide demand for specifications, requirements and test methods for multilayer pipes, WG 16 of ISO/TC 138/SC 5 was created at a meeting held in Kyoto, Japan, in 1998. The working group then started drafting three test standards (including ISO 17455) for multilayer pipes:

- ISO 17456, Plastics piping systems Multilayer pipes Determination of long-term strength;
- ISO 17454, Plastics piping systems Multilayer pipes Test method for the adhesion of the different layers by using a pulling rig.

So firsts, indees pulling rig. Only multilayer pipes are dealt with in this International Standard and for these purposes cross-linked polyethylene (PE-X) as well a adhesives are to be considered as a thermoplastics material.

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# Plastics piping systems — Multilayer pipes — Determination of the oxygen permeability of the barrier pipe

## 1 Scope

This International Standard specifies two test methods for determining the oxygen permeability of barrier pipe: the dynamic (Method Q and the static (Method II). In principle, both methods give the same results. The method to be applied is no application-dependent, but can be specified in the referring standard.

### 2 Principle

The principle is measurement of the oxygen transfer through the wall of the test piece under specified conditions.

The oxygen increase is measured in a system of which the test piece forms part. Oxygen can only be transported through the wall of the test piece. Therefore, the increased amount of oxygen in the closed system is the result of the functioning of the barrier layer of the test piece.

NOTE A certain continuous oxygen permeation why the barrier layer is allowed.

#### 3 Terms and definitions

For the purposes of this document, the following terms are finitions apply.

#### 3.1

#### multilayer pipe

pipe comprising layers of different materials

#### 3.2

#### multilayer M pipe

multilayer pipe comprising layers of polymers and one or more metal layer

NOTE The wall thickness of the pipe consists of at least 60 % polymer layers.

#### 3.3

#### multilayer P pipe

multilayer pipe comprised of two or more polymer layers

#### 3.4

#### inner layer

layer in contact with the liquid or gas

#### 3.5

outer layer layer exposed to the outer environment