
Low temperature sealing capability of elastomeric seals — Test methods

*Capacité d'étanchéité à basse température des joints en élastomère —
Méthodes d'essai*





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Foreword

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Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

There are several existing specifications to determine the low-temperature characteristics of elastomeric seal materials. There are also proprietary functional test procedures that aim to identify the minimum operating temperature for seals; however, all of these rely on the seal being energized by the pressure of the test fluid before being subjected to low temperature.

This specification gives details of a test procedure to act as a guide to the minimum operating temperature of elastomeric seals when used in static sealing applications when pressure is applied after cooling, the more commonly encountered situation.

Low temperature sealing capability of elastomeric seals — Test methods

1 Scope

This specification details a test method for static O-ring seals in elastomeric materials which are subject to pressurized gas media at low temperatures. It gives guidance on the design of test equipment, standard test parameters, and reporting criteria. It does not specify performance criteria that should be agreed upon between supplier and customer.

The test procedure may be used to test seals of alternate size and design or using alternative media but such deviations shall be detailed separately on the report form and the results shall not be used to determine the minimum operating temperature of seals of any other configuration than that tested.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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:

ISO 3601-1, *Fluid power systems — O-rings — Part 1: Inside diameters, cross-sections, tolerances and designation codes*

ISO 3601-2, *Fluid power systems — O-rings — Part 2: Housing dimensions for general applications*

ISO 3601-3, *Fluid power systems — O-rings — Part 3: Quality acceptance criteria*

ISO 5598, *Fluid power systems and components — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms, and definitions given in ISO 5598 apply and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

minimum seal temperature

minimum temperature at which the test seal holds the test pressure at the end of the test

3.2

zero leakage

gas leak rate considered to be negligible for the purposes of the test and equal to a displacement of less than 20 cm³/h equivalent to no discernible bubbles

Note 1 to entry: The zero leakage is as defined as in ISO 10423.

3.3

room temperature

standard temperature of the test facility usually considered to be in the range of (20 ± 5) °C