
International Standard



6303

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Pressure vessel steels not included in ISO 2604, Parts 1 to 6 — Derivation of long-time stress rupture properties

Produits en acier pour récipients à pression ne figurant pas dans l'ISO 2604, Parties 1 à 6 — Dérivation des propriétés de rupture sous contrainte prolongée

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Descriptors : steels, pressure vessels, mechanical properties, rupture stress, tests, sampling, test specimen conditioning.

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 6303 was developed by Technical Committee ISO/TC 17, *Steel*, and was circulated to the member bodies in November 1979.

It has been approved by the member bodies of the following countries :

Australia	India	Romania
Austria	Italy	South Africa, Rep. of
China	Japan	Spain
Czechoslovakia	Korea, Dem. P. Rep. of	Sweden
Denmark	Korea, Rep. of	Switzerland
Egypt, Arab Rep. of	Netherlands	United Kingdom
Finland	New Zealand	USSR
France	Norway	
Germany, F. R.	Poland	

The member body of the following country expressed disapproval of the document on technical grounds :

Belgium

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0 Introduction

In the ISO rules for the construction of stationary boilers (ISO/R 831) and the draft rules for the construction of unfired pressure vessels, mean stress for rupture in 100 000 h is listed as an alternative design criterion.

International Standards for pressure vessel steels contain mean values for stress to give rupture in 100 000 h and longer times which have been internationally agreed. For products supplied to these International Standards or national standards conforming with the relevant International Standards, the stress rupture values given in the International Standards are valid provided that

- a) the product has been manufactured strictly in accordance with the technical requirements of the relevant International Standard;
- b) the manufacturer supplies a statement to this effect.

In all other cases, it is necessary to assure the manufacturer of the vessel that the product supplied is capable of meeting the values given in a national standard or other specification

- a) by adequate records of test results on the type of steel concerned, and
- b) by a statement that the manufacturing processes have remained equivalent to those of the steel for which the test results were obtained.

A method of extrapolation used in analyses of creep rupture data is given in the annex.

1 Scope and field of application

This International Standard defines a procedure for obtaining and for assessing the data necessary to establish long-time stress rupture values of steels for pressure purposes

- a) for a steel not included in ISO 2604, Parts 1 to 6;

- b) where properties different from those internationally agreed are being claimed (for example, in instances where a standard specifies a restricted or extended composition or heat-treatment range).

The purpose of specifying a standard procedure is to minimize any differences in long-time estimates obtained in different countries due to

- a) differences in the quantity and duration of the data used to establish the estimates;
- b) differences in the method of analysing the data.

Details of the method of extrapolation used in the analysis of creep rupture data are given in the annex.

2 References

ISO/R 206, *Creep stress rupture testing of steel at elevated temperatures*.

ISO/R 831, *Rules for construction of stationary boilers*.

3 General

The stress rupture strength of a steel depends upon various factors, including the thermal history and the chemical composition, which includes residual and trace elements. Consequently, a number of samples have to be tested in order to estimate both the average stress rupture strength and the scatter in results.

The accuracy to which estimates of scatter and of average stress rupture strengths are made, depend in turn upon the number of samples tested; the manner in which samples are selected for testing, in relation to permitted heat treatment and compositional ranges in specifications; the influence of testing technique and the extent and method of extrapolation. It is necessary, therefore, to give attention to these factors when considering the validity of data and long-time estimates.