
International Standard



6178

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

Centrifuges — Construction and safety rules — Method for the calculation of the tangential stress in the shell of a cylindrical centrifuge rotor

Centrifugeuses — Règles de construction et de sécurité — Méthode pour le calcul des contraintes tangentielles des viroles de rotors cylindriques

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (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 authorized 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 6178 was developed by Technical Committee ISO/TC 72, *Textile machinery and allied machinery and accessories*, and was circulated to the member bodies in April 1982.

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

Australia	India	Spain
Belgium	Indonesia	Switzerland
Czechoslovakia	Japan	Turkey
Egypt, Arab Rep. of	Romania	USSR
France	South Africa, Rep. of	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Germany, F. R.
Italy
United Kingdom

Centrifuges — Construction and safety rules — Method for the calculation of the tangential stress in the shell of a cylindrical centrifuge rotor

0 Introduction

This International Standard has been established by ISO/TC 72 in response to the requirements of the majority of its members. It is understood that the contents of this International Standard cover fields other than textile machinery and therefore the Central Secretariat of ISO, which is responsible for the co-ordination of technical work, and ISO/TC 72 will ensure that this International Standard is reviewed when necessary in the light of future ISO publications and will be withdrawn should the occasion arise.

1 Scope and field of application

This International Standard gives

- regulations relating to the construction and safety of certain centrifuges;
- a method of calculation of the tangential stress of cylindrical centrifuge rotors.

2 Field of application

2.1 These construction and safety rules do not apply to the following centrifuges, which are expressly excluded from the field of application of this International Standard :

- centrifuges in which the kinetic energy of the loaded rotor is less than 750 J;
- centrifuges considered to be electric motor-driven domestic machines;
- centrifuges with a circumferential speed greater than 300 m/s;
- centrifuges used exclusively for the processing of atomic energy products.

2.2 The method of calculation of tangential stress of cylindrical centrifuge rotors described in clause 5 is applicable to centrifuges having a cylindrical rotor of constant wall

thickness, perforated or unperforated, having either a horizontal or a vertical axis of rotation, lined or unlined, with or without filter.

The method is applicable only to rotors constructed from ductile metallic materials, it having been assumed that in selection of the material due account has been taken of the possible effects of operating temperature on the properties of the material; it does not hold good for centrifuge rotors with a ratio of wall thickness to radius :

$$\frac{\delta}{r_2} > 0,1$$

It can be applied in an analogous manner to centrifuge rotors with holes which are not circular.

3 Definition

For the purpose of this International Standard, the following definition applies.

3.1 centrifuge : A machine designed for the separation of two liquid phases, or of one solid phase held in suspension in one or more liquids, or for the drying of solid products, by means of centrifugal force produced by the rotation of a rotor.

This rotor is commonly called a “basket” when its wall is perforated and a “bowl” when it is not perforated.

4 Construction and safety rules

4.1 Choice of materials of construction

4.1.1 The choice of materials of construction will be guided by consideration of the mechanical stresses and fatigue properties.

4.1.2 The materials used shall have appropriate properties for the intended application and shall take corrosion and abrasion into account.

4.1.3 All parts of a centrifuge shall be constructed and assembled carefully in accordance with good engineering practice.