First edition
1998-10-01

# Vitreous and porcelain enamels — Release of lead and cadmium from enamelled ware in contact with food —

## Part 1:
Method of test

*Émaux vitrifiés — Émission de plomb et de cadmium d'articles émaillés en contact avec les aliments —*

*Part 1: Méthode d'essai*

Reference number
ISO 4531-1:1998(E)

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 4531-1 was prepared by Technical Committee ISO/TC 107, *Metallic and other inorganic coatings*, Subcommittee SC 6, *Vitreous and porcelain enamels*.

ISO 4531 consists of the following parts, under the general title *Vitreous and porcelain enamels — Release of lead and cadmium from enamelled ware in contact with food*:

— *Part 1: Method of test*

— *Part 2: Permissible limits*

The Bibliography is for information only.



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## Introduction

The problem of lead and cadmium release from enamelled ware requires effective means of control to ensure the protection of the population against possible hazards arising from the use of improperly formulated, applied and fired enamels and/or decorations on the food contact surfaces of enamelled ware used for the preparation, serving and storage of foodstuffs.

NOTE Articles which are highly coloured or decorated on their food contact surfaces or which have a high surface area/volume ratio are more likely than other articles to release lead and/or cadmium.

As a secondary consideration, different requirements from country to country for the control of the release of toxic materials from the surfaces of enamelled ware present non-tarif barriers to international trade in these commodities. Accordingly, there is a need to establish internationally accepted methods of testing enamelled ware for the lead and cadmium release.

An expert panel convened by the World Health Organization (WHO) met in Geneva, in June 1976, and recommended the adoption of sampling methods, testing procedures and limits for the release of toxic materials from ceramic ware [6]. A further meeting was convened by the WHO in November 1979 [7].

The method of test specified in this part of ISO 4531 is based on those WHO recommendations, because it was the sense of the WHO meeting that the term "ceramic" includes ceramics, glass, vitreous enamels and glass ceramics. The description of the test method is largely in accordance with EN 1388-2 dealing with the determination of the release of lead and cadmium from silicate surfaces other than ceramic ware.

The amount of lead and/or cadmium determined by the method of test specified in this part of ISO 4531 will not be less than, and in the vast majority of cases will be greater than, the quantities released into acidic foods and drinks over a period of time [8]. If WHO recommendations were to include hot testing at any time then a new edition of this part of ISO 4531 should be considered.