AS 2070.4—1992

Australian Standard®

Plastics materials for food contact use

Part 4: Acrylonitrile plastics materials

STANDARDS AUSTRALIA

This Australian Standard was prepared by Committee FT/8, Plastics for Food Contact. It was approved on behalf of the Council of Standards Australia on 10 July 1992 and published on 12 October 1992.

The following interests are represented on Committee FT/8:

Australian Federation of Consumer Organizations

Australian Government Analytical Laboratories

Australian Institute of Food Science and Technology

Confederation of Australian Industry

Council of Australian Food Technology Associations

CSIRO, Division of Food Processing

Department of Health, N.S.W.

Health Department, Vic.

Health Department, W.A.

National Food Authority

Packaging Council of Australia

Plastics Industry Association

Queensland Health

University of New South Wales

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Amendment No. 1
to
AS 2070.4—1992
Plastics materials for food contact use

Part 4: Acrylonitrile plastics materials

REVISED TEXT

The 1992 edition of AS 2070.4 is amended as follows; the amendment should be inserted in the appropriate place.

SUMMARY: This Amendment applies to Clause 5.

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AMDT No. 1 AUG. 1993

Page 7 Clause 5

Delete Clause 5 and *substitute* the following:

5 MARKING All packages or bulk containers containing acrylonitrile plastics materials for food contact use shall be clearly and durably marked with the following information:

(a) The name, trademark or other adequate means of identifying the manufacturer.

(b) An identifying batch code or number.

(c) The name and grade of the compound.

(d) The designating mark 'Food Contact' in letters not smaller than the letters used to identify the name and grade of the compound. The designating mark shall be placed immediately following or immediately under the name and grade of the compound.

NOTE: Manufacturers making a statement of compliance with this Australian Standard on a product, packaging, or promotional material related to that product are advised to ensure that such compliance is capable of being verified.

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PREFACE

This Standard was prepared by the Standards Australia Committee on Plastics for Food Contact to supersede AS 2070.4—1979.

The Standard is one of a series which specify the requirements for plastics materials used in the manufacture of plastics items for food contact use. This Standard deals with acrylonitrile plastics materials while other Standards in the series specify requirements for various other plastics materials for food contact use and also for colourants which may be incorporated in the plastics materials. One of the series (see below) lists the chemical compounds which may be added for various reasons to the plastics materials and specifies the permitted levels of use of these additives and any restrictions on their use.

In this edition the specification for acrylonitrile plastics material for food contact use is substantially the same as in the 1979 edition except for the list of permitted additives which has been amended as new additives have been approved or existing additives deleted. These additives were listed in a Table in the previous edition but have been removed from this Standard and are now published separately in AS 2070, *Plastics materials for food contact use*, Part 8: *Miscellaneous additives* which provides a complete list of additives which may be used in the various plastics materials covered by the AS 2070 series.

A guide for the manufacture of plastics for food contact use has been published as AS 2171, *Guide to the manufacture of plastics items for food contact applications* and it is emphasized that the AS 2070 series of Standards needs to be used in combination with AS 2171 when manufacturing plastics items for food contact use, e.g. for food processing equipment, food utensils and the plastics component of food packaging materials.

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FOREWORD

Acrylonitrile polymers as produced may be used with or without further additives to manufacture plastics items for food contact use. In some cases, the plastics materials manufacturer or the compounder may incorporate additives such as colourants into the polymer.

The packaging and processing of food introduces the possibility of the migration or transfer of substances from the plastics packaging or wrapping materials into the food. It is essential that the formulation of the plastics materials is such that any migration of substances into the food from the plastics packaging or wrapping materials is minimized and if migration occurs no known toxic hazard will exist to the consumer of the food.

Toxic effects generally can be either acute, being more or less immediate following a single dose of a toxic substance as is the case in most forms of accidental poisoning, or chronic, as a result of repeated ingestion of a number of small doses each in themselves insufficient to cause an immediate acute reaction but in the long term having a cumulative effect.

The occurrence of acute toxicity due to plastics materials in contact with food is most unlikely since only trace quantities of potentially toxic materials are likely to migrate. Chronic effects however are possible where small quantities of biologically active substances transfer from packaging materials and are ingested in small amounts over a long period of time.

The high-molecular-mass polymer itself does not pose a toxic hazard, being inert and essentially insoluble in food.

In the preparation of the plastics material, numerous additives are used and the nature of these is dependent on the type of polymer being produced. Examples of the additives which may be used are catalysts, suspension and emulsifying agents, stabilizers and polymerization inhibitors. These additives are bound either chemically or physically into the polymer and may be present in their original or altered form. In addition, the polymerization process may leave trace quantities of residual monomer or low-molecular-mass polymer in the product. It is therefore necessary to specify the purity of the polymer to be used in the preparation of plastics materials intended for food contact use.

It is also necessary to consider the migration of substances from the plastics packaging materials and their levels in the food. The extent to which migration occurs will depend upon such factors as the contact area, the rate of transfer, the type of plastics material, the temperature and the contact time. It is therefore necessary to consider the intrinsic toxicity of each ingredient in the plastics material, and its ability to migrate under extreme conditions in an original or altered form and the amounts of such ingredients which may be safely ingested.

The migration of substances from the packaging into the food is also related to the type of food packaged in the plastics material. For example, foods such as alcoholic beverages, and edible fats and oils may extract substances more readily than dry foods such as cereals.

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1 SCOPE This Standard specifies requirements for acrylonitrile plastics materials including acrylonitrile butadiene styrene (ABS) and styrene acrylonitrile (SAN) (in the form of granules or powder) for use in the manufacture of plastics items for food contact use. It does not apply to acrylonitrile dispersions.

NOTE: This Standard is not intended to apply to nitrile barrier resins which contain less than 50 percent styrene-derived material.

2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS
1886 Glossary of terms relating to plastics
2070 Plastics materials for food contact use
2070.6 Part 6: Colourants
2070.8 Part 8: Miscellaneous additives

3 DEFINITIONS For the purpose of this Standard, the terms given in AS 1886 apply.

4 COMPOSITION OF ACRYLONITRILE POLYMERS

4.1 General requirements Acrylonitrile polymers shall have a rigid thermoplastic phase as specified in Clause 4.3, and may contain a dispersed elastomeric phase as specified in Clause 4.4.

The rigid phase of acrylonitrile polymers shall contain at least 50 percent by mass of styrene, α-methylstyrene or vinyl toluene.

Acrylonitrile polymers shall contain not less than 5 percent by mass of units derived from the Group B monomers listed in Clause 4.3(b).

All polymers used in the production of acrylonitrile polymers shall comply with the appropriate Parts of this Standard.

Where additives are required in the production of acrylonitrile plastics materials, only those substances specified in Clauses 4.5 to 4.10 shall be used.

4.2 Residual monomers The total content of Group A monomers (see Clause 4.3(a)), except acrylic and methacrylic acid esters, remaining in the acrylonitrile plastics material shall not exceed 0.5 percent by mass.

The total content of Group B monomers (see Clause 4.3(b)), excluding acrylonitrile monomer, remaining in the acrylonitrile plastics material shall not exceed 0.01 percent by mass.

NOTE: The acrylonitrile monomer content of the plastics packaging material and packages should meet the requirements of the Australian Food Standards Code.*

Where in another Part of this Standard a specific residual monomer content is specified, it shall also apply to acrylonitrile plastics materials.

In addition to the foregoing restrictions, the total content of other monomers, including acrylic and methacrylic acid esters, remaining in the acrylonitrile plastics material shall not exceed 0.2 percent by mass.

4.3 Rigid thermoplastic phase The rigid thermoplastic phase shall consist of one or more polymers each made by the copolymerization of at least one of the monomers listed in Group A, together with at least one of the monomers listed in Group B. The monomers listed in Group C may also be used in the production of the thermoplastic phase.

(a) *Group A monomers*:

(i) Styrene.

(ii) Alkyl-substituted styrenes.

(iii) Halogen-substituted styrenes.

(iv) Acrylic and methacrylic acid esters.

* Published by the National Food Authority, Canberra.