

Microbiological examination for dairy purposes —

**Part 3: Methods for detection and/or
enumeration of specific groups of
microorganisms —**

Section 3.9 Detection of *Salmonella* —

**Subsection 3.9.2 Screening method
using electrical conductance**

IMPORTANT NOTE. It is essential that Parts 0 and 1 and Section 2.1, which are published separately, be read in conjunction with this Subsection.

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Agriculture and Food Standards Policy Committee (AFC/-) to Technical Committee AFC/14, upon which the following bodies were represented:

- AFRC Institute of Food Research
- Association of British Preserved Milk Manufacturers
- Association of Public Analysts
- British Food Manufacturing Industries Research Association
- British Laboratory Ware Association
- Campden Food and Drink Research Association
- Dairy Trade Federation
- Department of Agriculture Northern Ireland
- Department of Trade and Industry (Laboratory of the Government Chemist)
- Milk Marketing Board
- Milk Marketing Board for Northern Ireland
- Ministry of Agriculture, Fisheries and Food
- Public Health Laboratory Service
- Scottish Milk Marketing Board
- Society for Applied Bacteriology
- United Kingdom Dairy Association

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Foreword

This Subsection of BS 4285 has been prepared under the direction of the Agriculture and Food Standards Policy Committee.

BS 4285-3.9:1987 describes a classical method for the detection of *Salmonella*. It has been renumbered as Subsection 3.9.1 to allow the following screening test using electrical conductance to be issued as Subsection 3.9.2.

This Subsection incorporates the isolation and confirmation procedures described in ISO 6785:1985 *Milk and milk products — Detection of Salmonella*, but it is technically different from that standard principally because it allows a choice of at least two of the selective solid media from the four described.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This Subsection of BS 4285 describes a screening method for the detection of *Salmonella* in milk products and other dairy products using electrical conductance.

WARNING. It is essential to observe the safety precautions in clause 5.

2 References

2.1 Normative references

This Part of BS 4285 incorporates, by reference, provisions from specific editions of other publications. These normative references are cited at the appropriate points in the text and the publications are listed on the inside back page. Subsequent amendments to, or revisions of, any of these publications apply to this Subsection of BS 4285 only when incorporated in it by updating or revision.

2.2 Informative references

This Subsection of BS 4285 refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back page, but reference should be made to the latest editions.

3 Definitions

For the purposes of this British Standard, the following definitions apply.

3.1

salmonella

microorganisms which change the conductance of the selective media in a typical manner, form typical colonies on solid selective media and which display the biochemical and serological characteristics described when the tests are carried out in accordance with this standard

3.2

detection of *Salmonella*

determination of the presence or absence of these microorganisms, in a particular mass or volume of product, when the tests are carried out in accordance with this standard

4 Principle

4.1 General

The detection of *Salmonella* by electrical techniques necessitates four successive stages as described in 4.2 to 4.5 (see Figure 1).

4.2 Pre-enrichment in liquid medium

The non-selective pre-enrichment broth is inoculated with the test portion and incubated at 37 °C for 16 h to 20 h.

4.3 Enrichment and detection in selective liquid media

One or two selective media in conductance cells are inoculated with the culture obtained from 4.2 and incubated at 37 °C in an electrical impedance detection unit. This allows the selective growth of *Salmonella* during which specific substrates are metabolized causing a change in the electrical conductivity of the medium that is indicative of the presence of the organism. The diagnostic reactions are dependent on the fermentation of mannitol or dulcitol with the simultaneous reduction of trimethylamine-*N*-oxide, and/or the decarboxylation of lysine. The incubation period shall be not less than 24 h at 37 °C.

4.4 Plating out and recognition

From the cultures obtained (see 4.3), two selective solid media are inoculated.

The two selective solid media, are incubated at 37 °C and examined after 20 h to 24 h and, if necessary, after 40 h to 48 h to check for the presence of colonies which, from their characteristics, are considered to be presumptive *Salmonella*.

4.5 Confirmation

Colonies of presumptive *Salmonella* (see 4.4) are sub-cultured and confirmed by means of appropriate biochemical and serological tests.

5 Safety precautions

5.1 The procedure specified in this Subsection of BS 4285 shall be carried out only in laboratories with suitable facilities and under the control of a qualified microbiologist.

5.2 These procedures shall not be performed in quality control laboratories, or in food manufacturing or processing premises, where there is a risk of contamination of the environment.

5.3 Full bacteriological precautions shall be taken at all times whilst carrying out the procedure specified in this Subsection of BS 4285. Particular attention shall be given to the sterilization of used equipment and media after testing suspect samples and prior to disposal or re-use.

6 Culture media, reagents and sera

6.1 Basic materials

To improve the reproducibility of the results, it is recommended that dehydrated basic components or complete dehydrated media should be used for the preparation of culture media. The manufacturer's instructions shall be rigorously followed when preparing the culture media.