



BSI Standards Publication

**Microbiology of the food chain  
— Polymerase chain reaction  
(PCR) for the detection of food-  
borne pathogens — Detection  
of botulinum type A, B, E and F  
neurotoxin-producing clostridia  
(ISO/TS 17919:2013)**

**National foreword**

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A list of organizations represented on this committee can be obtained on request to its secretary.

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Mikrobiologie von Lebensmitteln, Futtermitteln und Umgebungsproben - Polymerase-Kettenreaktion (PCR) zum Nachweis von pathogenen Mikroorganismen in Lebensmitteln - Nachweis von Botulinum-Neurotoxin-Typ A, B, E und F produzierenden Clostridien (ISO/TS 17919:2013)

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## Foreword

This document (CEN ISO/TS 17919:2013) has been prepared by Technical Committee ISO/TC 34 "Food products" in collaboration with Technical Committee CEN/TC 275 "Food analysis - Horizontal methods" the secretariat of which is held by DIN.

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### Endorsement notice

The text of ISO/TS 17919:2013 has been approved by CEN as CEN ISO/TS 17919:2013 without any modification.

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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 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.

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- an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;
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An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

ISO/TS 17919 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 275 *Food analysis — Horizontal methods*, in collaboration with Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 9, *Microbiology*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

## Introduction

Botulinum neurotoxin-producing clostridia are ubiquitous in the environment. Botulism is a severe neuromuscular disease resulting from the action of botulinum neurotoxins (BoNTs). Seven different serotypes of BoNTs (type A to G) and a number of subtypes have been identified to date.

BoNT type A (BoNT/A), type B (BoNT/B), type E (BoNT/E) and type F (BoNT/F) are mainly responsible for botulism in humans and the genes encoding these toxins are the targets of this Technical Specification. BoNT type A, B, E, and F-producing clostridia exist in four physiologically distinct groups (Group I *Clostridium botulinum*, Group II *C. botulinum*, *C. baratii*, *C. butyricum*).

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# Microbiology of the food chain — Polymerase chain reaction (PCR) for the detection of food-borne pathogens — Detection of botulinum type A, B, E and F neurotoxin-producing clostridia

## 1 Scope

This Technical Specification specifies a horizontal method for the molecular detection of clostridia carrying botulinum neurotoxin A, B, E, and F genes by a PCR method. This method detects the genes and not the toxins, therefore a positive result does not necessarily mean the presence of these toxins in the sample investigated. This Technical Specification is applicable to products for human consumption, animal feed, and environmental samples.

The PCR assays for detection of genetic sequences encoding specific toxin types are described in [Annexes B](#) and [C](#).

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 6887-1, *Microbiology of food and animal feeding stuffs — Preparation of test samples, initial suspension and decimal dilutions for microbiological examination — Part 1: General rules for the preparation of the initial suspension and decimal dilutions*

ISO 7218, *Microbiology of food and animal feeding stuffs — General requirements and guidance for microbiological examinations*

ISO 11133, *Microbiology of food, animal feed and water — Preparation, production, storage and performance testing of culture media*

ISO 20837, *Microbiology of food and animal feeding stuffs — Polymerase chain reaction (PCR) for the detection of food-borne pathogens — Requirements for sample preparation for qualitative detection*

ISO 20838:2006, *Microbiology of food and animal feeding stuffs — Polymerase chain reaction (PCR) for the detection of food-borne pathogens — Requirements for amplification and detection for qualitative methods*

ISO 22174, *Microbiology of food and animal feeding stuffs — Polymerase chain reaction (PCR) for the detection of food-borne pathogens — General requirements and definitions*

## 3 Terms and definitions

For the purpose of this document, the terms and definitions given in ISO 22174 apply.

## 4 Symbols and abbreviated terms

### 4.1 Symbols

*c* substance concentration