



BSI Standards Publication

# **Foodstuffs — Detection of food allergens by molecular biological methods**

Part 4: Peanut (*Arachis hypogaea*) —  
Qualitative detection of a specific DNA  
sequence in chocolate by real-time PCR

**National foreword**

This Published Document is the UK implementation of CEN/TS 15634-4:2016.

The UK participation in its preparation was entrusted to Technical Committee AW/275, Food analysis - Horizontal methods.

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

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**Foodstuffs - Detection of food allergens by molecular  
biological methods - Part 4: Peanut (*Arachis hypogaea*) -  
Qualitative detection of a specific DNA sequence in  
chocolate by real-time PCR**

Produits alimentaires - Détection d'allergènes  
alimentaires par des méthodes de biologie moléculaire  
- Partie 4 : Arachide (*Arachis hypogaea*) - Détection  
qualitative d'une séquence d'ADN spécifique dans du  
chocolat, par PCR en temps réel

Lebensmittel - Nachweis von Lebensmittelallergenen  
mit molekularbiologischen Verfahren - Teil 4: Erdnuss  
(*Arachis hypogaea*) - Qualitativer Nachweis einer  
spezifischen DNA-Sequenz in Schokolade mittels Real-  
time PCR

This Technical Specification (CEN/TS) was approved by CEN on 11 February 2016 for provisional application.

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## European foreword

This document (CEN/TS 15634-4:2016) has been prepared by Technical Committee CEN/TC 275 “Food analysis - Horizontal methods”, the secretariat of which is held by DIN.

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EN 15634, Foodstuffs — Detection of food allergens by molecular biological methods, is currently composed with the following parts:

- Part 1: General considerations;
- Part 2: Celery (*Apium graveolens*) — Qualitative determination of a specific DNA sequence in cooked sausages by real-time PCR [Technical Specification];
- Part 3: Hazelnut (*Corylus avellana*) — Qualitative detection of a specific DNA sequence in chocolate by real-time PCR [Technical Specification];
- Part 4: Peanut (*Arachis hypogaea*) — Qualitative detection of a specific DNA sequence in chocolate by real-time PCR [Technical Specification];
- Part 5: Mustard (*Sinapis alba*) and soya (*Glycine max*) — Qualitative detection of a specific DNA sequence in cooked sausages by real-time PCR [Technical Specification].

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## 1 Scope

This Technical Specification describes a procedure for the qualitative detection of peanut (*Arachis hypogaea*) in chocolate using real-time PCR based on the gene for the peanut allergen Ara h 2 [4], [5].

## 2 Principle

The total DNA is extracted from the sample and the DNA content estimated. A sequence specific to peanut from the gene for Ara h 2 is multiplied using real-time PCR. The amplicon with a length of 86 base pairs (bp) formed in this way is detected by annealing a sequence-specific probe and generating a fluorescence signal [4].

## 3 Reagents

As a rule, analytical grade chemical reagents suitable for molecular biology shall be used. The water used shall be double distilled or equivalent quality. Solutions should be prepared by dissolving the appropriate reagents in water and autoclaving, unless indicated differently.

### 3.1 DNA extraction with CTAB

#### 3.1.1 Chloroform.

#### 3.1.2 Ethanol, volume fraction $\varphi = 96\%$ .

#### 3.1.3 Ethylenediaminetetraacetic acid disodium salt ( $\text{Na}_2\text{EDTA}$ ).

#### 3.1.4 Cetyltrimethylammoniumbromide (CTAB).

#### 3.1.5 Hydrochloric acid, mass fraction $w = 37\%$ .

#### 3.1.6 Isoamyl alcohol.

#### 3.1.7 Isopropanol.

#### 3.1.8 Proteinase K.

#### 3.1.9 Sodium chloride.

#### 3.1.10 Sodium hydroxide.

#### 3.1.11 Tris(hydroxymethyl)aminomethane (TRIS).

#### 3.1.12 Chloroform isoamyl alcohol mixture.

Mix 24 parts by volume of chloroform (3.1.1) with one part by volume of isoamyl alcohol (3.1.6).

Commercially available and comparable mixtures can be used.

**3.1.13 CTAB extraction buffer solution**, containing CTAB (mass concentration  $\rho = 20\text{ g/l}$ ), sodium chloride (substance concentration  $c = 1,4\text{ mol/l}$ ), TRIS ( $c = 0,1\text{ mol/l}$ ),  $\text{Na}_2\text{EDTA}$  ( $c = 0,02\text{ mol/l}$ ). Adjust the pH value with hydrochloric acid to  $\text{pH} = 8,0$ .

#### 3.1.14 Ethanol solution, $\varphi = 70\%$ .

#### 3.1.15 Proteinase K solution, $\rho = 20\text{ mg/ml}$ .