

Cocoa and chocolate products (cocoa powder, dark, milk, chips): HMTc Standard

Karen Pendergrass ·  · Heavy Metal Tested & Certified, Institute of Contaminant Standards

CITE AS

Pendergrass, K. (2026). Cocoa and chocolate products (cocoa powder, dark, milk, chips): HMTc Standard. Institute of Contaminant Standards.
© 2026 Institute of Contaminant Standards / Heavy Metal Certified. All rights reserved.

KEYWORDS

heavy metals, food safety, dietary exposure

PUBLICATION HISTORY

This revision 2026-08.

CORRESPONDENCE

Corrections are logged publicly on the article page, each with its date, the affected value, and the source that resolved it.

Abstract

The Heavy Metal Tested & Certified standard for Cocoa and chocolate products (cocoa powder, dark, milk, chips) (Chocolate, Cocoa and Confectionery), stated as sold. Each analyte carries the strictest applicable government maximum level in the product's native basis, with a disclosed read-across or a mandatory control where no government regulates the exact product.

1 | How every number on this standard is set

HMTc Method v2.0 (government-limit default; explicit-id lookup; legislated product-form splits preserved)

2 | Master limit table

All values in ppb (µg/kg), as sold basis. A brand meeting every value qualifies for the mark.

ANALYTE	TIER	HMTc LIMIT	BASIS
Lead (Pb)	Tier 1	200	strictest government ML, set by product form
Cadmium (Cd)	Tier 1	100	strictest government ML, set by product form
Total arsenic (tAs)	Tier 2	200	strictest government ML, set by product form
Inorganic arsenic (iAs)	Tier 1	—	—

Mercury, total (tHg)	Tier 1	50	government maximum level
Methylmercury (MeHg)	Tier 1	n/m	not material in this matrix
Nickel (Ni)	Tier 2	2,500	strictest government ML, set by product form
Tin (Sn)	Tier 2	n/m	not material in this matrix
Aluminium (Al)	Tier 2	n/m	not material in this matrix
Total chromium (Cr)	Tier 2	—	—
Hexavalent chromium (Cr-VI)	Tier 2	—	—

3 | Derivation – where each number comes from

Every cell traces to one named sovereign maximum level (the strictest for the nearest analog), or to an explicit control, not-material, or species-bounded determination. No occurrence statistic selects a certification value.

ANALYTE	HMTC	SOVEREIGN ANALOG / DETERMINATION
Lead (Pb)	200	strictest government ML, set by product form
Cadmium (Cd)	100	strictest government ML, set by product form
Total arsenic (tAs)	200	strictest government ML, set by product form
Inorganic arsenic (iAs)	—	—
Mercury, total (tHg)	50	government maximum level
Methylmercury (MeHg)	n/m	Methylmercury is a marine--bioaccumulation speciation with no formation pathway in a terrestrial cocoa or chocolate matrix, and it is arithmetically bounded by total mercury (MeHg <= tHg). Every applicable mercury limit is set on total mercury, which the tHg standard caps, bounding any organomercury fraction.
Nickel (Ni)	2,500	strictest government ML, set by product form

Tin (Sn)	n/m	Inorganic tin migrates from tinplate cans; chocolate, cocoa powder and chips are sold in wrappers/-boxes/pouches, not tinplate cans, so there is no tin source or migration route. Tin is material only for tin-plated canned product.
Aluminium (Al)	n/m	Cocoa is a natural aluminium accumulator (aluminium is taken up from soil into the cocoa bean); the aluminium present is background, not contamination. No credible regulator sets an aluminium contaminant maximum level for cocoa or chocolate; dietary aluminium is managed by intake against the EFSA TWI (1 mg/kg bw/week) and JECFA PTWI (2 mg/kg bw/week), not by a per-food ML. Matches the existing chocolate/Al determination in standards-not-material.csv.
Total chromium (Cr)	—	—
Hexavalent chromium (Cr-VI)	—	—

4 | Cite this standard

Pendergrass, K. (2026). *Cocoa and chocolate products (cocoa powder, dark, milk, chips): HMTc standard*. Institute of Contaminant Standards.

© 2026 Institute of Contaminant Standards / Heavy Metal Certified. All rights reserved.

STATUS AND LICENCE

A normative certification standard, editorially reviewed and version-controlled in-house; every value traces to a named sovereign maximum level, disclosed in the derivation. © 2026 Institute of Contaminant Standards / Heavy Metal Certified. All rights reserved.

COMPETING INTERESTS

This briefing is published by the Heavy Metal Tested & Certified (HMTc) program, operated by the Institute of Contaminant Standards. Its statements about government regulations, toxicology, and occurrence are sourced to the cited primary and expert-body records and to the independently maintained Heavy Metal Index; the program's own certification thresholds are not used as evidence for any factual claim made here.

DATA AVAILABILITY

The works this reference draws on are listed in full in the references above and on the briefing page at <https://heavymetalcertified.com/standards/chocolate>. Primary legal instruments and expert-body assessments are named with their public identifiers; the underlying occurrence and toxicology corpus is maintained on the Heavy Metal Index.

PUBLICATION HISTORY

This revision 2026-08. The full dated record is maintained at <https://heavymetalcertified.com/standards/chocolate>.