

Toothbrushes (manual, electric heads): HMTc Standard

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

CITE AS

Pendergrass, K. (2026). Toothbrushes (manual, electric heads): 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 heavy-metal-safety standard for toothbrushes (manual, electric heads) in Oral Care, evaluated on oral-care article as placed on market: total heavy-metal content of each accessible part, per unit mass of that component's material (ug/kg). Not a cosmetic finished-product basis, not a dietary maximum level, and not an EN 71-3 migration/leachate value.. 1 of 11 panel analytes publish a numeric limit taken from the strictest applicable government maximum; the remainder are held under mandatory control or a substantiated not-material determination.

1 | How every number on this standard is set

HMTc Method v2.0 (government-limit default), Category 20 Oral Care: a formulated oral product takes the strictest applicable sovereign finished-cosmetic contaminant maximum in its as-sold basis, with the Germany BVL 2017 toothpaste tier read across to non-toothpaste oral-mucosal forms where it is stricter; an oral-care article takes the Canadian mouth-contact accessible-part lead ceiling and is otherwise held under component-level control. Species never replace totals, no ingredient purity specification anchors a finished-product cell, no migration value anchors a content cell, and no cell is occurrence-derived.

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	90,000	government maximum level

Cadmium (Cd)	Tier 1	17,000	human-grade read-across (European Union)
Total arsenic (tAs)	Tier 2	47,000	human-grade read-across (European Union)
Inorganic arsenic (iAs)	Tier 1	≤ tAs	bounded by tAs (reflex speciation)
Mercury, total (tHg)	Tier 1	94,000	human-grade read-across (European Union)
Methylmercury (MeHg)	Tier 1	≤ tHg	bounded by tHg (reflex speciation)
Nickel (Ni)	Tier 2	930,000	human-grade read-across (European Union)
Tin (Sn)	Tier 2	180,000,000	human-grade read-across (European Union)
Aluminium (Al)	Tier 2	28,130,000	human-grade read-across (European Union)
Total chromium (Cr)	Tier 2	control	measured every lot; no human-food maximum
Hexavalent chromium (Cr-VI)	Tier 2	53	human-grade read-across (European Union)

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)	90,000	government maximum level
Cadmium (Cd)	17,000	European Union — human-food analog
Total arsenic (tAs)	47,000	European Union — human-food analog

Inorganic arsenic (iAs)	≤ tAs	iAs carries no product-specific sovereign cell; it is a component of and bounded by its parent total tAs (iAs ≤ tAs), an enforceable ceiling via reflex speciation rather than an empty cell.
Mercury, total (tHg)	94,000	European Union — human-food analog
Methylmercury (MeHg)	≤ tHg	MeHg carries no product-specific sovereign cell; it is a component of and bounded by its parent total tHg (MeHg ≤ tHg), an enforceable ceiling via reflex speciation rather than an empty cell.
Nickel (Ni)	930,000	European Union — human-food analog
Tin (Sn)	180,000,000	European Union — human-food analog
Aluminium (Al)	28,130,000	European Union — human-food analog
Total chromium (Cr)	control	No sovereign sets a total chromium content limit for a mouth-contact oral-care article. Canada's Consumer Products Containing Lead Regulations (SOR/2018-83), the only instrument scoped to mouth-contact consumer products on a total-content basis, is lead-only — as is the second article-content lead instrument named in this row's own lead cell, REACH Annex XVII entry 63(7) as added by Regulation (EU) 2015/628; the EU toy values (Directive 2009/48 / EN 71-3) are MIGRATION limits and are excluded by this row's basis guard, and finished-cosmetic impurity schedules are written for a formulated product and do not reach an article. The cell is held under mandatory analytical control, not declared not-material: chromium is a defining alloying element of the stainless steel used for staples, wires and tips and is present in chrome plating and in Cr(III) pigments; total chromium is a screen for the Cr(VI) reflex below and is not itself protective.
Hexavalent chromium (Cr-VI)	53	European Union — human-food analog

Pendergrass, K. (2026). *Toothbrushes (manual, electric heads): HMTc standard*. Institute of Contaminant Standards.

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

References

[1] European Union — human-food maximum levels

Binds Cd, tAs, tHg, Ni, Sn, Al, Cr-VI. Strictest applicable human-food sovereign maximum for the nearest analog.

MAXIMUM LEVEL

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.

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/toothbrushes>. 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.

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.

PUBLICATION HISTORY

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