

Clasps/fasteners (snaps, zippers, buttons) used in infant products: HMTc Standard

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KEYWORDS

heavy metals, food safety, dietary exposure

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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 clasps/fasteners (snaps, zippers, buttons) used in infant products in Infant and Child Durable Goods and Textiles (Ages 0-5), evaluated on total element content of the fastener component and its plating or coating (mg/kg of component; dried non-volatile film for platings and lacquers): a content basis, not an extraction, nickel-release or migration basis. 5 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-only): the strictest applicable maximum set by a credible sovereign government for this exact product form in the row's declared native basis; a disclosed read-across from the nearest applicable sovereign cell where the exact cell is unregulated; a substantiated not-material determination where the analyte is a species bounded by a published parent; and a control with a named reference method where neither a sovereign value nor a supportable read-across exists. Never 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	75,000	human-grade read-across ()
Total arsenic (tAs)	Tier 2	25,000	human-grade read-across (AU)
Inorganic arsenic (iAs)	Tier 1	≤ tAs	bounded by tAs (reflex speciation)
Mercury, total (tHg)	Tier 1	10,000	human-grade read-across (Canada)
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	60,000	screening ceiling (AU)
Hexavalent chromium (Cr-VI)	Tier 2	3,000	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)	75,000	— human-food analog
Total arsenic (tAs)	25,000	AU — 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)	10,000	Canada — 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)	60,000	government maximum level
Hexavalent chromium (Cr-VI)	3,000	European Union — human-food analog

4 | Cite this standard

Pendergrass, K. (2026). *Clasps/fasteners (snaps, zippers, buttons) used in infant products: HMTc standard* (Standard No. 10.83138/hmtc.std.10.clasps-fasteners-infant-products). Institute of Contaminant Standards. <https://doi.org/10.83138/hmtc.std.10.clasps-fasteners-infant-products>

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References

- [1] AU — human-food maximum levels
Binds tAs. Strictest applicable human-food sovereign maximum for the nearest analog.
MAXIMUM LEVEL
- [2] Canada — human-food maximum levels
Binds tHg. Strictest applicable human-food sovereign maximum for the nearest analog.
MAXIMUM LEVEL
- [3] European Union — human-food maximum levels
Binds Ni, Sn, Al, Cr-VI. Strictest applicable human-food sovereign maximum for the nearest analog.
MAXIMUM LEVEL

STATUS AND LICENCE

COMPETING INTERESTS

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.

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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/clasps-fasteners-infant-products>.

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.

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