Permanent hair dyes/tints (remain in hair after application): HMTc Standard

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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.

KEYWORDS

heavy metals, food safety, dietary exposure

PUBLICATION HISTORY

This revision 2026-08.

Abstract

The Heavy Metal Tested & Certified heavy-metal-safety standard for permanent hair dyes/tints (remain in hair after application) in Cosmetics and Personal Care — Leave-on, evaluated on finished leave-on cosmetic, TOTAL CONTENT as placed on market (ug/kg of product as sold), on the technically-unavoidable-impurity basis every instrument in this family uses. Not a migration/leachate basis, not a dietary basis, not an ingredient purity specification.. 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 initial setting: every numeric cell is the strictest applicable sovereign maximum for this exact leave-on cosmetic form expressed as total content of the finished product as placed on market, or a disclosed read-across where the exact cell is unregulated, or a substantiated not-material determination, or a control. No cell is occurrence-derived, no cell is precautionary or feasibility-adjusted, and no cell is anchored on an ingredient or colour-additive purity specification.

2 | Master limit table

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

ANALYTE	HMTC LIMIT	BASIS
Lead (Pb)	1,000	government maximum level (US-WA)
Cadmium (Cd)	100	government maximum level (DE)
Total arsenic (tAs)	500	government maximum level (DE)
Inorganic arsenic (iAs)	≤ tAs	bounded by tAs (reflex speciation)
Mercury, total (tHg)	100	government maximum level (DE)
Methylmercury (MeHg)	≤ tHg	bounded by tHg (reflex speciation)
Nickel (Ni)	10,000	government maximum level (South Korea)
Tin (Sn)	3,750,000	read-across (European Union)
Aluminium (Al)	560,000	read-across (European Union)
Total chromium (Cr)	50	read-across (AU)
Hexavalent chromium (Cr-VI)	5	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)	1,000	government maximum level (US-WA)
Cadmium (Cd)	100	government maximum level (DE)
Total arsenic (tAs)	500	government maximum level (DE)
Inorganic arsenic (iAs)	≤ tAs	bounded by tAs (reflex speciation)
Mercury, total (tHg)	100	government maximum level (DE)
Methylmercury (MeHg)	≤ tHg	bounded by tHg (reflex speciation)
Nickel (Ni)	10,000	government maximum level (South Korea)

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Tin (Sn)	3,750,000	read-across (European Union); toys (accessible toy material); pacifiers/soothers reached via the EN 1400 soother standard (excluded from the TSD itself, Annex I item 16); EN 71-3 test basis
Aluminium (Al)	560,000	read-across (European Union); toys (accessible toy material); pacifiers/soothers reached via the EN 1400 soother standard (excluded from the TSD itself, Annex I item 16); EN 71-3 test basis
Total chromium (Cr)	50	read-across (AU); drinking water
Hexavalent chromium (Cr-VI)	5	read-across (European Union); toys (accessible toy material); pacifiers/soothers reached via the EN 1400 soother standard (excluded from the TSD itself, Annex I item 16); EN 71-3 test basis

4 | Cite this standard

Pendergrass, K. (2026). *Permanent hair dyes/tints (remain in hair after application): HMTc standard* (Standard No. 10.83138/hmtc.std.13.permanent-hair-dyes-tints). Institute of Contaminant Standards. https://doi.org/10.83138/hmtc.std.13.permanent-hair-dyes-tints

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References

[1] US-WA
Binds Pb.
MAXIMUM LEVEL

[2] DE
Binds Cd, tAs, tHg.
MAXIMUM LEVEL

[3] South Korea
Binds Ni.
MAXIMUM LEVEL

[4] AU
Binds Cr. drinking water.
READ-ACROSS

[5] European Union
Binds Cr-VI, Sn, Al. toys (accessible toy material); pacifiers/soothers reached via the EN 1400 soother standard (excluded from the TSD itself, Annex I item 16); EN 71-3 test basis.
READ-ACROSS

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 standard 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 standard draws on are listed in full in the references above and on the standard page at https://heavymetalcertified.com/standards/permanent-hair-dyes-tints. 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/permanent-hair-dyes-tints.