

Vacuum cleaner fragrance additives: 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 vacuum cleaner fragrance additives in Home Air and Inhalation-Adjacent Products, evaluated on as sold, micrograms of element per kilogram of the emitting material (the fragrance concentrate, wax, gel, botanical mass or refill charge that is aerosolised, evaporated or combusted), with component-level screening of the article's non-emitting parts; a content screen on the article and its refill, never an emission rate, a per-actuation dose or an indoor-air concentration. 4 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: the strictest applicable sovereign maximum for this exact product form in its native basis; disclosed read-across where the exact cell is unregulated; control where neither a sovereign number nor a supportable near-neighbour analogue 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
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Lead (Pb)	Tier 1	500	human-grade read-across (US-CO)
Cadmium (Cd)	Tier 1	200	human-grade read-across (US-CO)
Total arsenic (tAs)	Tier 2	200	human-grade read-across (US-CO)
Inorganic arsenic (iAs)	Tier 1	≤ tAs	bounded by tAs (reflex speciation)
Mercury, total (tHg)	Tier 1	100	human-grade read-across (US-CO)
Methylmercury (MeHg)	Tier 1	≤ tHg	bounded by tHg (reflex speciation)
Nickel (Ni)	Tier 2	18,800	human-grade read-across (European Union)
Tin (Sn)	Tier 2	3,750,000	human-grade read-across (European Union)
Aluminium (Al)	Tier 2	560,000	human-grade read-across (European Union)
Total chromium (Cr)	Tier 2	600	screening ceiling (US-MD)
Hexavalent chromium (Cr-VI)	Tier 2	≤ Cr	bounded by Cr (reflex speciation)

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)	500	US-CO — human-food analog
Cadmium (Cd)	200	US-CO — human-food analog
Total arsenic (tAs)	200	US-CO — 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)	100	US-CO — 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)	18,800	European Union — human-food analog
Tin (Sn)	3,750,000	European Union — human-food analog
Aluminium (Al)	560,000	European Union — human-food analog
Total chromium (Cr)	600	government maximum level
Hexavalent chromium (Cr-VI)	≤ Cr	Cr-VI carries no product-specific sovereign cell; it is a component of and bounded by its parent total Cr (Cr-VI ≤ Cr), an enforceable ceiling via reflex speciation rather than an empty cell.

4 | Cite this standard

Pendergrass, K. (2026). *Vacuum cleaner fragrance additives: HMTc standard* (Standard No. 10.83138/hmtc.std.22.vacuum-cleaner-fragrance-additives). Institute of Contaminant Standards. <https://doi.org/10.83138/hmtc.std.22.vacuum-cleaner-fragrance-additives>

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References

- [1] European Union — human-food maximum levels
Binds Ni, Sn, Al. Strictest applicable human-food sovereign maximum for the nearest analog.
MAXIMUM LEVEL
- [2] US-CO — human-food maximum levels
Binds Pb, Cd, tAs, tHg. 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.

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/vacuum-cleaner-fragrance-additives>.

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/vacuum-cleaner-fragrance-additives>.