

Pet milk replacers & specialty liquids: 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 human-grade standard for pet milk replacers & specialty liquids, stated as consumed. Pet food is legally feed; HMTc voluntarily certifies each analyte to the strictest human-food sovereign maximum for the nearest analog, with the laxer feed-law floor disclosed for contrast.

1 | How every number on this standard is set

Pet food is legally governed by feed law — EU Directive 2002/32/EC on undesirable substances in animal feed, FDA Center for Veterinary Medicine guidance, and AAFCO model regulations — whose maximum levels are generally laxer than the corresponding human-food limits. Japan (FAMIC pet-food standard) and China (draft pet-food guidance) set enforced or proposed pet-food maxima in the same lax range. The HMTc standard for each analyte is not the feed limit: it is the strictest applicable human-food sovereign maximum for the nearest human-food analog, adopted as a voluntary human-grade over-compliance. The feed floor is disclosed on every row and never selects the number.

2 | Master limit table

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

ANALYTE	TIER	HMTc LIMIT	BASIS
Lead (Pb)	Tier 1	20	human-grade read-across (India)

Cadmium (Cd)	Tier 1	50	human-grade read-across (Paraguay)
Total arsenic (tAs)	Tier 2	50	human-grade read-across (Paraguay)
Inorganic arsenic (iAs)	Tier 1	≤ tAs	bounded by tAs (reflex speciation)
Mercury, total (tHg)	Tier 1	10	human-grade read-across (Hong Kong)
Methylmercury (MeHg)	Tier 1	≤ tHg	bounded by tHg (reflex speciation)
Nickel (Ni)	Tier 2	100	human-grade read-across (European Union)
Tin (Sn)	Tier 2	250,000	human-grade read-across (Singapore)
Aluminium (Al)	Tier 2	500	human-grade read-across (Australia / New Zealand)
Total chromium (Cr)	Tier 2	300	human-grade read-across (China)
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)	20	India — Secondary milk products (as consumed)
Cadmium (Cd)	50	Paraguay — fluid milk ready for consumption and dairy products without addition, undiluted and unconcentrated
Total arsenic (tAs)	50	Paraguay — fluid milk ready for consumption and dairy products without addition, undiluted and unconcentrated

Inorganic arsenic (iAs)	$\leq$ tAs	iAs carries no product-specific sovereign cell; it is a component of and bounded by its parent total tAs (iAs $\leq$ tAs), an enforceable ceiling via reflex speciation rather than an empty cell.
Mercury, total (tHg)	10	Hong Kong — Secondary milk products
Methylmercury (MeHg)	$\leq$ tHg	MeHg carries no product-specific sovereign cell; it is a component of and bounded by its parent total tHg (MeHg $\leq$ tHg), an enforceable ceiling via reflex speciation rather than an empty cell.
Nickel (Ni)	100	European Union — infant/young-child formula, liquid
Tin (Sn)	250,000	Singapore — human-food analog
Aluminium (Al)	500	Australia / New Zealand — infant formula, follow-on formula, and special medical purpose product for infants other than preterm-infant products
Total chromium (Cr)	300	China — raw, pasteurized, sterilized, modified and fermented milk (GB 2762-2022 Table 7, section 4.7); total Cr, not Cr-VI
Hexavalent chromium (Cr-VI)	$\leq$ Cr	Cr-VI carries no product-specific sovereign cell; it is a component of and bounded by its parent total Cr (Cr-VI $\leq$ Cr), an enforceable ceiling via reflex speciation rather than an empty cell.

4 | Cite this standard

Pendergrass, K. (2026). *Pet milk replacers & specialty liquids: HMTc standard* (Standard No. 10.83138/hmtc.std.17.pet-milk-replacers-specialty-liquids). Institute of Contaminant Standards. <https://doi.org/10.83138/hmtc.std.17.pet-milk-replacers-specialty-liquids>

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References

- [1] Australia / New Zealand — human-food maximum levels
 Binds Al. Strictest applicable human-food sovereign maximum for the nearest analog.
 MAXIMUM LEVEL

- [2] China — human-food maximum levels
Binds Cr. Strictest applicable human-food sovereign maximum for the nearest analog.
MAXIMUM LEVEL
- [3] European Union — human-food maximum levels
Binds Ni. Strictest applicable human-food sovereign maximum for the nearest analog.
MAXIMUM LEVEL
- [4] Hong Kong — human-food maximum levels
Binds tHg. Strictest applicable human-food sovereign maximum for the nearest analog.
MAXIMUM LEVEL
- [5] India — human-food maximum levels
Binds Pb. Strictest applicable human-food sovereign maximum for the nearest analog.
MAXIMUM LEVEL
- [6] Paraguay — human-food maximum levels
Binds Cd, tAs. Strictest applicable human-food sovereign maximum for the nearest analog.
MAXIMUM LEVEL
- [7] Singapore — human-food maximum levels
Binds Sn. Strictest applicable human-food sovereign maximum for the nearest analog.
MAXIMUM LEVEL
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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/pet-milk-replacers-specialty-liquids>. 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

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