

Metal and alloy cookware (cast iron, stainless steel, aluminum): 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 metal and alloy cookware (cast iron, stainless steel, aluminum) in Food-Contact Consumer Goods and Kitchenware, evaluated on element RELEASE FROM THE FOOD-CONTACT ALLOY INTO FOOD OR A FOOD SIMULANT, $\mu\text{g/kg}$ of food, determined against an acidic simulant at the article's stated use temperature and duration with the third successive release governing for repeat-use articles. This is a RELEASE basis on the food, not the plastics-simulant convention and not a total-content basis: the percent-by-weight lead limits on food-contact metals and solder are a separate MATERIAL-CONTENT obligation, disclosed as companions and never published here.. No government sets a numeric heavy-metal limit for this product form, so every panel analyte is held under mandatory analytical control or a substantiated not-material determination rather than an invented ceiling.

1 | How every number on this standard is set

HMTc Method v2.0 (government-limit-only): the strictest applicable sovereign maximum for this exact product form expressed as specific element migration into food or a food simulant; a disclosed read-across from the nearest applicable sovereign value in the same basis where the food-contact material family is expressly excluded from or not reached by that instrument; a substantiated not-material determination; or a control. No cell is occurrence-derived, and no cell borrows a value across a basis.

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	10	human-grade read-across (China)
Cadmium (Cd)	Tier 1	2	human-grade read-across (China)
Total arsenic (tAs)	Tier 2	2	human-grade read-across (China)
Inorganic arsenic (iAs)	Tier 1	≤ tAs	bounded by tAs (reflex speciation)
Mercury, total (tHg)	Tier 1	10	human-grade read-across (European Union)
Methylmercury (MeHg)	Tier 1	≤ tHg	bounded by tHg (reflex speciation)
Nickel (Ni)	Tier 2	140	human-grade read-across (China)
Tin (Sn)	Tier 2	100,000	human-grade read-across (China)
Aluminium (Al)	Tier 2	1,000	human-grade read-across (China)
Total chromium (Cr)	Tier 2	250	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)	10	China — human-food analog
Cadmium (Cd)	2	China — human-food analog
Total arsenic (tAs)	2	China — human-food analog

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	European Union — human-food analog
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)	140	China — human-food analog
Tin (Sn)	100,000	China — human-food analog
Aluminium (Al)	1,000	China — human-food analog
Total chromium (Cr)	250	China — human-food analog
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). *Metal and alloy cookware (cast iron, stainless steel, aluminum): HMTc standard* (Standard No. 10.83138/hmtc.std.23.cookware-metal-alloy). Institute of Contaminant Standards. <https://doi.org/10.83138/hmtc.std.23.cookware-metal-alloy>

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References

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

COMPETING INTERESTS

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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/cookware-metal-alloy>. 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.

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/cookware-metal-alloy>.