Maximum levels of nitrites and nitrates lowered

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Regulation

Commission Regulation (EU) 2023/2108 as regards food additives nitrites (E 249–250) and nitrates (E 251–252)

What is changing and why?

The European Union (EU) is lowering the amount of nitrosamines (nitrites and nitrates) that are added to cheese, meat, and fishery products as preservatives and additives. The EU is also reducing the levels of lead, mercury, and arsenic within these nitrites and nitrates. The aim is to ensure levels of these substances are as low as possible while still improving shelf-life and making food safe to eat.

For details relating to cheese, see Table 2; for meat products, see Tables 2–6; and for fishery products, see Table 7.

Timeline

The Regulation was published on 9 October 2023.

The new rules will apply as follows:

- Limits for lead, mercury, and arsenic: The new maximum limits for potassium nitrite (E 249), sodium nitrite (E 250), sodium nitrate (E 251), and potassium nitrate (E 252) apply from 29 October 2023. If food additives that do not comply with new limits were put on the EU market before 29 October, they may be used in food products until 29 April 2024. Foods put on the market before 29 April 2024 that contain non-compliant food additives may be marketed until their use-by date.
- Levels of nitrites/nitrates in food: The new levels will apply for meat and fishery products (see Tables 3–7) from 9 October 2025. For cheese, the application dates depend on the product concerned (see Table 2 for details). Meat, fishery, and cheese products that have been put on the market before these application dates may continue to be marketed until their use-by date.

For more information see the full record on the AGRINFO website – where you can also view the latest AGRINFO Update newsletters and search the database.

Tables & Figures

Table 1
Changes to purity specifications

Additive	Element	Maximum permitted level (mg/kg)	
		Current	Proposed
E 249 potassium nitrite	Arsenic	3	0.1
	Lead	2	0.1
	Mercury	1	0.1
E 250 sodium nitrite	Arsenic	3	0.1
	Lead	2	0.1
	Mercury	1	0.1
E 251 sodium nitrate	Nitrites (expressed as $NaNO_2$)	30	10
	Arsenic	3	0.1
	Lead	2	0.1
	Mercury	1	0.1
E 252 potassium nitrate	Nitrites (expressed as KNO_2)	20	20
	Arsenic	3	0.1
	Lead	2	0.1
	Mercury	1	0.1

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Source: Regulation 2023/2108, Annex II

Table 2
Changes to maximum levels of nitrates and nitrites in cheese products (category 01)

Additive	Product	Period of application	Max. level (mg/l or mg/kg)	Footnotes
01.7.2 Ripened cheese				
E 251–252 Nitrates	only hard, semi-hard and semi-soft cheese	*Until* 9 October 2026	150	(30)
		From 9 October 2026	75 (expressed as NO_3 ion)	(30) (XB)
	only traditional Swedish granular-eyed cheese from Gäsene ripened for a minimum of 11 months	*Until* 9 October 2027	110	(30) (XA) (XB)
	only traditional Swedish cheddar cheese from Kvibille ripened for a minimum of 4 months		110	(30) (XA) (XB)
	only traditional Swedish granular-eyed cheese from Falköping ripened for a minimum of 12 months		110	(30) (XA) (XB)
01.7.4 Whey cheese				
E 251–252 Nitrates	only cheese milk of hard, semi-hard and semi-soft cheese	*Until* 9 October 2026	150	(30)
		From 9 October 2026	75	(30) (XA) (XB)
01.7.6 Cheese products (excluding those in category 16)				
E 251–252 Nitrates	only hard, semi-hard and semi-soft ripened products	*Until* 9 October 2026	150	(30)
		From 9 October 2026	75	(30) (XA) (XB)
01.8 Dairy analogues including beverage whiteners				
E 251–252 Nitrates	only dairy-based cheese analogue	*Until* 9 October 2025	150	(30)
		From 9 October 2025	75	(30) (XA) (XB)

Existing footnote:
(30) In the cheese milk or equivalent level if added after removal of whey and addition of water
Proposed additional footnotes:
(XA) The maximum amount that may be added during the manufacturing expressed as NO_3 ion.
(XB) In case the residual amount from all sources for the product ready for marketing throughout the shelf-life of the product exceeds 35 mg/kg expressed as NO_3 ion, food business operators shall investigate the reason of this excess.

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Source: Regulation 2023/2108, Annex I

Table 3
Changes to maximum levels of nitrates and nitrites in meat preparations (08.2–08.3)

Additive	Product	Period of application	Max. level (mg/l or mg/kg)	Footnotes
08.2 Meat preparations				
E 249–250 Nitrites	only lomo de cerdo adobado, pincho moruno, careta de cerdo adobada, costilla de cerdo adobada, Kasseler, Bräte, Surfleisch, toorvorst, šašlõkk, ahjupraad, kiełbasa surowa biała, kiełbasa surowa metka, tatar wołowy (danie tatarskie) and golonka peklowana	*Until* 9 October 2025	150	(7)
		From 9 October 2025	80	(XC) (XD)
08.3.1 Non-heat–treated meat products				
E 249–250 Nitrites	non-heat–treated meat products	*Until* 9 October 2025	150	(7)
		From 9 October 2025	80	(XC) (XD)
E 251–252 Nitrates	non-heat–treated meat products	*Until* 9 October 2025	150	(7)
		From 9 October 2025	90	(XA) (XE)
	only large bacon primals and dry sausages without nitrites added	*From* 9 October 2025	110	(XA) (XF)
08.3.2 Heat–treated meat products				
E 249–250 Nitrites	*only* sterilised meat products ($F_0 > 3.00$)*	*Until* 9 October 2025	100	(7) (58) (59)
		From 9 October 2025	55	(58) (59) (XC) (XG)
E 251–252 Nitrates	*except* sterilised meat products ($F_0 > 3.00$)*	*Until* 9 October 2025	150	(7) (59)
		From 9 October 2025	80	(59) (XC) (XD)

* F_0 is defined as the thermal lethality time required to eliminate all microorganisms present in foods by exposing them to a temperature of 121.1°C, expressed in minutes. This F_0 value is also called the $F_{121.1}$ value.

Existing footnotes:

(7) Maximum added amount, expressed as $NaNO_2$ or $NaNO_3$.

(58) F_0 value 3 is equivalent to 3 min heating at 121°C (reduction of the bacterial load of 1 billion spores in each 1000 cans to one spore in 1000 cans).

(59) Nitrates may be present in some heat-treated meat products resulting from natural conversion of nitrites to nitrates in a low-acid environment.

Proposed additional footnotes:

(XA) The maximum amount that may be added during the manufacturing expressed as NO_3 ion.

(XC) The maximum amount that may be added during the manufacturing expressed as NO_2 ion.

(XD) The maximum residual amount from all sources for the product ready for marketing throughout the shelf-life of the product shall not exceed 45 mg/kg expressed as NO_2 ion.

(XE) In case the residual amount from all sources for the product ready for marketing throughout the shelf-life of the product exceeds 90 mg/kg expressed as NO_3 ion, food business operators shall investigate the reason of this excess.

(XF) In case the residual amount from all sources for the product ready for marketing throughout the shelf-life of the product exceeds 110 mg/kg expressed as NO_3 ion, food business operators shall investigate the reason of this excess.

(XG) The maximum residual amount from all sources for the product ready for marketing throughout the shelf-life of the product shall not exceed 25 mg/kg expressed as NO_2 ion.

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Source: Regulation 2023/2108, Annex I

Table 4
Changes to maximum levels of nitrates and nitrites in traditional immersion cured products (08.3.4.1)

Additive	Product	Period of application	Max. level (mg/l or mg/kg)	Footnotes
08.3.4.1 Traditional immersion cured products*				
E 249–250 Nitrites	only traditionally cured products	*From* 9 October 2025	30	(XH)
E 251–252 Nitrates	only Wiltshire bacon and similar products: Meat is injected with curing solution followed by immersion curing for 3 to 10 days. The immersion brine solution also includes microbiological starter cultures	*Until* 9 October 2025	175	(39)
		From 9 October 2025	105	(XH)
E 251–252 Nitrates	only Wiltshire bacon and similar products: Meat is injected with curing solution followed by immersion curing for 3 to 10 days. The immersion brine solution also includes microbiological starter cultures	*Until* 9 October 2025	250	(39) (59)
		From 9 October 2025	150	(59) (XI)
E 249–250 Nitrites	only Wiltshire ham and similar products: Meat is injected with curing solution followed by immersion curing for 3 to 10 days. The immersion brine solution also includes microbiological starter cultures	*Until* 9 October 2025	100	(39)
		From 9 October 2025	65	(XH)
E 251–252 Nitrates	only Wiltshire ham and similar products: Meat is injected with curing solution followed by immersion curing for 3 to 10 days. The immersion brine solution also includes microbiological starter cultures	*Until* 9 October 2025	250	(39) (59)
		From 9 October 2025	150	(59) (XI)
E 249–250 Nitrites	only entremeada, entrecosto, chispe, orelheira e cabeça (salgados), toucinho fumado and similar products: Immersion cured for 3 to 5 days. Product is not heat-treated and has a high water activity	*Until* 9 October 2025	175	(39)
		From 9 October 2025	105	(XH)
E 251–252 Nitrates	only entremeada, entrecosto, chispe, orelheira e cabeça (salgados), toucinho fumado and similar products: Immersion cured for 3 to 5 days. Product is not heat-treated and has a high water activity	*Until* 9 October 2025	250	(39) (59)
		From 9 October 2025	150	(59) (XI)
E 249–250 Nitrites	only cured tongue: Immersion cured for at least 4 days and pre-cooked	*Until* 9 October 2025	50	(39)
E 251–252 Nitrates	only cured tongue: Immersion cured for at least 4 days and pre-cooked	*Until* 9 October 2025	10	(39) (59)
		From 9 October 2025	7	(59) (XI)
E 249–250 Nitrites	only kylmâsavustettu poronliha/ kallrökt renkött: Meat is injected with curing solution followed by immersion curing. Curing time is 14 to 21 days followed by maturation in cold-smoke for 4 to 5 weeks	*Until* 9 October 2025	150	(7)
		From 9 October 2025	100	(XC) (XJ)

continued

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Table 4
continued

Additive	Product	Period of application	Max. level (mg/l or mg/kg)	Footnotes
E 251–252 Nitrates	only kylmâsavustettu poronliha/ kallrökt renkött: Meat is injected with curing solution followed by immersion curing. Curing time is 14 to 21 days followed by maturation in cold-smoke for 4 to 5 weeks	*Until* 9 October 2025	300	(7)
		From 9 October 2025	180	(XA) (XK)
E 249–250 Nitrites	only bacon, filet de bacon and similar products: Immersion cured for 4 to 5 days at 5 to 7°C, matured for typically 24 to 40 h at 22°C, possibly smoked for 24 h at 20 to 25°C and stored for 3 to 6 weeks at 12 to 14°C	*Until* 9 October 2025	150	(7)
		From 9 October 2025	100	(XC) (XJ)
E 251–252 Nitrates	only bacon, filet de bacon and similar products: Immersion cured for 4 to 5 days at 5 to 7°C, matured for typically 24 to 40 h at 22°C, possibly smoked for 24 h at 20 to 25°C and stored for 3 to 6 weeks at 12 to 14°C	*Until* 9 October 2025	250	(7) (40) (59)
		From 9 October 2025	180	(40) (59) (XA) (XK)
E 249–250 Nitrites	only Rohschinken, nassgepökelt and similar products: Curing time depending on the shape and weight of meat pieces for approximately 2 days/kg followed by stabilisation/ maturation	*Until* 9 October 2025	50	(39)
E 251–252 Nitrates	only Rohschinken, nassgepökelt and similar products: Curing time depending on the shape and weight of meat pieces for approximately 2 days/kg followed by stabilisation/ maturation	*Until* 9 October 2025	250	(39)
		From 9 October 2025	150	(XI)

* Meat products cured by immersion in a curing solution containing nitrites and/or nitrates, salt and other components.
Existing footnotes:
(7) Maximum added amount, expressed as $NaNO_2$ or $NaNO_3$.
(39) Maximum residual amount, residue level at the end of the production process, expressed as $NaNO_2$ or $NaNO_3$.
(40) Without added nitrites.
(59) Nitrates may be present in some heat-treated meat products resulting from natural conversion of nitrites to nitrates in a low-acid environment.
Proposed additional footnotes:
(XA) The maximum amount that may be added during the manufacturing expressed as NO_3 ion.
(XC) The maximum amount that may be added during the manufacturing expressed as NO_2 ion.
(XH) The maximum residual amount from all sources for the product ready for marketing throughout the shelf-life of the product expressed as NO_2 ion.
(XI) The maximum residual amount from all sources for the product ready for marketing throughout the shelf-life of the product expressed as NO_3 ion.
(XJ) The maximum residual amount from all sources for the product ready for marketing throughout the shelf-life of the product shall not exceed 50 mg/kg expressed as NO_2 ion.
(XK) In case the residual amount from all sources for the product ready for marketing throughout the shelf-life of the product exceeds 95 mg/kg expressed as NO_3 ion, food business operators shall investigate the reason of this excess.

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Source: Regulation 2023/2108, Annex I

Table 5
Changes to maximum levels of nitrates and nitrites in traditional dry cured products (08.3.4.2)

Additive	Product	Period of application	Max. level (mg/l or mg/kg)	Footnotes
08.3.4.2 Traditional dry cured products*				
E 249–250 Nitrites	only traditionally cured products	*From* 9 October 2025	30	(XH)
E 249–250 Nitrites	only dry cured bacon and similar products: Dry curing followed by maturation for at least 4 days	*Until* 9 October 2025	175	(39)
		From 9 October 2025	105	(XH)
E 251–252 Nitrates	only dry cured bacon and similar products: Dry curing followed by maturation for at least 4 days	*Until* 9 October 2025	250	(39) (59)
		From 9 October 2025	150	(59) (XI)
E 249–250 Nitrites	only dry cured ham and similar products: Dry curing followed by maturation for at least 4 days	*Until* 9 October 2025	100	(39)
		From 9 October 2025	65	(XH)
E 251–252 Nitrates	only dry cured ham and similar products: Dry curing followed by maturation for at least 4 days	*Until* 9 October 2025	250	(39) (59)
		From 9 October 2025	150	(59) (XI)
E 249–250 Nitrites	only jamón curado, paleta curada, lomo embuchado y cecina and similar products: Dry curing with a stabilisation period of at least 10 days and a maturation period of more than 45 days	*Until* 9 October 2025	100	(39)
		From 9 October 2025	65	(XH)
E 251–252 Nitrates	only jamón curado, paleta curada, lomo embuchado y cecina and similar products: Dry curing with a stabilisation period of at least 10 days and a maturation period of more than 45 days	*Until* 9 October 2025	250	(39) (59)
		From 9 October 2025	150	(59) (XI)
E 249–250 Nitrites	only presunto, presunto da pá e paio do lombo and similar products: Dry cured for 10 to 15 days followed by a 30 to 45-day stabilisation period and a maturation period of at least 2 months	*Until* 9 October 2025	100	(39)
		From 9 October 2025	65	(XH)
E 251–252 Nitrates	only presunto, presunto da pá e paio do lombo and similar products: Dry cured for 10 to 15 days followed by a 30 to 45-day stabilisation period and a maturation period of at least 2 months	*Until* 9 October 2025	250	(39) (59)
		From 9 October 2025	150	(59) (XI)
E 249–250 Nitrites	only Rohschinken, trockengepökelt and similar products: Curing time depending on the shape and weight of meat pieces for approximately 10 to 14 days followed by stabilisation/ maturation	*Until* 9 October 2025	50	(39)
E 251–252 Nitrates	only Rohschinken, trockengepökelt and similar products: Curing time depending on the shape and weight of meat pieces for approximately 10 to 14 days followed by stabilisation/ maturation	*Until* 9 October 2025	250	(39) (59)
		From 9 October 2025	150	(59) (XI)
E 251–252 Nitrates	only jambon sec, jambon sel and other similar dried cured products: Dry cured for 3 days + 1 day/kg followed by a 1-week post-salting period and an ageing/ ripening period of 45 days to 18 months	*Until* 9 October 2025	250	(39) (40) (59)
		From 9 October 2025	150	(40) (59) (XI)

* Dry curing process involves dry application of curing mixture containing nitrites and/or nitrates, salt and other components to the surface of the meat followed by a period of stabilisation/maturation.
Existing footnotes:
(39) Maximum residual amount, residue level at the end of the production process, expressed as $NaNO_2$ or $NaNO_3$.
(40) Without added nitrites.
(59) Nitrates may be present in some heat-treated meat products resulting from natural conversion of nitrites to nitrates in a low-acid environment.
Proposed additional footnotes:
(XH) The maximum residual amount from all sources for the product ready for marketing throughout the shelf-life of the product expressed as NO_2 ion.
(XI) The maximum residual amount from all sources for the product ready for marketing throughout the shelf-life of the product expressed as NO_3 ion.

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Source: Regulation 2023/2108, Annex I

Table 6
Changes to maximum levels of nitrates and nitrites in other traditionally cured products (08.3.4.3)

Additive	Product	Period of application	Max. level (mg/l or mg/kg)	Footnotes
08.3.4.3 Other traditional and traditionally cured products*				
E 249–250 Nitrites	only traditionally cured products	*From* 9 October 2025	30	(XH)
E 249–250 Nitrites	only Rohschinken, trocken-/ nassgepökelt and similar products: Dry curing and immersion curing used in combination (without injection of curing solution). Curing time depending on the shape and weight of meat pieces for approx. 14 to 35 days followed by stabilisation/ maturation	*Until* 9 October 2025	50	(39)
E 251–252 Nitrates	only Rohschinken, trocken-/ nassgepökelt and similar products: Dry curing and immersion curing used in combination (without injection of curing solution). Curing time depending on the shape and weight of meat pieces for approx. 14 to 35 days followed by stabilisation/ maturation	*Until* 9 October 2025	250	(39) (59)
		From 9 October 2025	150	(59) (XI)
E 249–250 Nitrites	only jellied veal and brisket: Injection of curing solution followed, after a minimum of 2 days, by cooking in boiling water for up to 3 hours	*Until* 9 October 2025	50	(39)
E 251–252 Nitrates	only jellied veal and brisket: Injection of curing solution followed, after a minimum of 2 days, by cooking in boiling water for up to 3 hours	*Until* 9 October 2025	10	(39) (59)
		From 9 October 2025	7	(59) (XI)
E 251–252 Nitrates	only Rohwürste (Salami and Kantwurst): Product has a minimum 4-week maturation period and a water / protein ratio of less than 1.7	*Until* 9 October 2025	300	(40) (7)
		From 9 October 2025	180	(40) (XA) (XK)
E 251–252 Nitrates	only salchichón y chorizo tradicionales de larga curación and similar products: Maturation period of at least 30 days	*Until* 9 October 2025	250	(40) (7) (59)
		From 9 October 2025	180	(40) (59) (XA) (XK)

continued

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Table 6
Continued

Additive	Product	Period of application	Max. level (mg/l or mg/kg)	Footnotes
E 249–250 Nitrites	only vysočina, selský salám, turistický trvanlivý salám, poličan, herkules, lovecký salám, dunajská klobása, paprikáš and similar products: Dried product cooked to 70°C followed by 8 to 12-day drying and smoking process. Fermented product subject to 14 to 30-day three-stage fermentation process followed by smoking	*Until* 9 October 2025	180	(7)
		From 9 October 2025	105	(XC) (XJ)
E 249–250 Nitrites	only Svensk julskinka and Svensk leverpastej and similar products: Cured/ uncooked or cooked in its consumer package	*From* 9 October 2025	100	(XC) (XJ)
E 249–250 Nitrites	only Mettwurst, Teewurst and similar products: Spreadable, soft, shortripened raw sausages	*From* 9 October 2025	100	(XC) (XJ)
E 251–252 Nitrates	only saucisson sec and similar products: Raw fermented dried sausage without added nitrites. Product is fermented at temperatures in the range 18 to 22°C or lower (10 to 12 °C) and then has a minimum ageing/ ripening period of 3 weeks. Product has a water / protein ratio of less than 1.7	*Until* 9 October 2025	250	(40) (7) (59)
		From 9 October 2025	180	(40) (59) (XA) (XK)

*Including immersion and dry cured processes used in combination or where nitrite and/or nitrate is included in a compound product or where the curing solution is injected into the product prior to cooking.

Existing footnotes:

(7) Maximum added amount, expressed as $NaNO_2$ or $NaNO_3$.

(39) Maximum residual amount, residue level at the end of the production process, expressed as $NaNO_2$ or $NaNO_3$.

(40) Without added nitrites.

(59) Nitrates may be present in some heat-treated meat products resulting from natural conversion of nitrites to nitrates in a low-acid environment.

Proposed additional footnotes:

(XA) The maximum amount that may be added during the manufacturing expressed as NO_3 ion. EN 38 EN

(XC) The maximum amount that may be added during the manufacturing expressed as NO_2 ion.

(XH) The maximum residual amount from all sources for the product ready for marketing throughout the shelf-life of the product expressed as NO_2 ion.

(XI) The maximum residual amount from all sources for the product ready for marketing throughout the shelf-life of the product expressed as NO_3 ion.

(XJ) The maximum residual amount from all sources for the product ready for marketing throughout the shelf-life of the product shall not exceed 50 mg/kg expressed as NO_2 ion.

(XK) In case the residual amount from all sources for the product ready for marketing throughout the shelf-life of the product exceeds 95 mg/kg expressed as NO_3 ion, food business operators shall investigate the reason of this excess.

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Source: Regulation 2023/2108, Annex I

Table 7
Changes to maximum levels of nitrates and nitrites in fishery products (09.2)

Additive	Product	Period of application	Max. level (mg/l or mg/kg)	Footnotes
09.2 Processed fish and fishery products including molluscs and crustaceans				
E 251–252 Nitrates	only pickled herring and sprat	*Until* 9 October 2025	500	(39) (59)
		From 9 October 2025	270	(XA) (XD)

Existing footnotes:
(39) Maximum residual amount, residue level at the end of the production process, expressed as $NaNO_2$ or $NaNO_3$.
(59) Nitrates may be present in some heat-treated meat products resulting from natural conversion of nitrites to nitrates in a low-acid environment.
Proposed additional footnotes:
(XA) The maximum amount that may be added during the manufacturing expressed as NO_3 ion.
(XD) The maximum residual amount from all sources for the product ready for marketing throughout the shelf-life of the product shall not exceed 45 mg/kg expressed as NO_2 ion.

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