

The BfR's recommended maximum levels

for vitamins and minerals in food supplements and fortified foods

Year	Vitamins and minerals in food supplements* (per daily recommended intake of a product)		Vitamins and minerals in fortified foods	
Vitamin A**				
2021	Option 1	No addition	Margarine and blended fat products	1.0 mg/100 g
	Option 2	0.2 mg	Other foods for general consumption	No addition
Recommended note: Vitamin A supplementation during pregnancy only after medical consultation.				
2004	For adults	0.4 mg	Margarine and blended fat products	1.0 mg/100 g
	For children between 4 and 10 years old	0.2 mg	Other foods for general consumption	No addition
Beta-carotene**				
2021	3.5 mg	Option 1: Assuming that only 15 % of daily energy intake is ingested from fortified foods:		
		Solid foods		1.7 mg/100 g
		Drinks		0.45 mg/100 ml
		Option 2: Limit addition to “breakfast cereals”, “dairy products” and “juices and soft drinks” with maximum levels corresponding to 15 % and 7.5 % of the reference value for labelling:		
		Solid foods		0.72 mg/100 g
		Drinks		0.36 mg/100 ml
Option 3: Restriction of the addition of beta-carotene for nutritional purposes to solid foods				
2004	2.0 mg	No addition		

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Vitamin D				
2023	20 µg		Milk and dairy products, including cheese	1.5 µg/100 g
			Bread and cereals (excluding pastries)	5.0 µg/100 g
			Spreadable fats and cooking oil	7.5 µg/100 g
			Other foods	No addition
			UV-irradiated foods and products derived therefrom **	See Implementing Regulation (EU) 2017/2470
2021	20 µg		Milk and dairy products, including cheese	1.5 µg/100 g
			Bread and cereals (excluding pastries)	5.0 µg/100 g
			Spreadable fats and cooking oil	7.5 µg/100 g
			UV-irradiated edible mushrooms ***	10.0 µg/100 g
			UV-irradiated milk ***	3.2 µg/100 g
			Other foods for general consumption	No addition
2004	For people < 65 years old	5 µg	Margarine and blended fat products	2.5 µg/100 g
	For people > 65 years old	10 µg	Cooking oils	20 µg/l
			Other foods for general consumption	No addition

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** UV irradiated foods and products derived therefrom are covered by Regulation (EU) 2015/2283 on novel foods.

The relevant authorisations can be found in the consolidated version of the Commission Implementing Regulation (EU) 2017/2470 of 20 December 2017.

*** UV-irradiated foods are subject to Regulation (EU) 2015/2283 on novel foods. The corresponding authorisations to place these foods on the market refer only to the foods themselves and not to products made from them.

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Vitamin E***				
2021	30 mg		Solid foods	7 mg/100 g
			Drinks	2 mg/100 ml
2004	15 mg		Consider limiting addition to certain food groups and linking addition to the food's polyene fatty acid content.	15 mg**
Vitamin K				
2021	Vitamin K ₁	80 µg	No addition	
	Vitamin K ₂	25 µg		
	Recommended note: People taking anticoagulant drugs should seek medical advice before taking any food supplements that contain vitamin K.			
2004	80 µg		80 µg**	
Vitamin B ₁				
2021	No maximum levels		No maximum levels	
2004	4 mg		1.3 mg**	
Vitamin B ₂				
2021	No maximum levels		No maximum levels	
2004	4.5 mg		1.5 mg**	

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Niacin				
2021	Nicotinamide	160 mg	Nicotinamide	37 mg/100 g
	For products with a daily recommended dose of more than 16 mg per daily dose of a food supplement: Note that pregnant women should refrain from taking such products (including a justification, if applicable).			10 mg/100 ml
	Nicotinic acid	4.0 mg	Nicotinic acid	No addition
	Inositol hexanicotinate	4.4 mg	Inositol hexanicotinate	No addition
2004	Nicotinamide	17 mg	Nicotinamide	17 mg**
	Nicotinic acid	No addition	Nicotinic acid	No addition
Vitamin B ₆				
2023	0.9 mg		Option 1: Assuming that 30 % of daily energy is ingested from fortified foods and fortification is limited to solid foods:	0.27 mg/100 g
			Option 2: Assuming that only 15 % of daily energy is ingested from fortified foods:	
			Solid foods	0.54 mg/100 g
			Drinks	0,14 mg/100 ml
2021	3.5 mg		Solid foods	0.85 mg/100 g
			Drinks	0.23 mg/100 ml
2004	5.4 mg			1.2–1.6 mg**
Pantothenic acid				

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2021	No maximum levels	No maximum levels	
2004	18 mg	6 mg**	
Vitamin B ₁₂			
2021	25 µg	Solid foods	6 µg/100 g
		Drinks	1.6 µg/100 ml
2004	3–9 µg	3 µg**	
		Consider limiting addition to certain food groups.	
Folic acid***			
2024	200 µg	Option 1: Assuming that only 15 % of daily energy intake is ingested from fortified foods:	
		Solid foods	98.5 µg/100 g
		Drinks	26 µg/100 ml
	For women of child-bearing age and pregnant women in the first trimester to reduce the risk of neural tube defects: 400 µg	Option 2: (corresponding to 15 % or 7.5 % of the reference value for labelling)	
		Solid foods	30 µg/100 g
		Drinks	15 µg/100 ml

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*** The proposed maximum levels refer to folic acid. If other folate sources permitted in the EU (e.g., calcium L-methylfolate) are used instead of or in combination with folic acid, the maximum levels must be adjusted according to the conversion factors derived by EFSA. See here for more information:

<https://www.bfr.bund.de/cm/343/aktualisierung-2024-hoehstmengenvorschlaege-fuer-folsaeure-in-lebensmitteln-inklusive-nahrungsergaenzungsmitteln.pdf>

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2021	200 µg For women of child-bearing age and pregnant women in the first trimester to reduce the risk of neural tube defects: 400 µg	Option 3: Restriction to:
		Breakfast cereals and dairy products 59.5 µg/100 g bzw. 100 ml
		Juices and soft drinks 16 µg/100 ml
		Option 4: Restriction to:
		Solid foods 98.5 µg/100 g
		Option 1: Assuming that only 15 % of daily energy intake is ingested from fortified foods:
		Solid foods 80 µg/100 g
		Drinks 20 µg/100 ml
		Option 2: (Corresponds to 15 % or 7.5 % of the reference value for labelling)
		Solid foods 30 µg/100 g
		Drinks 15 µg/100 ml
		Option 3: Restriction to:
		Breakfast cereals and dairy products 50 µg/100 g or 100 ml
		Juices and soft drinks 15 µg/100 ml
		Option 4: Restriction to:
		Solid foods 80 µg/100 g
2004	400 µg	200 µg**

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Biotin			
2021	No maximum levels Recommended note on food supplements containing biotin: People who have to undergo laboratory testing should inform their doctor or the laboratory staff that they are taking/have recently taken biotin.	No maximum levels	
2004	180 µg	60 µg**	
Vitamin C			
2021	250 mg	Solid foods	60 mg/100 g
		Drinks	16 mg/100 ml
2004	225 mg	100 mg**	
Sodium			
2021	No addition for nutritional purposes	No addition	
		Exception: Special drinks to offset increased sodium losses.	1,150 mg/l (minimum quantity: 460 mg/l)
2004	No addition for nutritional purposes	No addition	
		Exception: Drinks that are specifically intended to offset significant losses of sodium in healthy consumers (e.g., as a result of increased sweating)	

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Year	Vitamins and minerals in food supplements* (per daily recommended intake of a product)	Vitamins and minerals in fortified foods								
Chloride										
2021	No addition for nutritional purposes	No addition for nutritional purposes								
2004	No addition for nutritional purposes	No addition for nutritional purposes								
Potassium										
2021	500 mg	<p>Option 1: As an exception, non-significant maximum levels could be accepted, assuming that 30 % of daily energy comes from fortified foods:</p> <table><tr><td>Solid foods</td><td>120 mg/100 g</td></tr><tr><td>Drinks</td><td>32 mg/100 ml</td></tr></table> <p>or assuming that only 15 % of daily energy is ingested from fortified foods:</p> <table><tr><td>Solid foods</td><td>240 mg/100 g</td></tr><tr><td>Drinks</td><td>64 mg/100 ml</td></tr></table> <p>Option 2: Limit to selected food groups when using significant amounts of potassium:</p> <p>≥ 300 mg/100 g or ≥ 150 mg/100 ml</p> <p>Option 3: No addition of potassium for nutritional purposes. Under this condition, the total available residual amount of 2,000 mg/day could be allocated to the food supplement category alone.</p>	Solid foods	120 mg/100 g	Drinks	32 mg/100 ml	Solid foods	240 mg/100 g	Drinks	64 mg/100 ml
Solid foods	120 mg/100 g									
Drinks	32 mg/100 ml									
Solid foods	240 mg/100 g									
Drinks	64 mg/100 ml									
2004	500 mg	<p>No addition</p> <p>Exception: For the purpose of restoration (to offset potassium losses that occur during food processing) possibly with simultaneous reduction of the salt content in processed foods.</p>								
Calcium										

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2021	500 mg For supplements with more than 250 mg calcium per daily dose of a product: Note that the consumption of another food supplement containing calcium should be avoided.		Limit fortification to products consumed as substitutes for foods naturally rich in calcium, such as substitutes for milk and dairy products: Maximum levels amounting to the natural “equivalent”, e.g. addition of calcium to a milk substitute drink: 120 mg/100 ml	
2004	500 mg		Limit fortification to dairy alternatives to which calcium is added in amounts comparable to that in dairy products, or specially labelled drinks (30 % of the reference value for labelling/100 g or 100 ml).	
Phosphorus/Phosphate				
2021	No addition for nutritional purposes		No addition for nutritional purposes	
2004	Phosphate	250 mg	No addition for nutritional purposes	
Magnesium				
2021	Note: It is recommended to divide this amount into two or more servings per day	250 mg	Solid foods	31 mg/100 g
			Drinks	8 mg/100 ml
2004	Note: Divide into two single doses, if necessary	250 mg	Solid foods and drinks	15–28 mg/100 kcal or 22.5 mg/100 ml
Iron**				

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2021	6 mg		Option 1	No addition
	Note indicating that men, post-menopausal women and pregnant women should only take iron after consulting a doctor		Option 2: Limit addition to “breakfast cereals” and set a maximum level conforming to the fortification practice established in Germany regarding the iron content and the iron compounds used.	
2004	No addition		No addition	
Iodine				
2021	100 µg		Table salt	2,500 µg/100 g
			Note: Even at 3,000 µg/100 g, no health impairments are expected according to BfR Opinion No. 005/2021 of 9 February 2021	
	For pregnant and breastfeeding women:	150 µg	Other foods for general consumption	No addition
2004	100 µg		No fortification of foods for general consumption	
	Note: This limit does not apply to dietetic food supplements, e.g., for pregnant and breastfeeding women.		Limit to iodised salt	2,500 µg/100 g
Fluoride**				
2021	No addition		Table salt	0.25 mg/g
			Other foods for general consumption	No addition
2004	No addition		Table salt	0.25 mg/g
			Other foods for general consumption	No addition
Zinc				
2021	6.5 mg		No addition	

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2004	2.25 mg Note: No supplementation for children and adolescents under the age of 17	No addition
Selenium		
2023	40 µg	Option 1: Assuming that 30 % of daily energy is ingested from fortified foods and fortification is limited to solid foods: 12 µg/100 g Option 2: Assuming that only 15 % of daily energy is ingested from fortified foods: Solid foods 24 µg/100 g Drinks 6 µg/100 ml
2021	45 µg	Option 1: Assuming that 30 % of daily energy is ingested from fortified foods and fortification is limited to solid foods: 10 µg/100 g Option 2: Assuming that only 15 % of daily energy is ingested from fortified foods: Solid foods 22 µg/100 g Drinks 6 µg/100 ml
2004	25–30 µg	No addition
Copper		
2021	1 mg Consumer information: Not for children and adolescents.	No addition

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2004	no addition	No addition	
Manganese**			
2021	0.5 mg	No addition	
2004	No addition	No addition	
Chromium			
2021	60 µg	Solid foods	15 µg/100 g
		Drinks	4 µg/100 ml
2004	60 µg	No addition	
Molybdenum			
2021	80 µg	Assuming that 30 % of daily energy is ingested from fortified foods:	
		Solid foods	19 µg/100 g
		Drinks	5 µg/100 ml
2004	80 µg	No addition	
	Note: Proposed maximum level not for children up to and including ten years of age		
Boron			
2021	0.5 mg	No addition	
	Note: Not for children and adolescents		
2004	Not taken into account when maximum levels were derived	Not taken into account when maximum levels were derived	

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Silicon										
2021	<div>When adding:</div> <table><tr><td>Silicon dioxide</td><td>350 mg</td></tr><tr><td>Silicic acid (silica gel)</td><td>100 mg</td></tr><tr><td>Choline-stabilised orthosilicic acid</td><td>10 mg</td></tr><tr><td>Organic silicon (monomethylsilanetriol)</td><td>10 mg **</td></tr></table>	Silicon dioxide	350 mg	Silicic acid (silica gel)	100 mg	Choline-stabilised orthosilicic acid	10 mg	Organic silicon (monomethylsilanetriol)	10 mg **	Silicon compounds have not been approved for fortification so far, therefore no maximum amounts proposed here
Silicon dioxide	350 mg									
Silicic acid (silica gel)	100 mg									
Choline-stabilised orthosilicic acid	10 mg									
Organic silicon (monomethylsilanetriol)	10 mg **									
2004	Not taken into account when maximum levels were derived	Not taken into account when maximum levels were derived								

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** Safe intake level for daily intake, approved in the context of novel food authorisation procedure.

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References

BfR (2022). Opinion No 026/2002 of the BfR issued 17 October 2022. Declining iodine intake in the population: model scenarios to improve iodine intake in children and adolescents: www.bfr.bund.de/cm/349/declining-iodine-intake-in-the-population-model-scenarios-to-improve-iodine-intake-in-children-and-adolescents.pdf; last accessed: 11.02.2025

Updated recommended maximum levels for the addition of vitamins and minerals to food supplements and conventional foods by the BfR (2021): www.bfr.bund.de/en/press_information/2021/11/maximum_levels_for_vitamins_and_minerals_in_food_supplements_and_fortified_foods-270796.html

Recommended maximum levels by the BfR (2004): www.bfr.bund.de/cm/350/use_of_minerals_in_foods.pdf
www.bfr.bund.de/cm/350/use_of_vitamins_in_foods.pdf

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