The BfR's recommended maximum levels
for vitamins and minerals in food supplements and fortified foods

German Federal Institute for Risk Assessment

Year	... food supplements* (per daily recommended intake of a product)		... fortified foods for general consumption	
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*
Vitamin D				
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[1]	10.0 µg/100 g
			UV-irradiated milk[1]	3.2 µg/100 g
			Other foods for general consumption	No addition
			[1] *UV-irradiated foods are subject to Regulation (EU) 2015/2283 on novel food. The corresponding authorisations to put these foods on the market refer only to the foods themselves and not to products made from them.*	
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*

* *The proposed maximum levels refer to adults (2004) or people over the age of 15 and adults (2021) unless otherwise indicated.*

The BfR's recommended maximum levels
for vitamins and minerals in food supplements and fortified foods

German Federal Institute for Risk Assessment

Year	... food supplements* (per daily recommended intake of a product)		... fortified foods for general consumption	
Vitamin E				
2021		30 mg	Solid foods	7 mg/100 g
			Drinks	2 mg/100 ml
2004		*15 mg*		*15 mg***
			***! Consider** limiting addition to individual food groups and linking addition to the food's polyene fatty acid content*	
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***
Niacin				
2021	**Nicotinamide**	160 mg	**Nicotinamide**	37 mg/100 g
	! For products with a daily recommended dose of more than 16 mg per food supplement: Note that pregnant women should refrain from taking such products (possibly also 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*

** The proposed maximum levels refer to adults (2004) or people over the age of 15 and adults (2021) unless otherwise indicated.*

*** Related to the expected daily intake of a food.*

The BfR's recommended maximum levels
for vitamins and minerals in food supplements and fortified foods

German Federal Institute for Risk Assessment

Year	... food supplements* (per daily recommended intake of a product)		... fortified foods for general consumption	
Vitamin B_6				
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				
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 vitamin addition to certain food groups*	
Folic acid				
2021		200 µg	**Option 1:** Assuming that only 15 % of daily energy intake is ingested from fortified foods:	
	For women of child-bearing age and pregnant women in the first trimester to reduce the risk of neural tube defects	400 µg	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***

** The proposed maximum levels refer to adults (2004) or people over the age of 15 and adults (2021) unless otherwise indicated.*

*** Related to the expected daily intake of a food.*

The BfR's recommended maximum levels
for vitamins and minerals in food supplements and fortified foods

German Federal Institute for Risk Assessment

Year	... food supplements* (per daily recommended intake of a product)		... fortified foods for general consumption	
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		**! Exception:** Special drinks to offset increased sodium losses	No addition 1,150 mg/l (Minimum quantity: 460 mg/l)
2004	*No addition for nutritional purposes*		***! Exception:** Drinks that are specifically intended to offset significant losses in healthy consumers (e.g., as a result of increased sweating)*	*No addition*
Chloride				
2021	No addition for nutritional purposes		No addition for nutritional purposes	
2004	*No addition for nutritional purposes*		*No addition for nutritional purposes*	

* *The proposed maximum levels refer to adults (2004) or people over the age of 15 and adults (2021) unless otherwise indicated.*

** *Related to the expected daily intake of a food.*

The BfR's recommended maximum levels
for vitamins and minerals in food supplements
and fortified foods

German Federal Institute for Risk Assessment

Year	... food supplements* (per daily recommended intake of a product)		... fortified foods for general consumption	
Potassium				
2021		500 mg	**Option 1:** As an exception, non-significant maximum levels could be accepted, assuming that 30 % of daily energy comes from fortified foods:	
			Solid foods	120 mg/100 g
			Drinks	32 mg/100 ml
			or Assuming that only 15 % of daily energy is ingested from fortified foods:	
			Solid foods	240 mg/100 g
			Drinks	64 mg/100 ml
			Option 2: Limit to selected food groups when using significant amounts of potassium:	≥ 300 mg/100 g or ≥ 150 mg/100 ml
			Option 3: No addition of potassium for nutritional purposes. Under this condition, the available residual amount of a total of 2,000 mg/day could be allocated to the food supplement category alone.	
2004		*500 mg*		*No addition*
			! 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.*	
Calcium				
2021	! 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	500 mg	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 product substitutes to which calcium is added in amounts comparable to the concentration in dairy products or specially labelled drinks (30 % of the reference value for labelling/100 g or 100 ml)*	

* *The proposed maximum levels refer to adults (2004) or people over the age of 15 and adults (2021) unless otherwise indicated.*

The BfR's recommended maximum levels
for vitamins and minerals in food supplements and fortified foods

German Federal Institute for Risk Assessment

Year	... food supplements* (per daily recommended intake of a product)		... fortified foods for general consumption	
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				
2021	**! Note** indicating that men, post-menopausal women and pregnant women should only take iron after consulting a doctor	6 mg	**Option 1**	No addition
			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	For pregnant and breastfeeding women	100 µg	Table salt	2,500 µg/100 g
		150 µg	**! Note:** Even at 3,000 µg/100 g, no health impairments are expected according to BfR Opinion No. 005/2021 of 9 February 2021	
			Other foods for general consumption	No addition
2004	***! Note:** This limit does not apply to dietetic food supplements, e.g., for pregnant and breastfeeding women.*	*100 µg*	*No fortification of foods for general consumption*	
			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*

* *The proposed maximum levels refer to adults (2004) or people over the age of 15 and adults (2021) unless otherwise indicated.*

The BfR's recommended maximum levels
for vitamins and minerals in food supplements and fortified foods

German Federal Institute for Risk Assessment

Year	... food supplements* (per daily recommended intake of a product)	... fortified foods for general consumption	
Zinc			
2021	6.5 mg		No addition
2004	*2.25 mg* ***! Note:*** *No supplementation for children and adolescents under the age of 17*		*No addition*
Selenium			
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
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*

* *The proposed maximum levels refer to adults (2004) or people over the age of 15 and adults (2021) unless otherwise indicated.*

The BfR's recommended maximum levels
for vitamins and minerals in food supplements and fortified foods

German Federal Institute for Risk Assessment

Year	... food supplements* (per daily recommended intake of a product)		... fortified foods for general consumption	
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*	
Silicon				
2021	*For the addition of ...*		Silicon compounds have not been approved for fortification so far, therefore no addition proposed here	
	Silicon dioxide	350 mg		
	Silicic acid (silica gel)	100 mg		
	Choline-stabilised orthosilicic acid	10 mg		
	Organic silicon (monomethylsilanetriol)	10 mg [2]		
	[2] *Safe intake level for daily intake, approved in the context of novel food authorisation procedure*			
2004	*Not taken into account when maximum levels were derived*		*Not taken into account when maximum levels were derived*	

References

BfR (2021). Stellungnahme Nr. 005/2021 des BfR vom 9. Februar 2021. Rückläufige Jodzufuhr in der Bevölkerung: Modellszenarien zur Verbesserung der Jodaufnahme (German only): www.bfr.bund.de/cm/343/ruecklaeufige-jodzufuhr-in-der-bevoelkerung-modellszenarien-zur-verbesserung-der-jodaufnahme.pdf; last accessed: 03.03.2021.

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/cm/349/updated-recommended-maximum-levels-for-the-addition-of-vitamins-and-minerals-to-food-supplements-and-conventional-foods.pdf

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

* *The proposed maximum levels refer to adults (2004) or people over the age of 15 and adults (2021) unless otherwise indicated.*