

Minerals

	DAILY VALUE* (USRDI)	DIETARY SOURCES	DEFICIENCY SYMPTOMS	IMPORTANCE	INHIBITS ABSORPTION	ENHANCES ABSORPTION
BORON	1.7-7.0 mg ^a (Daily Value not established)	Fruits, vegetables, nuts, wine, cider, beer	Depressed growth, osteoporosis	Proper mineral absorption	Triglycerides	Calcium, magnesium, phosphorus, Vitamin D
CALCIUM	800 mg 1000 mg 1300 mg	Leafy green vegetables, milk, cheese, yogurt, shellfish, bone meal, dolomite, almonds, liver	Back and leg pains, heart palpitations, tetany, brittle bones, insomnia, tooth decay, muscle pains	Necessary for development of healthy, strong bones and teeth; assists blood clotting, nerve transmission and tranquilization, heart rhythm	Stress. Lack of: hydrochloric acid, exercise, magnesium, Vitamin D	Magnesium, hydrochloric acid, vitamins A, D, C, F, iron
CESIUM	0.1-17.5 mcg ^b (Daily Value not established)	Foods grown in mineral rich soil	Not determined	Energy, brain function, cancer prevention	Unknown	Unknown
CHROMIUM	120 mcg	Whole grain cereals, clams, corn oil, brewer's yeast	Depressed growth rate, atherosclerosis, intolerance in diabetics	Increases effectiveness of insulin; stimulates enzymes in metabolism of energy; healthy blood circulatory system; synthesis of fatty acids, cholesterol and protein	Unknown	Unknown
COBALT	15-32 mcg ^c (Daily Value not established)	Meats, leafy green vegetables, fruits, poultry, milk, clams, organ meats	Retarded growth rate, pernicious anemia	Maintains red blood cells; functions as part of B-12; activates some enzymes in body	Unknown	Copper, iron, zinc
COPPER	1 mg 2 mg 2 mg	Soybeans, raisins, nuts, bone meal, organ meats, fish, legumes, molasses	Skin sores, impaired respiration, general weakness	Part of many enzymes; works with vitamin C to form elastin; formation of red blood cells; color of hair and skin; good for bone formation	High intakes of zinc	Zinc, cobalt, iron
IODINE	70 mcg 150 mcg 150 mcg	Mushrooms, iodized salt, fish, kelp tablets	Obesity, irritability, dry hair, nervousness, cold hands and feet	Regulates energy production and rate of metabolism, enhances thyroid function, needed for prevention of goiter, good for healthy hair, skin, nails, teeth	Unknown	Unknown
IRON	10 mg 18 mg 18 mg	Cherry juice, liver, eggs, fish, wheat germ, leafy green vegetables, shredded wheat, dried fruits, poultry	Weakness, difficulty in breathing, anemia, constipation, brittle nails	Needed for formation of hemoglobin and myoglobin; promotes protein metabolism; stress and disease resistance; promotes growth; good for healthy teeth, skin, nails, bones	Excessive zinc, coffee, excessive phosphorus	Copper, vitamins C, B-12, folic acid, calcium
LITHIUM	730 mcg mean US intake ^d (Daily Value not established)	Foods grown in mineral rich soil	Depressed growth, reduced fertility, reduced longevity, depression	Proper endocrine regulation, brain function, promoter of actin filament assembly (Actin is an integral component of striated muscle cells.)	Vanadium, cobalt, aluminum	Cobalt, Vitamin B-12
MAGNESIUM	200 mg 400 mg 450 mg	Molasses, whole grains, honey, nuts, kelp tablets, tuna, bran, green vegetables, bone meal, fish	Muscular excitability, confusion, nervousness, tremors	Catalyst in the utilization of carbohydrate-fat-protein, phosphorus, calcium, potassium; good for energy; healthy maintenance of bones, arteries, heart, nerves, teeth	Unknown	Vitamins B-6, C, D, protein, calcium

ABBREVIATIONS: USRDI: United States Reference Daily Intake • IU: International Units • g: grams • mg: milligrams • mcg: micrograms
 *DESCRIPTION OF DAILY VALUE (USRDI) LISTING: With more than one listing: The top line represents the Daily Value for children twelve

months to four years old; the second line represents the Daily Value for persons four years and older; the third line represents the Daily Value for pregnant and lactating women. All listings are Daily Values unless otherwise noted.

Minerals (continued)

	DAILY VALUE* (USRDI)	DIETARY SOURCES	DEFICIENCY SYMPTOMS	IMPORTANCE	INHIBITS ABSORPTION	ENHANCES ABSORPTION
MANGANESE	2 mg	Whole grains, nuts, legumes, leafy green vegetables, bananas, celery, pineapple, liver, egg yolks	Hearing loss, ataxia, dizziness	Enzyme activation, maintains sex hormone production; helps carbohydrate and fat production, tissue respiration; utilizes vitamin E; needed for normal skeletal development.	Excessive intake of phosphorus and calcium	Phosphorus, calcium, vitamins B-1, E
MOLYBDENUM	75 mcg	Milk, dairy products, legumes, organ meats, grains	Depressed growth, low appetite, impaired reproduction and fertility	Proper mental function, proper amino acid metabolism	Unknown	Sulfur-amino acids
NICKEL	35-700 mcg/d ^a (Daily Value not established)	Chocolate, nuts, dried beans, grains	Depressed growth, dermatitis	Optimal growth, healthy skin, bone structure, enhances alkaline phosphate	Iron, copper	Unknown
PHOSPHORUS	800 mg 1000 mg 1300 mg	Legumes, milk/milk products, bone meal, nuts, yellow cheese, eggs, fish, grains, poultry	Pyorrhea, weight loss, appetite loss, irregular breathing, fatigue, nervousness, overweight	Works with calcium to form bones, teeth; cell growth and repair; utilizes carbohydrate-fat-protein; heart muscle contraction; nerve activity	Excessive intake of magnesium, white sugar, iron	Protein, manganese, iron, calcium, vitamins A, F, D
POTASSIUM	3500 mg	Meats, whole grains, legumes, dried fruits, dates, figs, peaches, nuts, seafood, bananas, apricots	Respiratory failure, cardiac arrest, poor reflexes, dry skin, nervousness, irregular heartbeat (slow), insomnia	Controls activity of heart muscles, nervous system, kidneys; rapid growth; muscle contractions; nerve tranquilization	Coffee, diuretics, sugar, stress, alcohol, cortisone, laxatives	B-6, sodium
SELENIUM	70 mcg	Broccoli, onions, tuna, herring, bran and wheat germ, brewer's yeast, whole grain	Premature aging	Works with vitamin E; preserves tissue elasticity; protein utilization	Unknown	Vitamin E
SILICON	21-46 mg ^a (Daily Value not established)	Unrefined high-fiber grains, cereal products, root vegetables	Impaired formation of bone and cartilage (low collagen content)	Essential for the repair, maintenance and formation of healthy connective tissue	Unknown	Calcium
VANADIUM	12.4-30 mcg ^a (Daily Value not established)	Shellfish, mushrooms, parsley, dill seed, black pepper	Impaired perinatal survival, depressed growth, enhanced hematocrit, plasma cholesterol, lipids and phospholipids	Regulation of energy production, inhibition of cholesterol synthesis, enhances bone and tooth formation	Unknown	Zinc, copper, iron
ZINC	8 mg 15 mg 15 mg	Organ meats, brewer's yeast, fish, soybeans, liver, spinach, mushrooms, sunflower seeds	Sterility, delayed sexual maturity, loss of taste, poor appetite, fatigue, retarded growth	Aids in digestion and metabolism of phosphorus and protein; component of insulin and male reproductive fluid; burn and wound healing process; prostate, carbohydrate digestion	High intake of calcium, alcohol	Phosphorus, copper, calcium, Vitamin A

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NOTE: The symptoms referred to on these pages can occur only when daily intake of the minerals mentioned has been less than the U.S. Daily Value over a prolonged period of time. These nonspecific symptoms do not alone prove nutritional deficiency, but may be caused by any number of conditions or may have functional causes. If these symptoms persist, they may indicate a condition other than a vitamin or mineral deficiency.

Daily Values from 21CFR101.9(c)

^a Shils ME, Young VE, Modern Nutrition in Health and Disease, Lea & Febiger, (1988).

^b Minola C, Sabbioni P, Apostoli R, et al., The Science of the Total Environment, 95 (1990).

^c Marzec Z, Bulinski R, Rocznik Państw Zakł Hig (Poland), 1992, 43(2) p. 135-8.

^d Schrauzer GN, Shrestha KP, Flores-Arce MF, Biol Trace Elem Res (England), Aug. 1992.