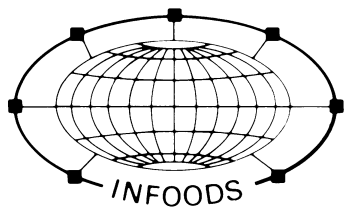


# FAO / INFOODS Databases

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## Density Database Version 2.0



Cover design: Kristy Ebanks in collaboration with Doris Rittenschober, Barbara Stadlmayr, U. Ruth Charrondiere, Diedelinde Persijn and Verena Nowak. Photos: © FAO

# **FAO/INFOODS Density Database Version 2.0 (2012)**

**Prepared by:** U. Ruth Charrondiere, David Haytowitz and Barbara Stadlmayr

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## Introduction

FAO/INFOODS prepared this database to provide a tool for researchers and professionals to convert volume into weight and vice-versa. Data were collected from the literature, various national food composition tables and measurements conducted by the authors (see bibliography).

Version 1.0 included density data for 214 food entries in 16 food groups from six sources and version 2.0 includes 638 foods entries in 20 food groups from 11 sources. For version 2, in addition to density data it was decided to also present data on specific gravity and to define the terms used. The data presented in this database are divided between density (including mass density and bulk density) and specific gravity. Like version 1.0, the data can be downloaded in Excel format from the INFOODS website.

*Table 1. Food groups and number of foods*

<b>Food group</b>	<b>Number of foods</b>
Beverages, non alcoholic (including soft drinks and juices)	44
Tea, coffee and drinking powders	18
Beverages (alcoholic)	118
- Beer	19
- Spirits and liqueurs	59
- Wine and cider	40
Milk and dairy products	48
- Milk	17
- Dairy products	31
Oils and fats	30
- Oils	23
- Fats and others	7
Cereals and cereal products	130
Tubers and products*	13
Nuts and seeds	12
Fruits*	3
Vegetables	29
Legumes	20
Herbs and spices*	8
Fish and fish products	2
Eggs and egg products	3
Meat and meat products*	13
Snacks	3
Sweets	22
Miscellaneous foods (e.g. salt table, salad dressing)	18
Soups	10
Mixed dishes	94

\* new food group in Version 2.0

**If you have any additional measured data, we would appreciate if you could send them to [ruth.charrondiere@fao.org](mailto:ruth.charrondiere@fao.org) to incorporate them into the FAO/INFOODS Density Database. Your contribution will be acknowledged with your name.**

## Definitions

- **Mass density or density:** The mass density or density of a material is defined as its mass per unit volume. The mass density of a material varies with temperature and pressure. The variance is typically small for solids and liquids. Whenever information on temperature or pressure was available in the literature it was added to the reference.

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

- **Bulk density:** Bulk density is a property of powders, granules and other solids, particularly used in reference to mineral components (soil, gravel), chemical substances, (pharmaceutical) ingredients, foodstuff or any other masses of corpuscular or particulate matter. It is defined as the mass of many particles of the material divided by the total volume they occupy. The total volume comprises particle volume, inter-particle void volume and internal pore volume.
- **Specific gravity:** Specific gravity is the ratio of the density (mass of a unit volume) of a substance to the density (mass of the same unit volume) of a reference substance. In most of the cases the reference substance is water for liquids or air for gases. Specific gravity represents a ratio and is therefore dimensionless.

The numerical values of density and specific gravity are the same if the measurement temperature of water is 4°C. At any other temperature the measures of density and specific gravity (with water being the reference component) will be slightly different.

Precision of data is important, however as food intake data are estimates and not precise to the exact mL, it was decided to truncate calculated density and specific gravity data to two decimal numbers whereas data from the literature given in three decimal number were listed as such.

## Densities and specific gravities of foods

Table 2. Densities and specific gravities of foods

Food name and description	Density in g/ml (including mass and bulk density)	Specific gravity	BiblioID	Update Version 2.0
<b>Beverages, non-alcoholic (including soft drinks and juices)</b>				
Apple juice, canned or bottled, unsweetened, with added ascorbic acid	1.04	1.05	USDA	x
Apple juice, canned or bottled, unsweetened, without added ascorbic acid	1.04	1.05	USDA	x
Beverages, fruit juice drink, reduced sugar, with vitamin E added	1.04	1.05	USDA	x
Carbonated beverage, tonic water	1.02	1.02	USDA	x
Cranberry juice cocktail, bottled	1.05	1.05	USDA	x
Cranberry-apple juice drink, bottled	1.06	1.07	USDA	x
Fruit drinks, low calories, undiluted		1.010-1.030	UK 6 <sup>th</sup>	
Fruit drinks, undiluted		1.090-1.120	UK 6 <sup>th</sup>	
Fruit juice	1.06		FNDDS 4.1	
Fruit juice drinks		1.040	UK 6 <sup>th</sup>	
Fruit juice drinks, ready to drink		1.030-1.040	UK 6 <sup>th</sup>	



Food name and description	Density in g/ml (including mass and bulk density)	Specific gravity	BiblioID	Update Version 2.0
Grape juice	1.054		S&W	
Grape juice, canned or bottled, unsweetened, with added ascorbic acid	1.06	1.07	USDA	x
Grape juice, canned or bottled, unsweetened, without added ascorbic acid	1.06	1.07	USDA	x
Guanabana nectar, canned	1.02	1.02	USDA	x
Guava nectar, canned	1.02	1.02	USDA	x
Ice, crushed	0.56-0.72		ASI	x
Juice, apple and grape blend, with added ascorbic acid	1.05	1.05	USDA	
Juice, apple, grape and pear blend, with added ascorbic acid and calcium	1.05	1.05	USDA	
Lemonade, frozen concentrate, pink	1.24	1.24	USDA	
Lemonade, frozen concentrate, white	1.17	1.17	USDA	
Lime juice cordial, undiluted		1.102	UK 6 <sup>th</sup>	
Mango nectar, canned	1.00	1.00	USDA	x
Meal supplement drink, NESTLE, SUPLIGEN, canned, peanut flavor	1.04	1.04	USDA	x
Orange juice	1.038		S&W	
Orange juice with calcium	1.038		S&W	
Orange juice, canned, unsweetened	1.04	1.05	USDA	x
Orange soda (sweetened with sugar)	1.029		S&W	
QUAKER OATS, PROPEL Fitness Water, fruit-flavored, non-carbonated	1.00	1.00	USDA	x
Soft drinks, cola type		1.040	UK 6 <sup>th</sup>	
Soft drinks, diet soda	0.988		S&W	
Soft drinks, lemonade type		1.020	UK 6 <sup>th</sup>	
Soft drinks, lucozade type		1.070	UK 6 <sup>th</sup>	
Soy drink	1.08		FNDDS 4.1	
Soya + milk + sugar	1.05		KEN	x
Soya + sugar	1.05		KEN	x
Sports drink, COCA-COLA, POWERADE, lemon-lime flavored, ready-to-drink	1.03	1.03	USDA	x
Sports drink, PEPSICO QUAKER GATORADE, GATORADE, original, fruit-flavored, ready-to-drink	1.03	1.03	USDA	x
Tamarind nectar, canned	1.01	1.01	USDA	x
Water		1	CG	x
Water, ice, 0 °C	0.916		TB	
Water, ice, 4 °C	0.999		TB	
Water, liquid, 20 °C	0.998		TB	
Water, mineralwater	1.035-1.04		DK	
<b>Tea, cacao, coffee and drinking powders</b>				
Coffee, brewed	1		FNDDS 4.1	
Coffee, espresso	1		FNDDS 4.1	
Coffee, green (beans)	0.59-0.62	0.59-0.62	ASI	x
Coffee, powder (nescafé)	0.25		RC	

Food name and description	Density in g/ml (including mass and bulk density)	Specific gravity	BiblioID	Update Version 2.0
Coffee, roasted (beans)	0.35-0.38	0.35-0.38	ASI	x
Miso, broth, ready to drink	1.06		FNDDS 4.1	
Powder, chocolate drinking powder	0.5-0.55		RC	
Powders	0.2-0.25		KEN	x
Tea, black (tea leaves)	0.48		KEN	x
Tea, herbal, Ciakimora (leaves + water)	1		KEN	x
Tea, herbal, Ciakimora leaves	0.23		KEN	x
Tea, flakes	0.38		ASI	x
Tea, powdered	0.43		ASI	x
Tea, liquid	1		FNDDS 4.1	
Tea, only (tea leaves + water)	1		KEN	x
Tea, ready-to-drink, ARIZONA iced tea, with lemon flavor	1.03	1.04	USDA	x
Tea, ready-to-drink, LIPTON BRISK iced tea, with lemon flavor	1.03	1.03	USDA	x
Tea, ready-to-drink, NESTLE, COOL NESTEA ice tea lemon flavor	1.03	1.04	USDA	x
<b>Beverages, alcoholic</b>				
<b>Beer</b>				
Beer, lager		1.005	UK 6 <sup>th</sup>	
Beer, light	1.00	1.00	USDA	x
Beer, light, BUD LIGHT	1.00	1.00	USDA	x
Beer, light, BUDWEISER SELECT	1.00	1.00	USDA	x
Beer, light, MICHELOB ULTRA	1.00	1.00	USDA	x
Beer, local (non specific)	0.96		KEN	x
Beer, pale ale		1.003	UK 6 <sup>th</sup>	
Beer, pilsner	1.007		DK	
Beer, pilsner, 4 °C	1.008		TB	
Beer, regular, all	1.01	1.01	USDA	x
Beer, regular, BUDWEISER	1.00	1.01	USDA	x
Beer, stout, bottled		1.014	UK 6 <sup>th</sup>	
Beer, stout, extra		1.002	UK 6 <sup>th</sup>	
Beer, strong ale		1.018	UK 6 <sup>th</sup>	
Beer, type bitter or brown ale		1.008	UK 6 <sup>th</sup>	
Beer, type draught		1.004	UK 6 <sup>th</sup>	
Beer, type Keg		1.001	UK 6 <sup>th</sup>	
Beer, type mild, draught		1.009	UK 6 <sup>th</sup>	
Beer, commercial (white cap etc.)	0.97		KEN	x
<b>Spirits and liqueurs</b>				
Alcohol, ethyl	0.789		TB	
Amaretto		1.1	CG	x
Amaretto di Saranno		1.08	CG	x
Anisette		1.175	CG	x
Apricot brandy		1.06	CG	x
Apricot liquor		1.09	CG	x
Bailey's irish cream		1.05	CG	x
Benedictine		1.04	CG	x

Food name and description	Density in g/ml (including mass and bulk density)	Specific gravity	BiblioID	Update Version 2.0
Benedictine D.O.M.		1.07	CG	x
Blackberry brandy		1.06	CG	x
Blackberry liquor		1.1	CG	x
Blue curacao		1.11	CG	x
Brandy		1.04	CG	x
Campari		1.06	CG	x
Cherry brandy		1.06	CG	x
Cherry liqueur		1.12	CG	x
Coffee liquor		1.13	CG	x
Cointreau		1.04	CG	x
Crème de almond		1.16	CG	x
Crème de banana		1.14	CG	x
Crème de cacao		1.14	CG	x
Crème de cassis		1.18	CG	x
Crème de noyaux		1.165	CG	x
Drambuie		1.08	CG	x
Frangelico		1.08	CG	x
Galliano		1.11	CG	x
Green chartreuse		1.01	CG	x
Green crème de menthe		1.12	CG	x
Kummel		1.04	CG	x
Liqueur	1.03-1.150		DK	
Liqueur, type advocaat		1.093	UK 6 <sup>th</sup>	
Liqueur, type cherry brandy		1.093	UK 6 <sup>th</sup>	
Liqueur, type curacao		1.052	UK 6 <sup>th</sup>	
Midori melon liquor		1.05	CG	x
Orange curacao		1.08	CG	x
Parfait d'amour		1.13	CG	x
Peach brandy		1.06	CG	x
Peach liqueur		1.04	CG	x
Peppermint schnapps		1.04	CG	x
Port		1.026	UK 6 <sup>th</sup>	
Rock and Rye		1.05	CG	x
Sherry, dry		0.988	UK 6 <sup>th</sup>	
Sherry, medium		0.998	UK 6 <sup>th</sup>	
Sherry, sweet		1.009	UK 6 <sup>th</sup>	
Sloe gin		1.04	CG	x
Southern comfort		0.97	CG	x
Spirits, 40% alcohol		0.950	UK 6 <sup>th</sup>	
Spirits, 45% alcohol (whiskey)	0.939		DK	
Spirits, 70% alcohol	0.885		DK	
Spirits, 75% alcohol	0.873		DK	
Strawberry liqueur		1.12	CG	x
Tia Maria		1.09	CG	x
Triple sec		1.09	CG	x
Tuaca		0.98	CG	x

Food name and description	Density in g/ml (including mass and bulk density)	Specific gravity	BiblioID	Update Version 2.0
Vermouth, dry		1.005	UK 6 <sup>th</sup>	
Vermouth, sweet		1.046	UK 6 <sup>th</sup>	
White crème de cacao		1.14	CG	x
White crème de menthe		1.12	CG	x
Yellow chartreuse		1.06	CG	x
<b>Wine and Cider</b>				
Cider, dry		1.007	UK 6 <sup>th</sup>	
Cider, sweet		1.012	UK 6 <sup>th</sup>	
Cider, vintage		1.017	UK 6 <sup>th</sup>	
Wine, red		0.998	UK 6 <sup>th</sup>	
Wine, rose, medium		1.003	UK 6 <sup>th</sup>	
Wine, table, all	0.99	0.99	USDA	x
Wine, table, red	0.99	0.99	USDA	x
Wine, table, red, Barbera	0.99	0.99	USDA	x
Wine, table, red, Burgundy	1.00	1.00	USDA	x
Wine, table, red, Cabernet Franc	0.99	0.99	USDA	x
Wine, table, red, Cabernet Sauvignon	0.99	0.99	USDA	x
Wine, table, red, Carignane	0.99	1.00	USDA	x
Wine, table, red, Claret	0.99	1.00	USDA	x
Wine, table, red, Gamay	0.99	0.99	USDA	x
Wine, table, red, Lemberger	0.99	1.00	USDA	x
Wine, table, red, Merlot	0.99	0.99	USDA	x
Wine, table, red, Mouvedre	0.99	0.99	USDA	x
Wine, table, red, Petite Sirah	0.99	1.00	USDA	x
Wine, table, red, Pinot Noir	0.99	0.99	USDA	x
Wine, table, red, Sangiovese	0.99	0.99	USDA	x
Wine, table, red, Syrah	0.99	0.99	USDA	x
Wine, table, red, Zinfandel	0.99	0.99	USDA	x
Wine, table, white	0.99	0.99	USDA	x
Wine, table, white, Chardonnay	0.99	0.99	USDA	x
Wine, table, white, Chenin Blanc	1.00	1.00	USDA	x
Wine, table, white, Fume Blanc	0.99	0.99	USDA	x
Wine, table, white, Gewurztraminer	0.99	1.00	USDA	x
Wine, table, white, late harvest	1.04	1.04	USDA	x
Wine, table, white, late harvest, Gewurztraminer	1.03	1.03	USDA	x
Wine, table, white, Muller Thurgau	1.00	1.00	USDA	x
Wine, table, white, Muscat	1.01	1.01	USDA	x
Wine, table, white, Pinot Blanc	0.99	0.99	USDA	x
Wine, table, white, Pinot Gris (Grigio)	0.99	0.99	USDA	x
Wine, table, white, Riesling	1.00	1.00	USDA	x
Wine, table, white, Sauvignon Blanc	0.99	0.99	USDA	x
Wine, table, white, Semillon	1.00	1.00	USDA	x
Wine, white	1-1.04		DK	
Wine, white, dry or sparkling		0.995	UK 6 <sup>th</sup>	
Wine, white, medium		1.005	UK 6 <sup>th</sup>	
Wine, white, sweet		1.016	UK 6 <sup>th</sup>	

Food name and description	Density in g/ml (including mass and bulk density)	Specific gravity	BiblioID	Update Version 2.0
<b>Milk and dairy products</b>				
<b>Milk</b>				
Milk (at 15.6 C)		1.02-1.05	CSG	x
Milk (non-fat dry)	0.56		ASI	x
Milk (powdered whole)	0.56		ASI	x
Milk (powdered)	0.21		ASI	x
Milk shake, fruit and other	1		FNDDS 4.1	
Milk, acidophilus cultured	1.01		DK	
Milk, buttermilk	1.022		DK	
Milk, chocolate milk, skimmed	1.056		DK	
Milk, cow, whole	1.04		KEN	x
Milk, evaporated		1.07	UK 6 <sup>th</sup>	
Milk, goat, whole	1.08		FNDDS 4.1	
Milk, liquid (whole, semi-skimmed, skimmed)		1.03	UK 6 <sup>th</sup>	
Milk, liquid, partially skimmed	1.034		DK	
Milk, liquid, skimmed	1.033		TB	
Milk, liquid, skimmed	1.036		DK	
Milk, liquid, whole	1.030		TB	
Milk, liquid, whole	1.031		DK	
<b>Dairy products</b>				
Butter	0.911		TB	
Butter, margarine	0.96		RC	
Buttermilk, dried	0.5		ASI	x
Casein	0.58		ASI	x
Cheese, emmentaler, grated	0.34		RC	
Cream, 13% fat	1.013		DK	
Cream, 38% fat	0.984		DK	
Cream, 9% fat	1.017		DK	
Cream, double (about 40-50% fat)		0.94	UK 6 <sup>th</sup>	
Cream, heavy	0.994		TB	
Cream, light	1.012		TB	
Cream, single (about 20% fat)		1.00	UK 6 <sup>th</sup>	
Cream, sour (crème fraiche about 18% fat)	1.005		DK	
Cream, sour (crème fraiche about 38% fat)	0.978		DK	
Cream, whipped	0.496		S&W	
Cream, whipping (about 40% fat)		0.96	UK 6 <sup>th</sup>	
Ice cream	0.554		S&W	
Ice cream, dairy		0.61	UK 6 <sup>th</sup>	
Ice cream, light (formerly ice milk)	0.56		FNDDS 4.1	
Ice cream, light, no sugar added	0.58		FNDDS 4.1	
Ice cream, no sugar added	0.54		FNDDS 4.1	
Ice cream, non dairy		0.51	UK 6 <sup>th</sup>	
Ice cream, regular	0.56		FNDDS 4.1	
Ice cream, rich	0.62		FNDDS 4.1	

Food name and description	Density in g/ml (including mass and bulk density)	Specific gravity	BiblioID	Update Version 2.0
Sour milk, cow, whole	0.98		KEN	x
Yoghurt, berry, low fat, artificially sweetened	1.06		FNDDS 4.1	
Yoghurt, fruits	1.045-1.06		DK	
Yoghurt, low fat, fruit		1.08	UK 6 <sup>th</sup>	
Yoghurt, plain, unsweetened	1.06		FNDDS 4.1	
Yoghurt, plain, unsweetened	1.031		DK	
Yoghurt, strawberry, low fat	1.08		FNDDS 4.1	
<b>Oils and fats</b>				
<b>Oils</b>				
Cooking oil, elianto oil, salad, golden fry, rina	0.88		KEN	x
Cooking oil, sima	0.88		KEN	x
Cooking oil, tily, chipo, pura	0.88		KEN	x
Oil, cod (at 15.6 C)		0.928	CSG	x
Oil, corn (at 15.6 C)		0.924	CSG	x
Oil, cotton seed (at 15.6 C)		0.88-0.93	CSG	x
Oil, lard (at 15.6 C)		0.91-0.93	CSG	x
Oil, linseed (at 15.6 C)		0.93-0.94	CSG	x
Oil, olive (at 15.6 C)		0.91-0.92	CSG	x
Oil, other than palmoil	0.92		DK	
Oil, palm (at 15.6 C)		0.924	CSG	x
Oil, palmoil	0.89		DK	
Oil, peanut (at 15.6 C)		0.92	CSG	x
Oil, rapeseed (at 20 C)		0.92	CSG	x
Oil, sesame seed (at 15.6 C)		0.923	CSG	x
Oil, sunflower	0.96		RC	
Oil, vegetable, coconut	0.924		TB	
Oil, vegetable, corn	0.922		TB	
Oil, vegetable, olive	0.918		TB	
Oil, vegetable, palm	0.915		TB	
Oil, vegetable, peanut	0.914		TB	
Oil, vegetable, soya	0.927		TB	
Oil, whale (at 15.6 C)		0.925	CSG	x
<b>Fats and other</b>				
Animal fat	0.7		KEN	x
Lard	0.919		TB	
Lard (at 15.6 C)		0.96	CSG	x
Mayonnaise, light	1		TB	
Mayonnaise, traditional	0.91		TB	
Solid vegetable fat kimbo	0.6		KEN	x
Solid vegetable fat rina	0.67		KEN	x
<b>Cereal and cereal products</b>				
Barley	0.62		TB	
Barley malt, flour	0.72		ASI	x
Barley, fine ground	0.74		ASI	x
Barley, meal	0.45		ASI	x

Food name and description	Density in g/ml (including mass and bulk density)	Specific gravity	BiblioID	Update Version 2.0
Barley, flour	0.61		ASI	x
Barley, flour, malted	0.64		ASI	x
Barley, ground	0.38-0.42		ASI	x
Barley, malted	0.49		ASI	x
Barley, rolled	0.34-0.38		ASI	x
Barley, scoured	0.66		ASI	x
Barley, whole	0.61-0.69		ASI	x
Biscuits	0.41-0.53		FNDDS 4.1	
Bran	0.56		ASI	x
Bread	0.29		FNDDS 4.1	
Bread, cornbread	0.433		S&W	
Bread, roll, soft	0.18		FNDDS 4.1	
Bread, white	0.42		KEN	x
Bread, white, sliced, prepacked	0.29		FNDDS 4.1	
Breadcrumbs	0.45		RC	
Breakfast cereal, cornflakes (dry cereal)	0.117		S&W	
Breakfast cereal, muesli w/ fruits&nuts	0.37		FNDDS 4.1	
Breakfast cereal, raisin bran	0.26		FNDDS 4.1	
Breakfast cereal, type Cheerios	0.13		FNDDS 4.1	
Breakfast cereal, type Corn flakes	0.1		RC	
Breakfast cereal, type Crispix	0.13		FNDDS 4.1	
Breakfast cereal, type frosted flakes	0.18		FNDDS 4.1	
Breakfast cereal, type Just Right	0.24		FNDDS 4.1	
Breakfast cereal, type rice krispies	0.12		FNDDS 4.1	
Buckwheat, bran	0.25		ASI	x
Buckwheat, flour	0.66		ASI	x
Buckwheat, whole	0.59-0.66		ASI	x
Bulrush mille, fermented flour	0.56		KEN	x
Cake	0.415		S&W	
Cake mix	0.7		ASI	x
Corn/maize flour, white	0.55		KEN	x
Corn/maize starch, loosely packed	0.54		TB	
Corn/maize sugar	0.33		ASI	x
Corn/maize, boiled	0.90		KEN	x
Corn/maize, boiled with fat	0.90		KEN	x
Corn/maize, bran	0.21		ASI	x
Corn/maize, chops (coarse)	0.64-0.70		ASI	x
Corn/maize, chops (fine)	0.58-0.62		ASI	x
Corn/maize, chops (medium)	0.61-0.67		ASI	x
Corn/maize, cobs	0.27		ASI	x
Corn/maize, cracked (coarse)	0.64		ASI	x
Corn/maize, ear	0.9		TB	
Corn/maize, ear	0.9		ASI	x
Corn/maize, fermented flour	0.55		KEN	x
Corn/maize, flour	0.82		ASI	x
Corn/maize, meal	0.64		ASI	x
Corn/maize, flour	0.62		ASI	x

Food name and description	Density in g/ml (including mass and bulk density)	Specific gravity	BiblioID	Update Version 2.0
Corn/maize, germ flour	0.56		ASI	x
Corn/maize, gluten flour	0.51-0.69		ASI	x
Corn/maize, grits	0.64-0.69		ASI	x
Corn/maize, ground	0.54-0.58		ASI	x
Corn/maize, kibbled	0.32-0.35		ASI	x
Corn/maize, mash	0.72		ASI	x
Corn/maize, shelled	0.72		TB	
Corn/maize, starch	0.67		ASI	x
Corn/maize, starch, tightly packed	0.63		TB	
Corn/maize, white, boiled	0.85		KEN	x
Corn/maize, white, dry	0.81		KEN	x
Corn/maize, whole kernel, dried, cracked (Njenga)	0.81		KEN	x
Corn/maize, whole kernel, dried, cracked, boiled (Njenga)	1.07		KEN	x
Corn/maize, whole shelled	0.72		ASI	x
Donut mix	0.64		ASI	x
Dough mix	0.59		ASI	x
Finger millet, fermented flour	0.61		KEN	x
Millet	0.64		ASI	x
Millet	0.64		TB	
Millet flour, bulrush	0.56		KEN	x
Millet flour, finger	0.61		KEN	x
Millet, bulrush	0.90		KEN	x
Millet, finger	0.81		KEN	x
Oat Flour	0.53		ASI	x
Oat middlings	0.61		ASI	x
Oats	0.41		TB	
Oats	0.43		ASI	x
Oats groats, whole	0.74		ASI	x
Oats, ground	0.46		ASI	x
Oats, hulls	0.13		ASI	x
Oats, rolled	0.30-0.38		ASI	x
Pasta, short macaroni style, boiled	0.55		RC	
Pasta, short macaroni style, raw	0.39		RC	
Pasta/ noodles, boiled	0.59		KEN	x
Porridge flour bonavist, boiled	0.73		KEN	x
Porridge flour bonavist, raw	0.84		KEN	x
Porridge flour ken-uji + lemon extract	0.54		KEN	x
Porridge flour ken-uji:F.mill, bul, sorg, wheat	0.60		KEN	x
Porridge, maize, flour + water	1.05		KEN	x
Rice	0.72		ASI	x
Rice, boiled	0.73		KEN	x
Rice, boiled with fat	0.70		KEN	x
Rice, bran	0.42		ASI	x
Rice, hulled	0.75		TB	
Rice, puffed	0.1		ASI	x
Rice, raw	0.85		KEN	x



Food name and description	Density in g/ml (including mass and bulk density)	Specific gravity	BiblioID	Update Version 2.0
Rice, rough	0.58		TB	
Rice, white, boiled	0.73		RC	
Rice, white, raw	0.82		RC	
Rye	0.72		TB	
Rye, bran	0.24-0.32		ASI	x
Rye, flour	0.67		ASI	x
Rye, malted	0.51		ASI	x
Rye, middlings	0.67		ASI	x
Rye, shorts	0.54		ASI	x
Rye, whole	0.69-0.72		ASI	x
Semolina, raw	0.78		RC	
Sorghum, fermented flour	0.54		KEN	x
Sorghum, flour	0.54		KEN	x
Sorghum, seed	0.51-0.56		ASI	x
Soy, flour	0.7		ASI	x
Soya, flour	0.64		ASI	x
Wheat	0.77		TB	
Wheat, bran	0.18-0.26		ASI	x
Wheat, cracked	0.56		ASI	x
Wheat, cut	0.74		ASI	x
Wheat, flour	0.48		ASI	x
Wheat, flour	0.58		KEN	x
Wheat, flour	0.67		ASI	x
Wheat, flour	0.521		S&W	
Wheat, flour, malted	0.66		ASI	x
Wheat, flour, white	0.67		RC	
Wheat, flour, wholemeal	0.55		RC	
Wheat, gluten	0.69		ASI	x
Wheat, hulls	0.7		ASI	x
Wheat, middlings	0.24		ASI	x
Wheat, shaved	0.54		ASI	x
Wheat, whole	0.72-0.83		ASI	x
Whey	0.56		ASI	x
<b>Tubers and products</b>				
Arrowroot/cocoyam, boiled	0.54		KEN	x
Arrowroot/cocoyam, raw	0.52		KEN	x
Cassava, flour	0.55		KEN	x
Cassava, boiled	0.63		KEN	x
Cassava, raw	0.63		KEN	x
Potato, english, boiled	0.59		KEN	x
Potato, english, raw	0.59		KEN	x
Potatoes, flakes	0.21		ASI	x
Potatoes, powdered	0.77		ASI	x
Sweet potato, boiled	0.65		KEN	x
Sweet potato, raw	0.44		KEN	x
Yam, boiled	0.79		KEN	x

Food name and description	Density in g/ml (including mass and bulk density)	Specific gravity	BiblioID	Update Version 2.0
Yam, raw	0.66		KEN	x
<b>Nuts and seeds</b>				
Almonds	0.46		ASI	x
Cashews	0.5		ASI	x
Coconut Chips	0.61		ASI	x
Flaxseed	0.7		ASI	x
Nuts	0.63		FNDDS 4.1	
Peanuts	0.53		ASI	x
Peanuts, shelled	0.69		ASI	x
Peanuts, unshelled	0.27-0.38		ASI	x
Pistachio, raw, with shell	0.6		RC	
Pistachio, raw, without shell	0.646		RC	
Rapeseed	0.77		ASI	x
Sunflower, seed	0.62		ASI	x
<b>Fruits</b>				
Apple slices, dried	0.24		ASI	x
Loquat	0.6		KEN	x
Paw Paw, unripe	0.56		KEN	x
<b>Vegetables</b>				
Alfalfa, leaf, meal	0.23		ASI	x
Alfalfa,meal, dehydrated 13%	0.26-0.29		ASI	x
Alfalfa, meal, dehydrated 17%	0.29-0.35		ASI	x
Alfalfa, meal, fine ground	0.24-0.35		ASI	x
Alfalfa, meal, suncured 13%	0.22		ASI	x
Alfalfa, seed	0.72-0.77		ASI	x
Alfalfa, stem meal	0.19		ASI	x
Carrot, raw, chopped	0.54		KEN	x
Carrot, raw, grated	0.71		KEN	x
Cauliflower, boiled	0.45		RC	
Chili, green	0.5		KEN	x
Chili, red	0.5		KEN	x
French green beans	0.53		KEN	x
Fresh green peas (minji)	0.73		KEN	x
Leaves, managu, raw (black night shade)	0.2		KEN	x
Leaves, onion, spring onion, raw	0.44		KEN	x
Corn/maize, green, sweet corn, boiled	0.73		KEN	x
Corn/maize, green, sweet corn, raw	0.61		KEN	x
Olives, green, with stone	0.65		RC	
Onions, chopped	0.22		ASI	x
Onions, minced	0.13		ASI	x
Onions, powdered	0.4		ASI	x
Onions, fried, cubed	0.75		RC	
Onions, raw, cubed	0.55		RC	
Salad, green, leaves, raw	0.06		RC	
Spinach, frozen, cooked	1.046		RC	

Food name and description	Density in g/ml (including mass and bulk density)	Specific gravity	BiblioID	Update Version 2.0
Spinach, leaves, raw	0.08		RC	
Sweet pepper, raw, cubes	0.51		RC	
Sweet pepper, raw, half rings	0.39		RC	
<b>Legumes</b>				
Beans, white	0.69-0.77		ASI	x
Cowpeas	0.72		ASI	x
Cowpeas, dried, boiled	0.75		KEN	x
Cowpeas, dried, raw	0.96		KEN	x
Greengram, boiled	0.76		KEN	x
Greengram, raw	0.79		KEN	x
Kidney beans, dry, boiled	0.79		KEN	x
Kidney beans, dry, raw	0.75		KEN	x
Kidney beans, green, boiled	0.7		KEN	x
Kidney beans, green, raw	0.68		KEN	x
Lentils, green, small, boiled	0.85		RC	
Lentils, green, small, raw	0.89		RC	
Pigeon peas, boiled	0.75		KEN	x
Pigeon peas, raw	0.84		KEN	x
Soybean	0.74		ASI	x
Soybean, flakes	0.58		ASI	x
Soybean, hulls	0.4		ASI	x
Soybean, meal	0.64		ASI	x
Soybean, boiled	0.79		KEN	x
Soybean, boiled with fat	0.70		KEN	x
<b>Herbes and spices</b>				
Cinnamon, powder	0.56		ASI	x
Clover, seed	0.77		ASI	x
Dry flavoring mix Roiko and other flavorings	0.7		KEN	x
Garlic, flakes	0.35		ASI	x
Garlic, powder	0.32		ASI	x
Sage, leaves	0.29		ASI	x
Spice, barbecue	0.48		ASI	x
Spice, blend	0.58		ASI	x
<b>Fish and fish products</b>				
Prawns, whole, boiled, with shell	0.58		RC	
Prawns, whole, boiled, without shell	0.77		RC	
<b>Egg and egg products</b>				
Egg, yoke, powder	0.37		ASI	x
Egg, chicken, boiled/poached	0.6		FND DS 4.1	
Eggs, powdered	0.35		ASI	x
<b>Meat and meat products</b>				
Blood, flour	0.48		ASI	x
Blood, meal	0.62		ASI	x

Food name and description	Density in g/ml (including mass and bulk density)	Specific gravity	BiblioID	Update Version 2.0
Bone and meat meal, loose	0.72		ASI	x
Bone meal, loose	0.80-0.96		ASI	x
Cow intestine, boiled	0.58		KEN	x
Cow, lean, no bone, raw	0.96		KEN	x
Cow, intestine, raw	0.93		KEN	x
Goat, intestine, boiled	0.56		KEN	x
Goat, intestine, raw	0.83		KEN	x
Pork, fatty, with bone, boiled	0.63		KEN	x
Pork, fatty, with bone, raw	0.97		KEN	x
Pork, medium, with bone, boiled	0.7		KEN	x
Pork, medium, with bone, raw	0.93		KEN	x
<b>Snacks</b>				
Potato chips	0.09		RC	
Potato chips, pringles	0.12		FNDDS 4.1	
Snacks, puffed, lowfat	0.11		FNDDS 4.1	
<b>Sweets</b>				
Glucolin, glucose	0.4		KEN	x
Glucose (at 15.6 C)		1.35-1.44	CSG	x
Jam	1.333		S&W	
Jam, sweetened	1.43		RC	
Jelly	1.245		S&W	
Nutella	1.26		RC	
Sucrose	0.85		ASI	x
Sucrose Octoacetate	0.53		ASI	x
Sugar	0.95		KEN	x
Sugar, dextrose	0.62		ASI	x
Sugar, dextrose	0.58		ASI	x
Sugar, granulated	0.7		ASI	x
Sugar, powdered	0.56		ASI	x
Sugar, white	0.9		RC	
Sugar, white	0.88		FNDDS 4.1	
Syrup, blackcurrant, undiluted		1.280	UK 6 <sup>th</sup>	
Syrup, corn	1.38		TB	
Syrup, corn, light	1.40	1.41	USDA	x
Syrup, fruit, blackberry	1.34		RC	
Syrup, grenadine		1.18	CG	x
Syrup, maple	1.32	1.32	USDA	x
Syrup, pancake	1.312		S&W	
<b>Miscellaneous foods</b>				
Baking powder	0.9		ASI	x
Gelatin	0.72		ASI	x
Monosodium glutamate	1.62		TB	
Mustard powdered	0.26		ASI	x
Protein supplement	0.54		ASI	x
Salad dressing	1.1		FNDDS 4.1	

Food name and description	Density in g/ml (including mass and bulk density)	Specific gravity	BiblioID	Update Version 2.0
Salt, sodium chloride	2.165		TB	
Salt, fine table	1.38		ASI	x
Salt, granulated	1.28		ASI	x
Salt, table	1.217		S&W	
Sauce, soy	1.12		FNDDS 4.1	
Sodium bicarbonate	2.2		TB	
Vitamin additive	0.66		ASI	x
Vitamin compound	0.67		ASI	x
Vitamin enrichment	0.64		ASI	x
Vitamin mix	0.7		ASI	x
Vitamin powder	0.56		ASI	x
Yeast	0.95		ASI	x
<b>Soups</b>				
Bean soup	1.054		S&W	
Cheddar cheese soup	1.046		S&W	
Chicken noodle soup	1		S&W	
Egg drop soup	1.017		S&W	
Mushroom soup	1.017		S&W	
Soup, meat	1.04		KEN	x
Soup, mixed	1.05		KEN	x
Soup, thick (squash, potato)	1.09		RC	
Soup, vegetable	0.99		KEN	x
Tomato soup	1.017		S&W	
<b>Mixed dishes</b>				
Beef and noodles (no sauce)	0.65		S&W	
Beef and noodles in gravy (mixture)	1.04		S&W	
Beef stew, canned	1.05		S&W	
Beef, noodles and vegetables (no sauce)	0.68		S&W	
Broccoli casserole	0.95		S&W	
Cheese tortellini	1.03		S&W	
Chicken and dumplings (mixture)	1.04		S&W	
Eggplant parmesan	0.83		S&W	
Githeri (muthugo + beans) + meat	0.95		KEN	x
Githeri (muthugo + beans) + meat + vegetable + potato/banana	0.99		KEN	x
Githeri (muthugo + beans) + onion, boiled with fat	0.98		KEN	x
Githeri (muthugo + beans) + potato/banana	0.88		KEN	x
Githeri (muthugo + beans) + vegetable	1.04		KEN	x
Githeri (muthugo + beans) + vegetable + meat	0.94		KEN	x
Githeri + meat	0.75		KEN	x
Githeri + meat + vegetable + potato/banana	1.05		KEN	x
Githeri + onion, boiled with fat	0.83		KEN	x
Githeri + peas	1.04		KEN	x
Githeri + potato/banana	1.10		KEN	x
Githeri + roots + vegetable	1.13		KEN	x
Githeri + vegetable	1.30		KEN	x

Food name and description	Density in g/ml (including mass and bulk density)	Specific gravity	BiblioID	Update Version 2.0
Githeri + vegetable + meat	0.84		KEN	x
Githeri + vegetable + potato/banana	0.95		KEN	x
Githeri plain (muthugo + beans + water)	0.98		KEN	x
Githeri, beans + vegetable + potatoes	0.93		KEN	x
Githeri, maize + peas	0.97		KEN	x
Githeri, plain (maize + beans + water)	0.71		KEN	x
Gitwero, banana + beans	1.20		KEN	x
Gitwero, banana + beans + vegetable	1.20		KEN	x
Gitwero, banana + potato + beans	1.04		KEN	x
Gitwero, banana + vegetable	1.20		KEN	x
Gitwero, banana, boiled with fat	1.19		KEN	x
Gitwero, banana/potato	1.30		KEN	x
Gitwero, banana/potato + meat	1.08		KEN	x
Gitwero, banana/potato + vegetable	1.22		KEN	x
Gitwero, root (yam, arrowroot, etc.)	1.14		KEN	x
Gitwero, roots + banana	1.03		KEN	x
Gitwero, roots + banana	1.03		KEN	x
Green bean casserole	0.95		S&W	
Lasagna	1.04		S&W	
Macaroni and cheese, canned	1.00		S&W	
Mataha (Maize stew) (Maize stew), maize + peas	0.86		KEN	x
Mataha (maize stew), beans + banana	1.22		KEN	x
Mataha (maize stew), beans + banana + potato	1.25		KEN	x
Mataha (maize stew), beans + banana + potato + vegetable	1.15		KEN	x
Mataha (maize stew), beans + potato/banana + vegetable	1.14		KEN	x
Mataha (maize stew), beans + vegetable	1.02		KEN	x
Mataha (maize stew), beans + vegetable + banana	1		KEN	x
Mataha (maize stew), maize + banana	1.09		KEN	x
Mataha (maize stew), maize + banana/potato + vegetable	1.10		KEN	x
Mataha (maize stew), maize + beans + potato	0.75		KEN	x
Mataha (maize stew), maize + beans + potato + vegetable	0.95		KEN	x
Mataha (maize stew), maize + beans + potato, boiled with fat	0.75		KEN	x
Mataha (maize stew), maize + beans + vegetable + banana	0.70		KEN	x
Mataha (maize stew), maize + vegetable	0.90		KEN	x
Mataha (maize stew), paw paw	1.33		KEN	x
Mexican casserole w/beef, beans, cheese, chips	0.6		S&W	
Mini ravioli, canned	1.05		S&W	
Moussaka	0.85		S&W	
Muthugo (maize without germ and cover) only	0.76		KEN	x
Noodles/pasta with fat	0.80		KEN	x
Rice + beans	0.75		KEN	x
Rice + beans + potato/banana	0.85		KEN	x
Rice + meat	0.73		KEN	x

Food name and description	Density in g/ml (including mass and bulk density)	Specific gravity	BiblioID	Update Version 2.0
Rice + meat + vegetable	0.83		KEN	x
Rice + potato/banana	0.80		KEN	x
Rice + roots (yam, arrowroot etc.)	0.90		KEN	x
Rice + vegetable	0.65		KEN	x
Rice + vegetable + potato/banana	0.80		KEN	x
Rice, plain (rice + water)	0.70		KEN	x
Spaghetti and meat balls, canned	1.04		S&W	
Stew, banana	1.07		KEN	x
Stew, banana + potato + vegetable	1.06		KEN	x
Stew, beans	1.01		KEN	x
Stew, beans/ peas + meat + vegetables	0.94		KEN	x
Stew, beans/ peas + vegetables	1.07		KEN	x
Stew, meat	1.12		KEN	x
Stew, pea + potato/banana	1.10		KEN	x
Stew, pea + potato/banana + vegetable	1.22		KEN	x
Stew, potato	1.10		KEN	x
Stew, potato + beans + vegetable	1.08		KEN	x
Stew, vegetable	0.68		KEN	x
Stew, vegetable + meat	0.86		KEN	x
Stew, vegetable + potato	1.10		KEN	x
Stew, vegetable + potato + meat	1.08		KEN	x
Stew: eggs + veg	0.68		KEN	x
Tuna noodle casserole	0.93		S&W	
Ugali + beans	0.80		KEN	x
Ugali + beans + vegetable	0.80		KEN	x
Ugali + vegetable, crumbed	0.75		KEN	x
Ugali + vegetables, boiled with fat	1.20		KEN	x
Ugali, plain (flour + water), crumbed	0.75		KEN	x
Wieners and sauerkraut (mixture)	0.61		S&W	
Zesty Italian "hamburger helper"	1.04		S&W	

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