



Food Writers New Zealand  
**HANDBOOK**

sugars, syrups  
and honey

# SUGAR

## SOURCES

Most of the sugar produced in New Zealand comes from cane grown in Australia and Fiji. In some countries, sugar is extracted from other plants such as sugar beet, palms, coconut, sorghum and maple. Some of these varieties are imported into New Zealand.

## PRODUCTION

To produce sugar, the raw, unrefined product has to be heated, crystallised, filtered and sieved. Even so-called 'raw' or 'unrefined' sugar varieties have to undergo some degree of refining in order to remove contaminants and to form crystals.

White sugar is not bleached. Pure sugar is naturally colourless. Naturally occurring brown molasses is removed from the sugar to produce the white crystals.

Both raw and brown varieties of sugar are produced in one of two ways; either less molasses is washed from the sugar crystals during processing or all the molasses is removed to produce white sugar and then molasses is added back in. Check packaging.

## HEALTH COMPARISONS

Brown and raw sugar varieties are not by nature healthier than white. All sugars, whether brown or white, are essentially 100% carbohydrate. The amount of vitamins and minerals contained in molasses are trace amounts that have little or no impact on daily dietary requirements.

## LOW GI SUGAR

White sugar (sucrose) has a GI (glycemic index) value of 65 (moderate = 56 to 69). Low GI sucrose has been treated (e.g. crystals are sprayed with a light molasses coating) to slow the speed at which the body digests and converts the sugar to glucose. Low GI sucrose has an approximate GI value of 50 (low = below 55). LoGiCane™ is low GI brand of sugar produced by Chelsea.

Whether low or high GI, sugar contains the same amount of kilojoules: 1700kJ per 100g or 68kJ per 4g teaspoon.

## VEGAN, KOSHER OR HALAL LABELLING

Refers to sugar that during processing has been passed through vegetable-sourced activated carbon (char) filters. The alternative is char made from animal bone but this product is not used in the New Zealand sugar industry so it would be unlikely to find sugar made this way in New Zealand unless it has been imported. In any case the char is not present in the finished product.

## ORGANIC SUGAR

Sugar made from cane grown without herbicides, pesticides or artificial fertilisers and must meet organic certification standards such as those of BioGro in New Zealand or other members of The International Federation of Organic Agriculture Movements (IFOAM).

## ANTI-CAKING AGENTS

These are added to some sugars to provide free-flow and prevent clumping. Icing sugar is a typical example. Some brands are marketed as containing no 'nasty' anti-caking agents. In New Zealand the most common anti-caking agent used in icing sugar is natural tapioca flour or maize flour. Usually about 3% is added. Tapioca and maize are both gluten-free. Check packaging of imported products.

## ROLE OF SUGAR IN FOOD

Adds sweetness; adds/improves flavour, provides structure; retains moisture in baked items, acts as a preservative in jams, jellies, chutneys etc; promotes desirable browning on food surfaces during cooking. In cakes without butter, sugar helps to delay egg coagulation (keeps the egg from thickening) and allows a cake to set properly.

## NON-SUGAR SWEETENERS

Other sweeteners are manufactured as sugar substitutes. These are usually low-calorie products which are useful as sweeteners but cannot be cooked in all the same ways as sugar. Examples include artificial sweeteners such as aspartame (200 times sweeter than sugar) and saccharin (300– 500 times sweeter than sugar). A variety of natural sweeteners are available. Sweeteners are marketed as powders and liquids and sometimes are combined to produce sugar substitutes in forms equivalent to icing sugar, crystallised sugar and caster sugar. These include:

Stevia	From leaves of the stevia plant, 300 times sweeter than sugar.
Xylitol	From plants such as corn husks, similar sweetness level to sugar.
Erythritol	From fruit such as grapes, melons, pears, 70% the sweetness of sugar.

## MEASURES FOR SUGAR

Product	Measures	Weight	Per 100g ( <i>Chelsea sugar</i> )
White sugar	1 level teaspoon 1 cup (250ml)	4g (exact) 5g (rounded) 220g	1700kJ (407 cal)
Caster sugar	1 level teaspoon 1 cup (250ml)	4g (exact) 5g (rounded) 220g	1700kJ (407 cal)
White sugar cube	1 (equiv 1 teaspoon)	4.5g (exact)	1700kJ (407 cal)
Icing sugar	1 level teaspoon 1 cup (250ml)	4g (exact) 5g (rounded) 160g	1690kJ (404 Cal)
Low Gi white sugar	1 level teaspoon	4g (exact) 5g (rounded)	1690kJ (404 Cal)
Brown sugar	1 level teaspoon 1 cup (250ml)	4g (exact) 5g (rounded) 220g (packed)	1640kJ (392 Cal)
Raw sugar	1 level teaspoon	4g (exact) 5g (rounded)	1700kJ (407 cal)
Demerara	1 teaspoon 1 cup (250ml)	4g (exact) 5g (rounded) 200g	1680kJ (403 Cal)
Muscovado light	1 teaspoon 1 cup (250ml)	4g (exact) 5g (rounded) 220g (packed)	1640kJ (392 Cal)*
Muscovado dark	1 teaspoon 1 cup (250ml)	4g (exact) 5g (rounded) 220g (packed)	1611kJ (385 Cal)*
Coffee crystals	1 level teaspoon	4g (exact) 5g (rounded)	1690kJ (404 Cal)
Blackstrap molasses	1 tablespoon (15ml)	25g	1190kJ (285 Cal)
Golden syrup	1 teaspoon 1 tablespoon (15ml)	7g (exact) 25g (rounded)	1280kJ (303 Cal)
Golden syrup Easy pour	1 teaspoon 1 tablespoon (15ml)	7g (exact) 25g (rounded)	1230kJ (295 Cal)
Treacle	1 teaspoon 1 tablespoon (15ml)	7g (exact) 25g (rounded)	1230kJ (294 Cal)

(\*Billingtons sugar)

## VARIETIES OF CANE SUGAR WITH ALTERNATIVE NAMES AND SPELLINGS

Product	Description	Uses
White sugar Granulated sugar Crystallised sugar Table sugar <i>Refer golden sugar below</i>	Pure white, fully refined sugar with medium-sized crystals	Table sugar General use in cooking Sweetener for drinks Syrups
Caster sugar castor sugar Superfine sugar <i>Refer golden sugar below</i>	Pure white fully refined with very fine crystals. Dissolves easily	Sweet pastry Meringue Sponges Cupcakes Dressings
Vanilla sugar	Caster sugar containing a vanilla pod or ground vanilla pod, for infused flavour	Custards Confectionery Sweet sauces
Confectioner's sugar	Pure white, powdered sugar. A superior very fine form of icing sugar which dissolves quickly	Royal icing Confectionery Fondant
Icing sugar Confectioner's sugar Powdered sugar <i>Refer golden sugar below</i>	Pure white powdered sugar with a small amount of starch additive (e.g. maize flour, tapioca flour) to prevent clumping	Water icing Butter cream Sweet pastry Shortbread Fruit coulis
Chocolate icing sugar	Icing sugar with 6% cocoa powder and 3% tapioca or maize flour	Instant chocolate icing or filling
Pink icing sugar Pink berry flavour icing	Icing sugar with berry fruit flavouring, red colour (carmine) and 3% tapioca or maize flour	Instant pink icing or filling
Lemon icing sugar	Icing sugar with lemon flavouring, yellow colour (carotene) and 3% tapioca or maize flour	Instant lemon icing or filling
Cube sugar Sugar cubes	Usually white sugar which is moistened with sugar syrup and moulded into cubes. Brown sugar cubes are also available	Table sugar Sweetener for tea and coffee
Nibbed sugar Sugar nibs Pearl sugar Sugar hail	Made from white refined sugar. Coarse, hard, opaque, chunky. Withstands high temperatures without melting	Sweet crunchy topping on baked items, e.g. breads, pastries, cookies Decoration or baked in items for sweet crunch
Coffee crystals	Large light brown crystals with a slight caramel flavour. Slow dissolving	Sweetener for coffee
Brown sugar Soft brown Light brown Dark brown Dark cane	Moist brown, fine sugar crystals (fully refined) containing added molasses	Add colour to baking Chutney/relish Coating for smoked fish On porridge Dressings
Jam sugar Jam setting sugar	White sugar with added pectin (0.7%), citric acid, vegetable oil	Jam-making made easy

Product	Description	Uses
<b>Raw sugar</b> <b>Unrefined sugar</b> <i>Term can include many varieties, e.g. Demerara, Muscovado, Turbinado</i>	Brown granulated sugar which has been partially refined so that some of the natural molasses is present	Rich dark fruit cakes Crumble toppings Pickles Chutney Coffee sweetener
<b>Golden sugar</b> <b>Golden light sugar</b>	A type of raw sugar with minimal molasses content. Light in colour. Available as granulated, caster and icing sugar	Replaces white sugar varieties as desired for colour and additional molasses flavour
<b>Demerara sugar</b>	A type of raw sugar with pale golden, crunchy crystals. Name originates from what was once a region of Guyana	Crème brûlée topping Baking Caramelised grilled fruit
<b>Muscovado sugar light/dark</b> <b>Molasses sugar</b>	A type of raw sugar that is moist, soft and sticky. Colour depends on molasses content. Some varieties are almost black. Portuguese name originally denoted poor quality sugar with too much molasses content	Rich dark fruit cakes Pickles Chutney Marinades
<b>Turbinado sugar</b>	A type of raw sugar with light golden crystals. Similar to Demerara in colour and consistency. Name come from the turbines originally used to spin the sugar during processing	Crème brûlée topping Baking Caramelised grilled fruit
<b>Jaggery (Hindi)</b> <i>Sometimes called 'gur' see below</i>	Unrefined cane sugar juice, sieved and heated to reduce to a syrup and set in moulds. Sometimes available ground into powder. Colour varies from pale to dark brown.	Chop or grate to use Savoury or sweet sauces Curries Asian dishes
<b>Sucanat</b> <i>Brand name from 'sugar cane natural'</i>	Dehydrated juice of raw sugar cane that is heated to form syrup before drying to form brown grains (not crystals). Has a high proportion of molasses.	Barbecue sauces Marinades Baked goods especially chocolate items
<b>Rapadura (Portuguese name)</b> <b>Panela</b> <i>(South American variety)</i>	Dehydrated juice of raw sugar cane that is heated to form syrup before drying to form brown grains (not crystals). Has a high proportion of molasses.	Barbecue sauces Marinades Baked goods especially chocolate items

#### OTHER TYPES OF SUGAR (NON-CANE) AVAILABLE IN NEW ZEALAND

Product	DESCRIPTION	USES
<b>Palm sugar (gur)</b> <i>Name varies throughout Asia, Sometimes called 'jaggery'</i>	Filtered sap of certain varieties of palms, heated to reduce to a syrup and set in moulds. Colour varies from pale to dark brown	Chop or grate to use Savoury or sweet sauces Curries Asian dishes
<b>Coconut sugar</b> <i>Sometimes called 'palm' sugar</i>	Filtered sap of the coconut palm flowers, heated to reduce to a syrup. Available as syrup or set in moulds or ground into granules. Colour varies from pale to dark brown	Savoury or sweet sauces Baking Curries Asian dishes
<b>Agave sugar</b>	Agave plant juice reduced to a sweet syrup and then cooked further to produce granular, light brown sweetener	Savoury or sweet sauces Baking Sauces, dressings and marinades
<b>Maple sugar</b>	Maple syrup heated and reduced until solid sugars remain. Light brown, granular. Maple flavour	Use as a sweetener in baking Marinades, rubs and dressings
<b>Date sugar</b>	Dried dates, finely chopped or ground. (Note: date palm sugar is a variety of palm sugar, refer above)	Use as a sweetener but cannot be used as a substitute for sugar when processes such as melting or creaming are required

# SUGAR CANE SYRUPS

Product	Description	Uses
Molasses First / light molasses Second / dark molasses	The main by-product of sugar refinement. Thick, dark and viscous, it forms when the sugar syrup is boiled to produce crystals	First boiling is sweetest and mildest. The second is less sweet and much darker. Not commonly available in New Zealand
Blackstrap molasses Sulphured and unsulphured varieties	Molasses which has been refined by boiling three times. Thick, dark, viscous and slightly bitter. High amounts of iron, manganese, calcium, potassium and B vitamins. Sulphur dioxide is added as a preservative when manufactured from young sugar cane plants. Unsulphured molasses is made from mature plants	Gingerbread Dark fruit cakes Rye bread Baked beans
Treacle Black treacle	Dark black, sticky liquid made from syrup left at the end of the sugar-refining process. It contains high amounts of potassium. Sweeter and lighter than blackstrap molasses.	Gingerbread Dark fruit cakes Rye bread Baked beans
Golden syrup Light treacle	Ingredients are sugar cane syrup and water. Golden, thick, viscous syrup made from molasses that has been carbon-filtered to remove darkness.	Baking Ginger biscuits Anzac biscuits
Easy pour golden syrup	Ingredients are sugar cane syrup and water. Golden, viscous syrup made from molasses that has been carbon-filtered to remove darkness. It has a higher water content than standard golden syrup	Sauces Marinades Drizzling
Maple syrup Note: maple flavoured syrup or pancake syrups are cane sugar syrups with added maple flavouring	Sap of maple tree, boiled to produce syrup. Different grades are available which are a reference to colour and also strength of maple flavour. Grades are not a reference to quality and vary according to place of production. The lighter the syrup the milder the maple flavour	Pancakes Waffles French toast Porridge Baking Glazes Barbecue sauces
Glucose syrup	Syrup made from starch. It can be made from most starches including wheat, tapioca and potato. Mostly it is made from maize (corn) starch	Promotes soft texture in baking Candy-making Prevents crystallisation of sugar Adds sweetness and flavour
Corn syrup Glucose syrup	Syrup made from maize (corn) starch. Commercially, corn syrup is converted into high-fructose corn syrup which is much sweeter and used extensively in commercial food and beverage production. Many health issues are associated with the use of high-fructose syrup	Promotes soft texture in baking Candy-making Prevents crystallisation of sugar Adds sweetness and flavour

Product	Description	Uses
Agave syrup Agave nectar	Juice from the agave plant is extracted and filtered and reduced to a syrup. Light to dark amber in colour, the colour reflects the strength of flavour, varying from neutral to strong caramel flavours. Health issues are associated with its high fructose content	Pancakes Waffles French toast Sauces Marinades Dressings
Barley malt syrup	Barley malt is made by soaking and sprouting barley which is dried then cooked to form a liquid that is high in maltose. After straining, the liquid is cooked down to form a thick, dark syrup. Not as sweet as cane sugar syrup	Use like honey or molasses Used in the brewing industry Baking, especially bread-making
Rice syrup Brown rice syrup Rice malt syrup	Cooked rice is exposed to enzymes that break down the starches to produce sugars. The heated mixture produces liquid that is strained and reduced to form a sticky dark syrup. Barley malt is sometimes used in the production	Pancakes Waffles Baking Desserts Sweeten beverages Sauces
Coconut syrup Coconut nectar	Sap from cut flower buds of coconut palm is reduced to form a clear amber-coloured syrup. (Not to be confused with dessert sauces made with coconut milk and sugar)	Pancakes Waffles Baking Desserts Sweeten beverages Sauces
Fruit syrups and fruit molasses e.g. pear syrup, apple syrup, pomegranate molasses	Fruit juices that are reduced, sometimes with the addition of extra sugar, until they form a sticky syrup	Desserts Drizzling With fresh fruits Basting meats Salad dressings Dips

# HONEY

## SOME FACTS ABOUT HONEY

### Honey from flower nectar [blossom honey]

Honey bees convert nectar into honey which they store as their food source in wax honeycombs inside beehives. Flavours and classification of honey depend on the floral source of the nectar.

### Honeydew honey

Honey bees collect the sweet secretions of sap-sucking insects such as aphids and scale insects. In New Zealand, the primary source of nectar for honeydew comes from scales insects feeding on South Island beech trees. Honeydew honey is generally darker than flower nectar honey and is also lower in glucose and higher in minerals.

### Physical properties

Classifications and differences in honey varieties are dependent on many factors such as water content, viscosity, density, sugar content, types of sugars, mineral content, temperature and processing methods.

### Pfund scale

This scale is used to classify honey colour. The scale is based on divisions of 1mm and ranges from 0–140mm. Although an individual measurement can be assigned to each honey, averages are often given for particular types, and groupings of colour ranges may also be used. These vary from country to country. The USA colour descriptors by range are:

Pfund scale	Description
0–8 mm	Water white
Up to 17mm	Extra white
Up to 34mm	White
Up to 50mm	Extra light amber
Up to 85mm	Light amber
Up to 114mm	Amber
Over 114mm	Dark

### UMF® honey

UMF stands for unique manuka factor. As well as assuring quality and purity, the UMF grading system appraises natural antibacterial markers found in manuka honey. The number represents the amounts of three key chemical markers which contribute to antibacterial strength: DHA (dihydroxyacetone), MGO (methylglyoxal), and leptosperin. Not all manuka honeys are UMF® rated – only those which have been independently tested and verified by the UMF Honey Association are given an UMF® rating.

### Active AAH honey

Honey with proven antibacterial antioxidant factors. In addition to manuka honey, thyme and honeydew are high in these factors.

## HONEY TERMINOLOGY

### Monofloral

Honey from the nectar of one type of flower. Beehives are close to one flower source. Because bees can fly long distances, it is of course possible that small amounts of nectar from other flowers may be present. The pollen percentage and type in the honey is the key to determining this.

### Blended

A mixture of two or more honey types, e.g. manuka and clover.

### Polyfloral [also called wildflower honey]

Honey from the nectar of many flowers.

### Strained honey

Honey is strained to remove particles such as wax and bits of bee.

### Filtered honey

Honey is usually heated and re-strained to remove fine particles including the natural pollens. Prevents crystallisation.

### Pasteurised honey

Honey is flash-heated to approximately 72°C then rapidly cooled. This destroys any yeast cells that may be present and which can cause honey to ferment. It also prevents crystallisation.

### Raw honey

There is no definite standard for what is meant by this term but it primarily appears as a reference to honey that has not been heated or pasteurised. However, it should be noted that beehives can reach temperatures of approximately 40°C and therefore all honey is subjected to some heat. Any honey that is sold as liquid has to be briefly heated to dissolve crystals and reduce the likelihood of re-crystallisation.

More information: [www.airborne.co.nz/faqs.shtml#Heated](http://www.airborne.co.nz/faqs.shtml#Heated)

### Crystallised honey

When some of the sugar in honey changes into crystal form and it becomes gritty or granulated. It can be returned to a liquid state by warming.

### Ultrasonicated honey

Uses sound energy at frequencies that destroy yeast cells and eliminate crystals at a low heat (approximately 35°C).

### Creamed honey

Creamed honey is not spun or whipped (a common misunderstanding). Granulation of the sugar crystals is controlled by reducing the temperature of honey to produce very fine crystals making the honey silky and smooth. Varieties that crystallise easily are often creamed to make them more stable, e.g. rata.

### Comb honey

Pieces of cut wax honey comb containing honey.

### Chunk honey

Wide-mouthed containers of liquid honey containing chunks of comb honey.

### Toxic honey

Honey can contain poisons when the primary nectar supply is from plants that are poisonous. In New Zealand, the poisonous tutu plant (*Coriaria arborea*) has been responsible for 'tutin' poisoned honey.

## SOME NEW ZEALAND MONOFLORAL HONEY PROFILES

Descriptions are generalised because honey from different areas, different beekeepers and with different processing methods will exhibit variations.

Type	Appearance	Aroma	Flavour
<b>Borage</b> Vipers Bugloss <i>Echium vulgare</i>	Yellow gold with chewy texture Although sometimes labelled as 'blue borage' this honey is not made from the culinary herb by that name pFund: 23.9 (average)	Dusty Rose oil	Delicate Clean Lemon Floral
<b>Clover</b> Primarily white clover, <i>Trifolium repens</i> , but other clover varieties are also present	New Zealand's most common honey Light colour pFund: 10–35 (80% of clover honey)	Herbal Dry grassy	Delicate Floral Mild Sweet
<b>Heather</b> Ling heather <i>Calluna vulgaris</i>	Reddish orange to dark amber Firm, gel-like (viscous) pFund: 60	Pungent Woody Floral Fresh fruit	Mild Sweet Smoky
<b>Honeydew</b> Primarily from black beech <i>Nothofagus solandri</i> and red beech <i>N. fusca</i>	A thick red, dark amber honey from the nectar produced by scale insects, <i>Ultracoelostoma assimile</i> and <i>U. brittini</i> pFund: 87.6 (average)	Musky Mineral	Full flavoured Heady Malty Sweet
<b>Kamahi</b> <i>Weinmannia racemosa</i>	Light amber honey Preferred by many honey connoisseurs pFund: 37.2 (average)	Intense Musky	Full bodied Complex flavours Rich Sweet Buttery finish

Type	Appearance	Aroma	Flavour
<b>Manuka</b> Primarily from <i>Leptospermum scoparium</i> NZ tea tree but also <i>Kunzea ericoides</i> , kanuka, white tea tree	Dark cream to dark brown pFund: 60–108 (95% of Manuka honey) (average = 84) <i>Antibacterial activity varies according to UMF®</i>	Damp, Earthy Aromatic Heathery	Strong flavoured Herbal woody Slightly bitter Mineral
<b>Nodding thistle</b> <i>Carduus nutans</i>	Light gold coloured honey pFund: 14 <i>Increasingly difficult to find due to its status as a weed and consequent eradication in rural areas.</i>	Perfumed Floral	Floral Mild sweetness
<b>Pohutakawa</b> Northern rata primarily from North Island <i>Metrosideros excelsa</i>	White to pale gold in colour silky texture pFund: 5–30	Aromatic Musky Damp	Delicate Floral A little salty Butterscotch
<b>Rata</b> From southern rata <i>Metrosideros umbellata</i> and northern rata <i>Metrosideros robusta</i>	White to pale cream in colour pFund: 22 (average)	Heady Aromatic Citrus blossom	Sweet Scented Mild saltiness Citrus (lime)
<b>Rewarewa</b> NZ honeysuckle <i>Knightsia excelsa</i>	Burnished red-amber hue pFund: 91.6 (average)	Intense Mixed fruit	Smoky Rich Malty Clean
<b>Tawari</b> <i>Ixerba brexioides</i>	Best when young – dull white colour Deeper orange colour with age pFund: 23 (average)	Rich Perfumed Musky Orange peel	Very sweet Clean Mild Rosehip
<b>Thyme</b> <i>Thymus vulgaris</i>	Mid-to dark brown honey An acquired taste enjoyed by honey connoisseurs pFund: 105 (average)	Aromatic Intense	Resin Strong herbal

## SOURCES

Primary information on sugars and syrups: The Sugar Research Advisory Service (SRAS): [www.srasanz.org](http://www.srasanz.org)  
 Chelsea Sugar: [www.chelsea.co.nz](http://www.chelsea.co.nz) Huckleberry farms: [www.huckleberryfarms.co.nz](http://www.huckleberryfarms.co.nz)  
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 Unique Manuka Factor Honey Association [www.umf.org.nz](http://www.umf.org.nz) Wikipedia [en.wikipedia.org/wiki/Honey](http://en.wikipedia.org/wiki/Honey)  
 Other useful sources include: [purenewzealandhoney.com](http://purenewzealandhoney.com) [nzartisanhoney.co.nz](http://nzartisanhoney.co.nz) [www.honeynz.co.nz](http://www.honeynz.co.nz)  
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Our first handbook was produced in 1991, with the purpose of providing a reference tool that in turn would establish standards for New Zealand food writers. In 1999 the handbook was updated to reflect the growing needs of members.

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**KATHY PATERSON, PRESIDENT, 2016**

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