Quality Assurance

Sugar Australia has refineries in Melbourne and Mackay, and depots in Sydney, Perth, Mackay and Brisbane. All of these sites have been certified by accredited external third party auditors as meeting the requirements of **ISO Standard 9001** for Quality Management Systems, under multi-site certification. Sugar Australia sites are also certified to either **HACCP** or **BRC Global Standard – Food Safety**. Sugar Australia's quality assurance measures begin with raw sugar, are applied throughout the refining and packaging processes, the processes that support them, and the products supplied to the customer.

Quality of the finished products is maintained by in-process control of what is essentially a continuous process. Regular checking of finished product is used to ensure the in-process controls are effective. Isolation of, and testing of samples from batches is generally not practiced as a basis of release for sale. Any product found, after delivery, not to comply with agreed specifications is subject to positive recall procedures and/ or concession.

Quality control of the finished product goes beyond the sugar characteristics to include date marking, print and packaging quality and protection against subsequent contamination.

Packaged products are identified for batch coding by packed date and a code for the particular packing site, and, for flavour syrups and invert syrup, a batch (or "skip") number.

Nutritional Data sheets have been developed for all our products. This data is regularly updated and is available on request from your local sales office.

Availability

Not all grades of liquid sugar are available from all delivery sites of Sugar Australia. Potential customers should discuss their needs with their customer manager.

Delivery

Liquid sugars, Manufacturers Golden Syrup and Invert Syrup are delivered in stainless steel or aluminium tankers which are properly cleaned to ensure a high standard of hygiene. Most of these products are also available in 1000 litre pallecons.
Invert Syrup is also packaged in 270kg epoxy lined steel drums, 25kg plastic pails and 1000 litre intermediate bulk pallecons.

Golden Syrup and Treacle are packaged in 292kg epoxy lined steel drums, 25kg plastic pails and 1000 litre intermediate bulk pallecons.

The availability of other containers can be discussed with the relevant sales office.

Storage

Liquid sugar and invert syrup products can be subject to microbial deterioration and proper handling is required to minimise microbial contamination from the atmosphere. Storage life of liquid products depends on storage conditions, cleaning procedures and the type of product. Liquid sugar should be stored in tanks which can be frequently emptied and cleaned to maintain good hygiene standards. The design and operation of tanks should minimise microbial contamination from the atmosphere. Tank volume should be adequate to hold at least a minimum working stock plus a full delivery load.

Exposure to cold temperatures for extended periods could lead to crystallisation of some products, especially liquid sugars and invert syrup. Invert syrup has a nominal shelf life of more than 2 years but to minimize the risk of crystallization it is recommended that the product be used within 6 months.

Detailed guidelines for the storage and handling of liquid sugars are available on request.

Flavour syrups, particularly Golden Syrup and Treacle are quite stable and have a useful life in excess of 2 years and thus do not require a "use by" date. There may be some darkening of Golden Syrup over time.

Sugar and Food Standards

In Australia sugar products are standardised foods. Sugar Australia products meet or better the CODEX Standards, the Australia New Zealand Food Standards Code and State Regulations relevant to the products.

All Sugar Australia liquid sugar and syrup products listed herein are manufactured in accordance with Halal and Kosher requirements and are certified Halal and Kosher.

Sugars supplied by Sugar Australia have not been produced from genetically-modified cane, nor is GM processing aids or additives used in the milling or refining operations.

No allergens as listed in the Australia New Zealand Food Standards Code are used in the processing or manufacturing of Sugar Australia liquid sugars and syrups listed herein.

Sugar's Properties

Sugar (sucrose) is primarily an inexpensive natural sweetener and a nutritive carbohydrate. Its sweetness profile is generally not matched by other carbohydrates or artificial sweeteners, and is stable over time.

Sugar is an established ingredient in food and beverage preparation because of its unique versatility and its compatibility with normal processing requirements such as cooking, freezing, dissolving and blending.

Sugar is also used for its chemical and physical properties in some non-food applications.

Sugar provides many other useful properties:

- high concentrations of sugar may act as a preservative (by osmotic effect) against most micro-organisms;
- low concentrations of sugar can be a flavour enhancer;
- sugar modifies boiling and freezing points of mixtures and solutions;
- sugar has humectant properties;
- sugar is important as a fermentable in breads and brewed beverages;
- sugar contributes "body" and "mouth feel" to all sweetened beverages.

Product Descriptions & Specific Applications

Sugar Australia supplies a range of liquid sugars, invert syrups and flavour syrups based on cane sugar.

Liquid and Invert Sugars

Premium Liquid Sugar (PLS) is a virtually water-white liquid sucrose syrup produced from bottler's grade white sugar to meet the exacting standards of the carbonated beverage industry. It is intended for a wide range of beverages, food products and as a source of sucrose in chemical manufacture.

Manufacturers Liquid Sugar (MLS) is a similar product to premium liquid sugar but with a marginally higher maximum level of micro-organisms. It is intended for a wide range of food products and as a source of sucrose in chemical manufacture where colour is critical, but where the marginally higher maximum levels of micro-organisms (compared with Premium Liquid Sugar) can be tolerated.

Standard Liquid Sugar (SLS) is a pale, straw-coloured liquid sucrose syrup produced by dissolving granulated white sugar. It is suitable for use in dairy products, cordials and juices where very low colour is not critical.

Fine Liquid Sugar (FLS) is straw-coloured sugar syrup with small amounts of the naturally-occurring reducing sugars, inorganic ash, other soluble organic matter, and colour of raw sugar origin. It is suitable for use in those products where small residual amounts of reducing sugars, mineral salts, soluble organic matter and colour can be tolerated or may even enhance flavour or other product characteristics.

High Colour Fine Liquid Sugar (HCFLS) is a straw coloured to brown sugar syrup produced from low colour raw sugar. The method of production is highly variable therefore its range of uses is limited. It contains small amounts of the naturally-occurring reducing sugars, inorganic ash, other soluble organic matter, and colour of raw sugar origin. It is suitable for use in those products where small residual amounts of reducing sugars, mineral salts, soluble organic matter and colour can be tolerated or may even enhance flavour or other product characteristics. Colour is also variable.

Invert Syrup is a pale-coloured sweetener prepared by the acid hydrolysis of a solution of white refined sugar. Following hydrolysis ("inversion"), the syrup is partially neutralised before delivery. Invert Syrup contains equal proportions of the invert (reducing) sugars: glucose and fructose. It has a wide application and is particularly useful where high concentrations of invert sugars are required. The crystal-inhibiting characteristics and humectant properties (retention of moisture) means that the shelf life of many products can be extended by the use of Invert Syrup in product formulations. It has a high degree of sweetening power relative to sucrose.

Flavour Syrups

These syrups have unique flavours which enhance foods.

Golden Syrup is a viscous, clear, golden-red liquid of characteristic flavour and aroma. It is produced by partial decolourisation of a partially-hydrolysed sugar syrup. Manufacturers Golden Syrup is a similar product to Golden Syrup but it is produced at a lower solids concentration and is therefore less viscous, which allows it to flow more readily than Golden Syrup.
These two syrups are widely used in baking and fillings where their flavour and high sweetening power (relative to sucrose) are especially advantageous.

Treacle is a viscous dark brown to black liquid that has a stronger flavour and aroma than Golden Syrup. It is produced from partially-hydrolysed sugar syrup. Treacle's colour and flavour make it suitable for baking applications and for the production of certain confectionery items.

Product Specifications

The following lists the standard specifications for Sugar Australia liquid sugar and syrup products. They are based on the parameters used to control the process, but generally better the minimum standards satisfactory for use. Where customers have particular requirements these can be agreed.

Liquid Sugars

	PREMIUM	MANUFACTURERS	STANDARD	FINE	HCFLS
Sucrose (dry) min	99.80%	99.80%	99.00%	99.00%	99.00%
Reducing sugars (dry) max	0.05%	0.05%	0.50%	0.60%	0.60%
Ash (dry) max	0.03%	0.03%	0.10%	0.30%	0.30%
Colour (ICUMSA units)	max 40	max 40	max 150	max 160	max 220
Total solids (Brix)	66.0 - 68.0	66.0 - 68.0	66.0 – 68.0	66.0 - 68.0	66.0 - 68.0
PH	6.5 - 8.0	6.5 - 8.0	6.0 – 8.5	6.0 - 8.5	6.0 - 8.5
Microbial Analysis-					
Mesophiles/10g dry solids max	200	600	600	600	600
Yeasts/10g dry solids max	10	30	30	30	30
Moulds/10g dry solids max	10	30	30	30	30

Invert Syrup

	BULK and "HIGH BRIX"	PACKAGED
Total solids (Brix)	74.0 - 76.0	71.0 – 73.0
Refractive Index @ 20°C	1.4706 - 1.4755	1.4640 - 1.4688
Invert (reducing) sugars (dry) min	90.0%	90.0%
Ash (dry) max	0.5%	0.5%
pH @ 20°C	5.0 - 5.5	5.0 - 5.5
Colour (ICUMSA Units @ 5pH) max	300	300

Packaged invert syrup has a lower total solids (Brix) range to prevent crystallisation during prolonged storage.

Flavour Syrups

	GOLDEN SYRUP	TREACLE	MANUFACTURERS GOLDEN SYRUP
Cane sugar	25 - 30%	23 - 28%	23 - 28%
Total solids (Brix)	80 - 84	80 - 84	74 - 78
Reducing sugars	45 - 50%	44 - 49%	41 - 47%
Water	16 - 20%	16 - 20%	22 - 26%
Ash	2.5 - 3.7%	3.8 - 4.7%	2.3 - 3.5%
Colour (ICUMSA Units)	4000 - 8000	black	4000 - 13000
Turbidity	clear	clear	clear
pH @ 20°C	5.5 - 7.0	5.5 - 7.0	5.5 - 7.0

The specification for flavour syrups is presented on an "as is" (i.e. wet) basis.

Analytical Methods

These specifications are based on analytical methods used by Sugar Australia. They are generally similar to widely-accepted methods in the sugar industry and in some cases are those of the International Commission for Uniform Methods of Sugar Analysis (ICUMSA).

It should be specifically noted that the microbiological standards are based on the National Soft Drink Bottlers Association (USA) Methods which use low pH media for yeasts and moulds.

References Proceedings 20th Session ICUMSA, 1990, pp266 - 271 (true density)
NBS C440, 1942, p. 632 (true to apparent density conversion)

LIQUID SUGAR CONVERSION FACTOR

	1 Litre		1kg dry sugar equivalent		1 Litre		1 kg dry sugar equivalent
Solution Brix	Wet Weight kg	Dry sugar equivalent kg	litres	Solution Brix	Wet Weight kg	Dry sugar equivalent kg	litres
0.0	0.9971	0.0000		67.0	1.3278	0.8896	1.1241
66.0	1.3217	0.8723	1.1464	67.1	1.3284	0.8914	1.1219
66.1	1.3223	0.8740	1.1441	67.2	1.3290	0.8931	1.1197
66.2	1.3229	0.8758	1.1419	67.3	1.3297	0.8949	1.1175
66.3	1.3235	0.8775	1.1396	67.4	1.3303	0.8966	1.1153
66.4	1.3241	0.8792	1.1374	67.5	1.3309	0.8984	1.1131
66.5	1.3247	0.8809	1.1351	67.6	1.3315	0.9001	1.1110
66.6	1.3253	0.8827	1.1329	67.7	1.3321	0.9019	1.1088
66.7	1.3260	0.8844	1.1307	67.8	1.3328	0.9036	1.1067
66.8	1.3266	0.8862	1.1285	67.9	1.3334	0.9054	1.1045
66.9	1.3272	0.8879	1.1263	68.0	1.3340	0.9071	1.1024

Notes:

1. Tables are based on apparent density of pure sucrose solutions at 20°C and thus apply to conditions in air.
2. If sugar solutions are at temperatures other than 20°C, errors may be introduced. For example, the error at 40° is approximately 0.8%, which is negligible for most purposes. Accurate figures for temperatures other than 20° are available upon request.
3. The table is for sucrose only. This table is not suitable for Invert Syrup. A table for Invert Syrup is available upon request.
4. Brix is a sugar industry term for percentage solids (weight / weight).

Occupational Health & Safety Warning

Sugar products are well-known ingredients in food and beverages. It is good hygiene practice to avoid direct skin contact with sugar during food and beverage preparation. The information below only concerns occupational handling exposures.

Risk: Irritating to eyes and skin.

Safety: Avoid contact with eyes and skin. Wear suitable protective clothing, including eye protection (AS/NZS 1337) if aerosol (mist) generated, and gloves (AS 2161) if repeated skin contact.

First Aid: Rinse eyes with plenty of water. Wash skin with soap and water.

Disposal: Collect in containers for disposal in accordance with local authority guidelines.

Safety Data Sheets for sugar products are available upon request.
Note: This brochure is subject to change without notice. This copy may not be current; please check with Sugar Australia for the issue date of the latest version.

This brochure is intended to provide customers with information which may assist them in purchasing or using sugar. The Company is not familiar with detailed technical aspects of customers' products and processes. Customers use sugar as they see fit and this information does not enlarge the Company's standard terms and conditions of sale and does not imply warranties or conditions that a particular sugar product is necessarily suitable for a particular purpose.