

Kusum



Invert Sugar Syrup



The Corporate Lineage

Invert Sugar (India) Pvt Ltd was established in the year 1997.

The First Plant for producing Invert Sugar Syrup with the state of the art Combined Cycle Technology, developed inhouse, was established in Malanpur Industrial Area, Gwalior & commercial production started in the year 2001. Madhya Pradesh being centrally located; facilitates timely deliveries to our Esteemed Customers having multi location manufacturing facilities in various States and need just in time supplies of important Raw Materials such as Invert Sugar.

Certifications

- NS-EN-ISO 22000:2005/ISO 22000:2005 Food Safety Management System Certificate (From KVQA)
- OHSAS 18001:2007 Occupational Health and Safety Management System Certificate (From KVQA)
- NS-EN-ISO 14001:2004/ISO 14001:2004 Environment Management System Certificate (From KVQA)
- NS-EN-ISO 9001:2000/ISO 9001:2000 Quality Management System Certificate (From KVQA)
- ISO 9001:2000 Certification from Moody international U.K.
- ISO 9001:2000 Certified by ICT Australia and New Zealand



The In-House R & D of the Company is recognized by the Ministry of Science & Technology, Department of Science and Industrial Research (DSIR) New Delhi.

The Technology

The Initial Enzymatic (Biotechnology Process) to manufacture Invert Syrup, was taken from the Food and Enzyme Division, Bhabha Atomic Research Centre (BARC) through the National Research Development Corporation (NRDC), New Delhi.

The Technology was improved & Value added by our Scientists and Technical team after years of research and development and with the assistance from Ministry of Food Processing, Government of India.

This resulted in the inception of "CCT"(COMBINED CYCLE TECHNOLOGY).

Combined Cycle Technology uses enzyme cum resin for production and inversion of Invert Syrup. Invert Syrup is also commonly known as High Fructose Syrup.

The Invert Syrup thus produced is much better and superior in quality as compared to other traditional production processes.



"We at Invert Sugar believe in constant improvement in technology and product and time and time again we have proven our worth by introducing better product mixes with Invert Syrup for better sweetness and quality end products."

Shri Pramod Goyal, Chairman, Monad Group

Why Invert Sugar Syrup?



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Already, over 200 Companies in India have found the benefits of using Invert Syrup over other traditional sweeteners..... **"Its time for you to Explore."**

Invert Sugar Syrup is more beneficial to all Industries using sweeteners, like Food, Pharmaceutical, Distillery, Tobacco, etc., because of its functionally more desirable & stable properties.

It is Ready to Use, has Low Cariogenicity, has High Osmotic Pressure, High Solubility, better shelf life, resulting in your products having better quality and lower calories than normal sugar or sucrose etc.....

Invert Sugar Syrup makes your processing time shorter, much shorter -- because you don't have to convert solid sugar into liquid, a time consuming and messy job too...

**It is time for you to change your process to achieve Better Quality
The Kusum Invert Sugar Way.....!!!!**

What is Invert Sugar Syrup?

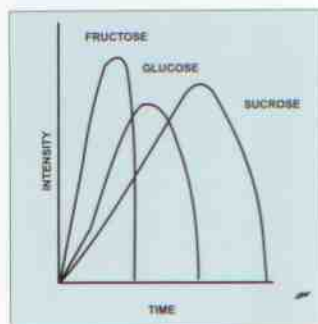


'Invert Sugar Syrup' or 'Invert Syrup' as it is commonly known; is an equimolecular ratio of Glucose and Fructose in Aqueous Form. The Product is made from Cane Sugar or Cane Juice. The term "Invert" originates from the effect on the polarimeter instrument traditionally used to analyze Sucrose solutions. Compared to Pure Sucrose, a mixture of glucose and fructose "Inverts" the plane of polarized light and because of this the product is widely known as "Invert Syrup".

THE REACTION MECHANISM OF THE PROCESS IS



The sweetness Intensity profiles of Glucose, Fructose and Sucrose are different. While Sucrose has a lingering taste, the sweetness intensity of Fructose reaches its peak relatively in short period and diminishes quickly. Because of this property of the fructose sweetness, Invert Syrup helps enhancing other flavors in the products.



"Invert Syrup - A TRIPLE REFINED product which has almost no impurity since the refining process removes all impurities. To make the products more pure and also to make it more safer for Consumption for our valued Customers, our product is refined using 5-Micron Filters and is Hydro Boiled. We make exemplary efforts to remove all impurities whether organic or inorganic present in normal Cane Juice or Sucrose Solutions."

Properties of Invert Syrup- To make your Product More Better, More Safer



Moistness/ Humectancy

Invert Syrup has a high affinity for water, i.e., it retains water for long. For this reason, invert syrup is used to keep products moist, extending acceptable shelf life of your products.

Crystallization Control

Invert Syrup can be used to slow down and minimize Crystallization that may occur, for example, in icings and fondants that are required to stay smooth during their shelf life. This Property is also better for all Liquid Formulations where Crystallisation reduces Shelf Life and Quality of the Products.

Flavour Enhancement

The Fructose in the Invert Syrup has a Natural Affinity to acid or fruit flavours and enhances these in drinks and bakery, confectionary products.

Sweetness

Medium Invert Sugar (A 50% Inverted Syrup) has an increased sweetness of 10%, when compared to Pure sugar. This extra Sweetness is of benefit in fruit flavored drinks where around 20% less carbohydrate Sweetener can be used as against usage of Ordinary sugar.

Preservation water activity reduction (AW)/High Osmotic Pressure

High water activity makes products liable to microbial spoilage & shorter shelf-life. Invert sugar increases the Osmotic Pressure much more than sucrose. Water is present but with a higher osmotic pressure which thus inhibits Microbial Growth in Products increasing the Shelf Life.

Freezing Point Depression

The affinity of water for Invert Syrup prevents the formation of large ice crystals in Products like Ice Creams, Sorbets, Cocktails, Frozen Baked Goods, Fillings, Toppings etc.

HMF-5 Free Product

Invert Sugar Syrup produced from Combined Cycle Process is free from Hydroxy Methyl Furfural (HMF-5). This Property is more suitable for Pharmaceutical Products where Carcinogenity in the product is a major issue.



"Invert Sugar made by Hybrid Technology is far superior in terms of stability for certain class of end products."

Mr. R. Dinesh, Dy. Manager- Process
Bacardi Martini (India) Ltd

Product Range



Kusum

KUSUM "PURE"

A Versatile Ready to use sweetener for all kinds of formulations where colour matters. It is being widely used in Industries like;

- Pharmaceuticals (Allopathic, Ayurvedic, Unani and Homeopathic)
- Distillery Industry
- Tobacco Industry
- Beverage Industry

KUSUM "PEARL"

An all Purpose Ready to Use Sweetener for general applications It is our most widely used product being used by Industries like;

- Bakery (For Baking Purpose) and General use(Domestic applications)
- Food Processing Industry

KUSUM "GOLD"

A higher solids invert syrup being used where minimum water is required to be added to the products and the maximum preservation effect of the invert sugar is to be achieved.

It is being widely used in the Industries like;

- Herbal Cosmetics
- Sherbets, Squashes, Concentrates
- For replacement of Honey in Products

Product Analysis

Specifications	Kusum Pure	Kusum PEARL	Kusum Gold
Total Solid(% by wt)	74±1	74±1	80±1
Inversion(% by wt)	95-98	95-98	95-98
Ph value	4.45±1	4.45±1	4.45±1
Colour	Water White	Pale Yellow	Brown
Sp.Gravity	1.36	1.36	1.40
Ash%	0.25	0.25	0.25
Solubility	Totally Soluble in Water/Glycerine/ Glycol	Totally Soluble in Water/Glycerine/ Glycol	Totally Soluble in Water/Glycerine/ Glycol

A Versatile Product Medium invert syrup can also be supplied which is 50-60% Inverted Product, where maximum sweetness intensity is required.

"By using Kusum's Invert Sugar, we have been able to increase the productivity and also prune the manpower."

Mr. Rajeev Karwayun, Asst. Works Manager
SBL Pvt. Ltd



Benefits of Invert Sugar Syrup in Industry

Invert Sugar Syrup is ready to use- its biggest benefit is that it cuts down on Production Time & Production Costs. It not only saves on Labour, Capital Costs but in some cases actually enhances Production Capacities.

Pharmaceutical Industries

- High Solubility of Invert Sugar Syrup enables easy mixing and it can be used even for higher concentrations.
- Invert Sugar Syrup being viscous, quantity of glycerin, sorbitol or liquid glucose can be considerably reduced.
- I.V.manufactures can use Invert Sugar Syrup in place of Dextrose to make I.V.'s more health-friendly by easy metabolism and assimilation
- Ph of Inverted Syrup is around 4.5 making it ideal & Less Acidic for Formulations as per Food & Chemicals Codex.
- Specifications of your Products can be maintained over a long duration which otherwise may vary with using different Crystal Sugars/Sweeteners where refining reagents are used.
- Saltish taste of Cough syrup is masked.
- Ideal for Pediatric syrups as it provides instant energy and Natural Sweetness.

In General use and bakery industry

- Has a High inversion and Low Ash content which is suitable for Food and Bakery Industry.
- It Lowers Baking temperature and provides for Faster Baking.
- Enhances Flavors in the Products whether Natural Flavors or Artificial Flavors used.
- Gives Rapid Richer Crust color.
- Reduces Breakages in Biscuits and Breads etc.
- It tenderizes and help retain moisture, prolongs freshness and improves shelf life of bakery products like buns, cakes, bread etc.

Benefits in beverage and distillery industry

- Since Invert Sugar is Ready to use in the formulation, consistency in production can be achieved.
- Glucose give easily instant energy to the body, therefore is ideal for energy drinks.
- It enhances the natural tastes of flavors. Upto 15% Less flavor consumption can be achieved with use of Invert Syrup.
- A Versatile Product Range can be produced, without increasing on Inventory Costs.
- Since Invert sugar has a lower water activity than that of sucrose, it provides more powerful preserving qualities than Sucrose.
- Provides uniform quality.

For Honey replacement

- Invert Sugar can be used for bee feeding and can be blended with honey chemically and physically making it more suitable for blending in the products.
- It can be replaced with Honey or other viscous materials in Herbal Cosmetics, since it restricts Bacterial activity.

Benefits In Tobacco Industry

- It acts as Humectant in cigarettes & enhances flavor.
- Used for Tobacco binding.
- It is used in Pan Chutneys to prevent crystallisation.

We would like to share your experiences of using
Invert Sugar Syrup.....Try it Today
Go the **Kusum Invert Sugar Way**.....!!!!!!

"Kusum's Invert Sugar Syrup has enhanced the flavour in my formulations and in many cases ever reduced their consumption."

Shri.R.C.Tayal, Technical Advisor
N.V.Distilleries & Breweries(P) Ltd.



What product are you using?

There are many kinds of Invert Syrups available in the market or you might be using Mineral Acids for hydrolyzing the Crystal Sugar, but you have to consider following products whether same is best for your products or maybe you are using low quality product which might be harmful.....!!!!

A little Comparison between Acid Hydrolysed Invert Syrup and our Combined Cycle Technology Process Invert Syrup :

Acid Process	Combined Cycle Technology Process
Artificial mineral acids like HCl, Citric Acid, H ₂ SO ₄ are used for hydrolysis of sugar.	Enzyme-Cum-Resin Process. The final solution is more healthy and without harmful effects of acids.
Acids have harmful effects on human body.	Enzymes are Protein supplements which are the building blocks of the body. Resins take out the harmful organic and inorganic impurities out of the solution.
Quality of Acids affect the formulations and can even have hazardous effects with final products during longer storage.	Enzymes-cum-Resins enhances the effects of Flavors, Formulations making product more better and harmless to consumption.
The Level of Inversion cannot be controlled thus rendering uneven product batches.	Uniform Inversion makes uniform product mixes and better batch plannings.
Chances of Contamination with Acid based invert Syrup (whether market bought or made inside your factory).	No chances of contaminations, proper refining is done to enhance product qualities.
Lower Shelf Life of the products made from Acid hydrolysed Invert Syrup.	Better Shelf Life of the Products made from Combined Cycle Process.
Presence of Harmful Carcinogens like HMF-5 and other complex products borne out of acid reaction.	No such elements because Bio Reaction is used for Hydrolysis.

Is Invert Sugar Syrup as good as Honey?

"Honey is an Invert Sugar composed mainly of Fructose and Glucose as well as small amounts of Vitamins and Minerals. Its color ranges from nearly colorless to dark brown, varying with the mineral content." - Dr R. J. Alexander, a senior Food Ingredients Expert in his book "Sweeteners Nutritive"

Table: Showing Composition of Honey and Invert Sugar

Component	Honey (In %)	Invert Sugar (In %)
Moisture	17.1	15.1
Fructose	38.5	32.01
Glucose	31.0	36.17
Maltose	7.2	Not Detected
Sucrose	1.5	Not Detected
Higher Sugars	4.2	Not Detected
Protein	0.5	0.02
Acids	0.6	0.02

"By using "Kusum Invert Syrup" we are getting the taste of Honey in our products."

Dr. Rahul Singh, Group Leader Herbal Drug Research,
Ranbaxy Laboratories Limited.



Are you taking the Sweeter way...
The **Kusum** Invert Sugar way...



Kusum

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