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X'mas of Flour & Sugar

ESSEN RIVESTA



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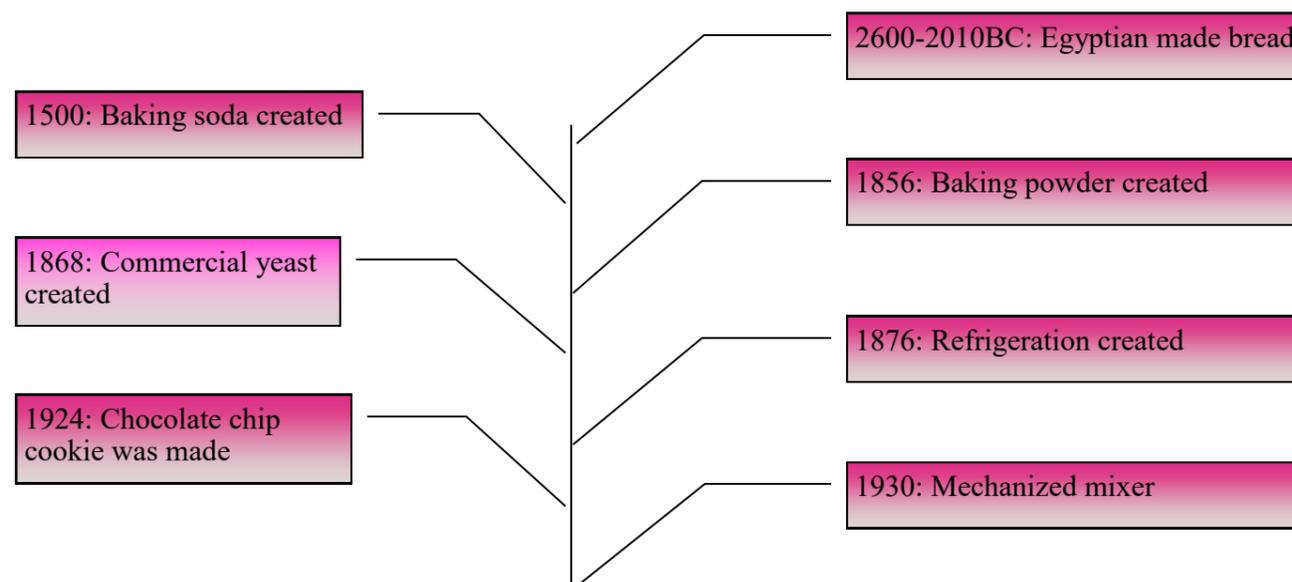
BLOOMING OF BAKERY

Birthdays would be too boring without cakes, isn't it? Then how do these cakes born? This article features the evolution of baked products and pastries. Cakes and confectionaries always symbolize celebrations, parties, festivities and happiness. Bread making began in Greece in early 600BC. History says that Egyptians learned the art of bread making from Babylonians. In ancient times there was belief that these confectionaries were used to remit God's dander. Many ancient sketches show that some cakes and breads were made in the form of animals for sacrifices. In 300BC, Romans made pastillarium as one of the major occupation in European



countries. During late 17th century, people of France made puff &pastry which gained more attraction among everyone. The baked foods were first sold in Paris .London cookery schools promoted pastry by teaching it to their students. In olden days wealthy people had cakes while poor people ended up with bread. This richer diet would be offered to the poor ones during the eve of Christmas. The baking skill was practiced in European countries and widely spread in Asian countries too. Around 16th to 19th century as people started to travel all around the world, biscuits became inevitable snacks naturally, thus paving way to new industry. Biscuits last longer than the other baked products. Over the years, as the new exciting and innovative techniques and ideas evolved, it gave new colour to this interesting sector of food industry.

CHRONOLOGY:



**JINGLE BELLS...JINGLE BELLS..
JINGLE ALL THE WAY....!!**



Do

you know among all festivals which festival is celebrated by more people ?

YEAH... Christmas, this is celebrated on December 25 every year, world wide. When we think about Christmas suddenly your mind fills with Christmas cake Isn't?...Here is the history behind it .

People ate the porridge on Christmas eve, using it to satisfy their hunger after a full day of fastening. Soon dried fruits , spices and honey were added to porridge mixture and eventually turned into Christmas pudding . In the 16th Century oatmeal was removed from the original recipe and butter, wheat flour and eggs were added. These ingredients helps to hold the mixture together, resulting in a boiled plum Cake. Then people used ovens to make fruit cakes with marzipan, an almond sugar paste, for Easter. For Christmas they made a similar cakes using a seasoned dried fruits and spices. This cake is called as a CHRISTMAS CAKE.

CHRISTMAS Cake is made in many different shapes with frosting, glazing, a dusting of confectioner's sugar or plain. The traditional Scottish Christmas cake, also known as WHISKY DUNDEE is very popular, it is light crumbly cake with currants, raisins, cherries and Scotch whisky. The apple cake is made with apples and other fruits, raisins, eggs, creams, cheese and whipping cream.

The wise trick in Christmas cake making is in the time of preparing and keeping it with its quality. All Christmas cakes made in advance. They are mostly made in November and kept upside down in a airtight container. A small amount of brandy, sherry or whisky is poured into the holes in the cake every week until Christmas. This process is called "Feeding the cake".

In Japan, Christmas cake is frosted sponge cake with strawberries, the chocolates or seasonal fruit and in Philippines, Christmas cake is a yellow pound cake with nuts or the traditional British fruit cake. Both the cakes are soaked in brandy or rum, a palm sugar syrup and water. Rosewater or orange flower water is usually added.

MERRY CHRISTMAS.....

AN ELEVATION TO ENTHUSIASM.....

R.Gopirajah
Research fellow,
Agri Bio Engg. Department,
South Dakota state University, US.



Your outlook on food sector, drawbacks, ill effects, public views and implementation of changes in food industry...

Food sector is a booming one. It needs more attention and awareness among the public. Industries should focus on novel food formulation with functional properties and minimizing the processing effects and use of preservatives.

Revolution to be occurred in food industry...

Food industries should join together towards promising a healthy food than improving their market with minimum processing and maximum quality.

Lagging fields of food sector in India and ideas to improve...

The hygiene practices and waste utilization needs more attention. Implementation of effective process line and by product utilization with social awareness would be benefit.

Challenges in the present job...

I face lack of co-operation and awareness about novel technique implementation. Needs risk taking and problem solving skills. Tactics includes statistical approach and updated knowledge.

Transformation into a successful person...

As a student, I enjoyed a lot of facility at TNAU and got good environment to update myself with different skills. TNAU laid me a strong foundation to build my career upon. This brought me as a successful person, a researcher at SDSU, US.

Personal note to budding juniors...

Be proud to be a TNAU student. The name will take you as high as you wish to go. Good luck..!!

• *The hygiene practices and waste utilization needs more attention*
• *minimum processing and maximum quality.*

AERATED SUGAR CONFECTIONARY

AERATE:

Incorporation of air or carbon-dioxide during production, to make the product more digestible and to increase the volume. The challenge is to get air into the confectionery item and keep it for the whole shelf life of the product.

AERATION BACKGROUND:

Why do we aerate sugar confectionery products?

Having more product for the same price is not the only reason. By adding air, a softer product is obtained, optimizing melting behavior and thus flavor release.

There are 5 ways in which Aeration of flour confectionery can be achieved

- Biological (panary, *yeast*)
- Chemical (baking powder)
- Mechanical (whisking and beating)
- Physical (lamination, steam)
- Combinations of the above



Biologically, this refers to products that use yeast fermentation for the aeration of product. Carbon-dioxide released by the breakdown of sugars by yeast provides aeration.

Chemically, carbon-dioxide produced by interaction of acid and alkali. Baking powder (acid-alkali ratio 2:1) produces the gas which are trapped in small cells formed during mixing and held by gluten network.

Mechanically, ingredients are beaten or whisked together using either hand, spatula, whisk or the appropriate attachments on a machine/blender.

Physically, when water reaches boiling point it produces water vapour, (steam) the gaseous phase of water. This, by its nature, increases in volume and if contained correctly will cause the product to expand

Combinations of the above

More than one of the above methods are used for aeration of a single product. For example, Danish pastries are aerated by a combination of Yeast and Lamination. A rich yeast fermented dough is laminated with fat, the pastry is given a lift due to the process of lamination and at the same time the dough layers are softened and aerated by the action of the yeast.

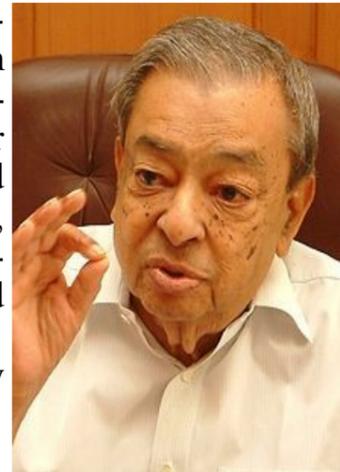
AERATED PRODUCTS:

Examples of aerated sugar confectionery products can be found worldwide. Aeration levels and textures vary strongly. There are nougat masses in a lot of candy bars. *Three Musketeers*, *Mars* bar, *Milky Way* and the *Nuts* bar are well-known examples. More traditional European versions are the Turrón and Montélimar types originating from the south of Europe. Beside the elastic *Campfire* marshmallows, a grained, starch-deposited, often banana-shaped version of marshmallows can be found. In Eastern Europe and Russia, agar-based, shorter-textured forms are marketed. Chews can be found in a variety of aeration levels. Air bubbles also act as seeding agents promoting fine sugar crystallization. The most delicate product is called an angel kiss. It is egg albumin-based, highly aerated foam with a limited shelf life of only a couple of weeks.

WHO AM I?(DEEPIKA II FPE)

I am known as Milk man of India and father of white revolution in India because of my endless contribution in dairy industry. I was born on 26th Nov, 1921 in Kozhikode, Kerala. I experimented on producing milk powder from buffalo milk. I was the co-founder of AMUL (Anand Milk Union Limited). I had received World food prize, Order of agricultural merit, Padma vibhusan, Padmashri, Ramon Magsaysay award. I think you reached me... Yeah... I am Verghese Kurien.

He is the major reason behind the self sustained dairy forming. We celebrate his birthday as World Milk day.



The most expensive pizza in the world costs \$12,000 and takes 72 hours to make.

ALL ABOUT CHOCOLATES...

Chocolates...everyone's palates are accustomed to different flavors of chocolates. The darkness and bitterness of a chocolate bar depends upon the *Cacao* content of the chocolate bar. If the chocolate is too sweet then it has more added sugar and lesser Cacao. Then it cannot be called a chocolate. It is candy. Most people don't know what a chocolate is!

INGREDIENTS OF PURE CHOCOLATE are Cacao paste, sugar, Cacao butter, lecithin and chocolate. Pure chocolate bar contains more than 65% of Cacao. The percentage of Cacao of a bar is determined by the composition of Cacao butter and Cacao paste used in the chocolate bar making. One of the major differences among different brands of chocolate is that how much of Cacao they use.

DARK CHOCOLATES

The ingredients are Cacao, Cacao liquor (essence of Cacao bean), added Cacao butter (recommended, 20%), sugar, emulsifiers. It is categorized as unsweetened chocolate, bitter-sweet chocolate and semisweet chocolate.

MILK CANDIES

Milk candies contain less than 30% of chocolate. Milk chocolate candy is primarily sugars and spices with almost no chocolate at all. Hence it cannot be called as chocolate. It is candy. A person who only eats white candies cannot be called *chocoholic*.

WHITE CANDIES

White candy is a candy bar developed for people who are allergic to cacao. It does not contain even a speck of Cacao. It primarily consists of Cocoa butter, milk, sugar and chocolate. Here the question in your mind is, 'Is Cacao and Cocoa different?', Isn't it? Yes. They are different! Fermented and dried Cacao is called Cocoa.

FLAVORING OF CHOCOLATES

Chocolate pairs well with a wide variety of flavors. Fruity flavors can be added using the extract from the fruit or the molecular formula of the fruity flavor can be analyzed and used for making artificial flavors.

Flavoring may be alcohol-based or oil-based flavoring. Alcohol-based flavors are chocolate, almond, hazelnut, coconut and lemon. Liqueurs and spirits that pair well with chocolate are amaretto, brandy, rum, Cointreau, Grand Marnier, and Kahlua. An important thing to be remembered here is that these liqueurs should be added to chocolate mixtures and not to pure melted chocolates, otherwise, the alcohol will cause the chocolate to seize and form a lumpy mass. These flavorings are well



s suited for Ganache mixtures or other candies that involve mixing melted chocolate with cream, milk or other substances. Oil-based flavoring can be added directly to melted chocolates. Oil-based flavoring is used in mint, strawberry, cherry, hazelnut, cinnamon and orange. We have been across many fruity flavors like apple, strawberry, banana, mango, orange but jack fruit is rare. The flavor of jack fruit is unique and more appealing than other fruits. Though jackfruit have a unique flavor that attracts us even from a certain distance, jack fruit flavors cannot be found like other fruits with lesser flavor than jackfruit. Why not a candy processor thinks about processing jackfruit flavor with a motive of drawing attention towards his product by its charming flavor? **WHY JACK FRUIT FLAVOR IS NOT FOUND?** Answers and opinions are being awaited at: essenrivest14@gmail.com

SONOLATOR-A HOMOGENIZER

Sonolator is an inline, high pressure homogenizer that subjects fluids to extreme acceleration and ultrasonic cavitation in single shot by forcing the material through our specially engineered orifice and impinging the fluid across a knife-like blade. The material is forced by Positive Displacement (PD) pump through the orifice is accelerated to greater than 300ft/sec. The fluid cavitates as vortices of material are violently spun off simultaneously forming a pulsating cavitation field around the blade. This extreme fluid acceleration and cavitation allows for highly effective mixing, homogenizing, emulsifying and dispersing.



By itself, sonolator is actually quite small with no moving parts, but when coupled to a PD pump it makes for a power house of a homogenizing system. All model sonolator house the orifice and blade discussed previously and can handle pressure upto 5000psi. The key to custom engineering sonolator systems is choosing the right pump. This is where our experience and technology shine. Because we can choose from a host of commercially available pumps, including high pressure plunger pumps, gear pumps, progressing cavity pumps and others.



The main advantage is that it has no moving parts. It does not depend upon centrifugal force or mechanical shear. It has good scalability and repeatability. Emulsions made at lower energy consumption than other mixtures that rely on mechanical shear and rotational velocity. Mechanical shear effected by viscosity and volume whereas sonolator is not.

MULTIPLE HOMOGENIZATION

One of the largest benefits to our sonolator systems is the use of multiple feed inline high pressure homogenization. It removes from the tank without transfer time. It provides greater product yield with same tanks. By this, it saves space. There is reduction in waste of finished products when compared to other conventional methods.

YUMMY EGGLESS CAKES..!!!

Metal ion protein like whey protein with water soluble polymer like carboxy methyl cellulose is used as an substitute for eggs in baking industries. This gives excellent whipping and foaming quality for cakes.

POPPING BOBA

TRY FREEZING THEM AHEAD OF TIME FOR A PLEASANT ICY TEXTURE!

Popping boba is a type of boba used in bubble tea. It is also known as bursting boba/popping juice balls. Popping boba is made using the spherification process that relies on reaction of sodium alginate and either calcium chloride or calcium lactate. Popping boba has a thin, gel-like skin with juice inside that bursts when squeezed. The ingredients for popping boba consists generally of Water, Sugar, Fruit juice, Other flavours, Ingredients for spherification.



Popping boba is a complementary good to bubble tea and frozen yoghurt. It can serve as a topping for frozen yoghurt and a substitute for traditional boba in bubble tea. Popping boba do not involve cooking but it will require refrigeration storage. When stored properly, it can last for a year. It quickly pops and mixes with other flavours. Popping boba is bit more versatile. Quickly bursting boba will add a fun layer of flavor to flavored drink, and is more exciting especially for kids. Boba still tastes in iced milk teas. It acts like a gelatin and the texture may become more liquid over time. For popping boba it comes in a large variety of flavours from exciting Green Apple to more traditional Lychee.

BEWARE (LETTER) CONSUMERS

Be it the classy hotels or the posh malls, the “dhabas” (roadside food stalls) have gained their own fandom. With an aromatic street, the street vendors have just graduated in the art of pulling in the passers-by. Little did both the parties know that the letters from the newspapers, in which the food is wrapped, contribute to affliction. Oops! And how does this happen? The printing ink administered is a potpourri of adverse additives, pigments, colors and preservatives that seep into the oily food when wrapped. The FSSAI (Food Safety and Standards of India) have curbed this action, which had been a very convenient and economic practice to these street side entrepreneurs. The act aims at saving people from the cancer causing ailments, which step closer with every bite of the unsafe food. So what would be the plight of the vending masses, unaware of such “cancerous” issues? The newsprints, cheap sources of paper, can be opted as alternative remedies. The implementation of the act seems to be a humungous task as it should reach every streets of the country. Awareness can be the only weapon to achieve the status.

Soylent is a food substitute intended to supply all daily nutritional needs .

PLUG N CHILL

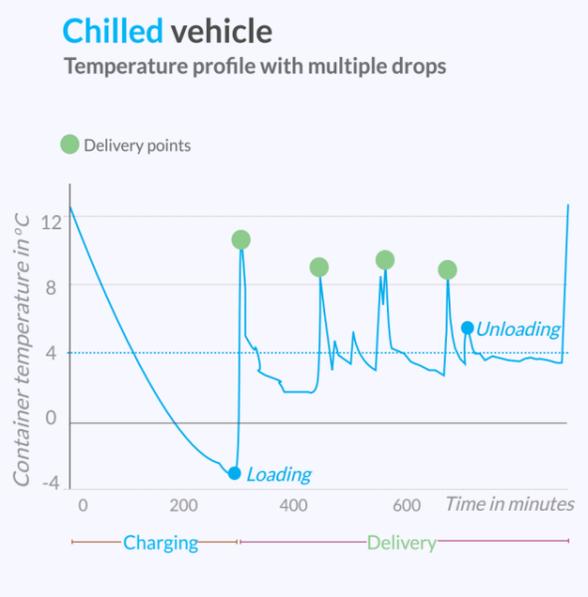
(P.Vinass Jamali , E.DeviSri II FPE)

The world is mainly focussing on production and farming techniques. But the main problem relies on wastage of produces. The quality of produce depends on microbial stability, chemical stability, enzymatic stability. The above three can be kept in control by reduction of temperature. The problem we face in our country is improper cold storage during transportation, where the cold chain breaks. Here comes, the “Plug n Chill” an effective, innovative way of solving the problem faced by conventional methods. Plug n Chill is a cold storage vehicle , which uses electricity to drive the compressor. It is the first fuel free refrigeration where the convectional refrigeration trucks usually works on consumption of diesel. Economically diesel is costly. In convectional trucks the compressor receives energy from engine which further reduces the speed of the vehicle thus increases the cost efficiency. Unfortunately , if the engine breaks down, the refrigeration effect reduces resulting in damage of the produce. But it is not in the case of plug n chill. The interesting fact in Plug n Chill is the unique refrigerant that they use. The ideal refrigerant is one which should have low melting point and high latent heat. The vehicle is available in following forms such as single compartment , multiple compartment , along with freezer box and blower.

Plug n Chill is a vehicle provided with charger. The vehicle is charged with stationary charging centre.

The container has plate where the phase changing material is placed. When plugged in, the phase changing material gets solidified and stores the energy required. The vehicle plugged in for 4-6 hrs. The chilling effect lasts around 20 hrs. The temperature of the chamber is about -4 deg centigrade. After loading, the temperature varies between 8 to 11 deg centigrade followed by successive deviations , the temperature of produce will be around 4 deg centigrade during unloading which is evident from the performance chart. The conventional truck consumes 1 litre diesel/hour whereas the power consumed by Plug n Chill is 18 KW/hr /day, which is much cost efficient. Plug n Chill reduces the operating costs by more than 60%.The use of conventional refrigerated truck is limited only for particular produce.

Whereas Plug n Chill is widely used to transport ice cream, meat, fish, dairy, cakes, pharmaceuticals, fruits and vegetables, flowers with cent percent product safety. Above all, the special features that make the vehicle inevitable is that it is eco-friendly. Being eco-friendly, there is reduction in the emission of carbon-dioxide, carbon-monoxide ,sulphur-dioxide.



Comment: *if the solar panels are used to deliver the energy, the time required to charge the chamber could be comparatively reduced. It can be used to reduce the fluctuations and deviations that occur during loading.*

DELICIOUS DOUGHNUTS TO YUMMY FRONUTS

Confectionaries.... suddenly comes to our mind is sweets, candies. We all know about doughnuts. What it is? It's nothing just a sweet snack prepared by deep frying flour dough having ring shape with or without a hole ,various toppings and flavours such as sugars chocolates or maple glazing. In addition to flour doughnuts also contains eggs, milk, oil, sugars and some natural or artificial flavours. Its interesting to note that our Indian doughnut is a sweet named "badhushah".



After doughnut is fronuts which is a croissant doughnut pastry. It resembles doughnuts and is made from croissant like dough which is filled with flavoured cream and fried oil. Croissant is a buttery, flaky dough. It is a French pastry. Then comes fronut. It is also similar to doughnuts but instead of deep frying it is baked in an oven. The advantage of fronut is gluten free. All the three are available all around the world. But we don't know the difference between each.

PROCESSING DICTIONARY

Braise:

To cook first by browning then gently simmering in a small amount of liquid over low heating a covered pan until tend.

Flambe:

To drizzle liquor over a food while it is cooking, then when the alcohol has warmed ignite the food just before serving.

Roux:

A method of thickening a sauce by cooking flour and butter together then gradually stirring in liquid ingredients.

Ganache:

French term that refers to smooth and velvety mixture of chopped chocolate and heavy cream.

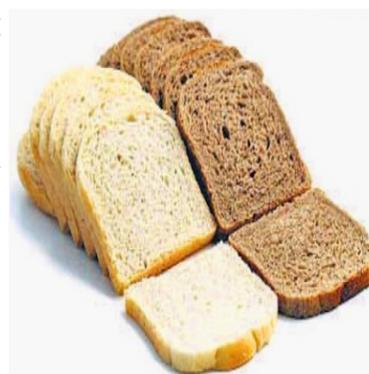
Italian Pastry Chef Creates Miniature World In The Most Amazing Way (Uma.SII FPE)

Pastry Chef from Italy creates magic with his work not just as a chef but as a miniature artist. Food itself is an art but when it meets art of mini world it's a treat indeed. Artist [Matteo Stucchi](#) is a pastry chef from Monza Italy, who builds desserts into miniature world. They simply look like a giant dessert in the world of small people. These creative works clearly show the best of imagination at work. Desserts always bring a smile on your face and you always have an appetite for them. No matter how much you have eaten, you always have some space for the dessert. This creative venture has brought a lot of fame & followers to the chef-cum-artist.



WHITE BREAD VS BROWN BREAD?(Nirmal.S II FPE)

Most white bread made from refined wheat flour gives nothing to your body. In fact, not only is it a premier weight gain food, you'll actually require more enzymes, vitamins and minerals from the other foods you eat just to deal with digesting it. In some extremely lazy manufacturing, but inspired marketing, much of the 'brown' bread you'll find in the supermarket is simply the same white bread with brown colouring, often caramel, added back into it. Hardly the healthier choice it's made out to be. Likewise, 'wholemeal' bread with a bit of chemically treated wheat germ added back in, or 'multigrain', with a sprinkling of softened grains, hardly makes up for what the main ingredient - refined wheat flour - has gone through.



Whole wheat bread is made with the wheat germ and the bran included and is hopefully not as heavily processed or full of chemical additives as most commercial loaves. Its higher fiber content helps to slow down its digestion and therefore its effect on your blood sugar and levels of fat storing insulin shouldn't be as pronounced. Even given all of that though, it's debatable whether even whole wheat bread is a truly healthy option. The problem is wheat itself. Perhaps with the exception of corn, no grain has been as hybridized and tampered with over the last 50 years. The levels of gluten in particular, an allergenic protein that more and more people seem to have problems dealing with, have risen dramatically due to selective breeding programs.

The highest calorie fast food item in the world is a milkshake

3D CHOCOLATES

A research project at the University of Exeter aim was to create a 3D printer that could produce objects in a material that hadn't been used for 3D printing before. As chocolate is universally loved it was decided it would be the perfect material to appeal to existing 3D printing enthusiasts and engage people who would normally not be interested in the technology. This new technology will not only empower users to take chocolate creation to new levels but ultimately enhance the overall chocolate consumption experience for the end user. No chemicals are used.

COMPONENTS AND ITS FUNCTIONS:

- 3D printing or Additive Layer Manufacturing (ALM) describes a range of technologies that are used to fabricate physical objects directly from *CAD data sources*.
- In 3D chocolate printing the chocolate is tempered, loaded into a specially designed *syringe*, and deposited into a 2D cross-section on a substrate - like a *printer* printing a 2D image onto paper. The syringe is then raised by the height of the chocolate line that is being printed and the process repeats layer-by-layer to form 2D, 2.5D and 3D chocolate products that are defined by a 3D computer design.
- These 3D computer designs can be created using a range of techniques and *software*. The software used to operate the machine is called Choc Print, which will convert .stl files into G code. Any 3D design program capable of producing STL files will be able to create designs that can be printed with the Choc Creator.

For ease of use, we chose a syringe system for printer. After finishing printing, we remove the syringe from the printer's barrel, and purge any remaining chocolate into a cup. Then simply clean the syringe and nozzle with warm water and dish soap. After the syringe is dry, we can reload it with freshly tempered chocolate and start the printing process again.



Nozzle: The 0.4mm nozzle has an ultra-fine hole that the chocolate come out of, so naturally it is susceptible to blocking if the chocolate has rogue particles or if the room temperate is very low.

WHAT TYPE OF CHOCOLATE CAN BE USED?

The use of high-quality, machine-tempered, Belgian dark chocolate as it has consistently shown better printing results compared to other types of chocolate, due to its high level of cocoa solids. However, it is possible to print with different kinds of chocolate including milk chocolate and white chocolate. Chocolate like Dark Belgian, Milk Belgian, White Belgian and the combinations can be used.

WHY TEMPERING?

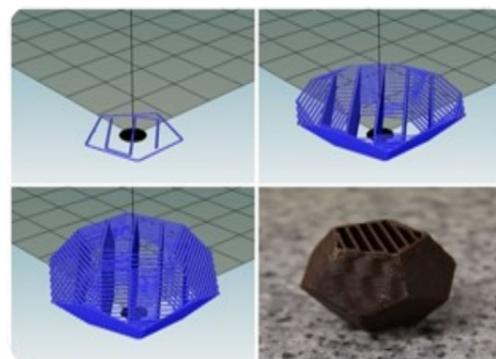
For reliable results it is essential that the chocolate is properly tempered. If the chocolate is not tempered results may be unpredictable or unsatisfactory

HEATING SYSTEM:

It has a heating system. The barrel which houses the syringe while printing keeps a constant temperature.

ROOM TEMPERATURE/HUMIDITY :

For reliable and accurate printing we the chocolate prepared, in room temperatures between 20-22°C - ideally around 21.5°C. The humidity of the room should be 50%. If the room temperature is very difficult to control, it may be helpful to place a small cooling appliance such as a USB-powered refrigerator in front of the printed. Quick cooling of chocolates should not be done.



HAPPY BIRTHDAY ESSEN RIVESTA !!!

(C.A.Mamathi II FPE)

The second year anniversary of Essen Rivesta food e-magazine was celebrated on 17th October 2016 on the week of food day. Professors and students gathered for the great occasion at the in skirts of agricultural engineering college and research institute.

To begin with, the previous editions were stacked for the audience to take a



glimpse, on the threshold of the hall, besides some of the student-made pamphlets and arts related to the event. The event was graced by the Chief Guest, Dr. Anandha Kumar, Registrar of TNAU, who was welcomed with a few tidbits of unveiled food facts, which was a different gesture rather than the cliché mementos. Firstly, the General Secretary of the ER team shared his experiences and the path that his team had trudged. Following him, Dr. Ganapathy, H.O.D., F&APE grew nostalgic about his involvement in the magazine activities zestfully in his youth hood. The Dean, Dr. C. Divaker Durairaj, AEC&RI, quoted that he was proud of the team's work. Miscellanea of opinions were shared by the seniors after which two video clips- in which one filmed the Essen Rivesta team's trail and the other featured Mrs. Sujala (an alumna), CFS, Canada works in Kosha Foods motivating the foodie blooms. It was then that juniors were given the authenticity to take up the magazine hereby. Thus, the event ended beautifully with the Chief Guest, Mr. Anandha Kumar, handing over a citation to the senior ER members from the juniors.

500, 1000 CURRENCY NOTES SOLD FOR Rs.100..!!

India has plunged into a homemade crisis over the past few weeks after the government banned the country's two biggest currency notes. The people all over the country view this issue in different perspectives. In Kolkata, some bakery has come out with dark chocolate replicas, made using scrapped notes. The base is chocolate and the layout of the notes is painted with edible sugar paint. They were sold for Rs.100. They were introduced right after demonetization was announced. It has raised a lot of eye brows and the curiosity is good for business. People enjoy it and are eager to have them on cakes.



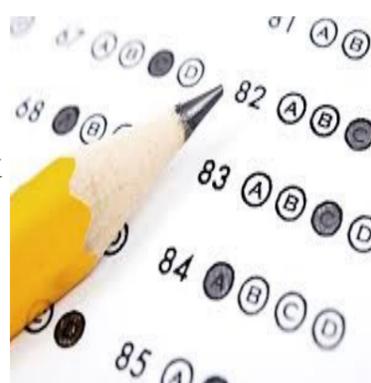
ARE YOU READY???

3RD FOOD ANALYST EXAMINATION

Theory exams will be held on 7th January,2017

- Paper I : 10.00 am—12.00
- Paper II : 2.00 pm– 4.00pm

Practical exams will be held during 3rd and 4th week of February,2017.the exact schedule will be announced after declaration of result of theory exam. Only those candidates who qualify the theory exams will be allowed to appear for practical examination.



READERS COLUMN

This edition of Essen Rivesta depicts the world of Bakery & Confectioneries. It covers the evolution of bakery, some interesting facts and some recent advancements made in the technical side of the industry.



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