New Food Ingredients and Clean Label Demands

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Associate Professor



Types

- Flavors and Colours
- Functional Food Ingredients
- (Texturants /Textural Food
- Ingredients : Soft Food Markets)
- Sweeteners
- Preservatives
- Enzymes

Global Food Ingredients Market 2016-2023 (US \$Mn)

Specialty Food Ingredients Market Share, by Ingredients, 2015-2020



Source : Secondary Data, Markets Analysis 2023

Categories of Applicable Food Industry

- Ready to Eat Pre-packaged Food & Beverages (Alcoholic and Non-alcoholic)
- Sauces, dressings and condiments (Cannery, Bottling and Soft Tetra-pack..)
- Bakery and Seasonal Festival Bakery Items
- Dairy (Raw ingredients, Semi-products and Finished products)
- Confectionary (Natural ingredients/ colorants & flavour : free from artificial ingredients)

Major recent trends : Clean Label and Extend the Food Product Life Cycle with Advanced Food Packaging

- Others (e.g. Pet Food)







Clear Protein-enriched Beverages

Evolution of the food and beverage industry continues as manufacturers innovate to respond to new consumer trends Focus on health and well-being, increasing interest in plant-based foods, Exploration of new flavors and textures

(all these among the top trends for 2020 identified by Innova Market Insights (Innova 2019)



Clear, low-pH beverages, high protein



How is Clear Whey Isolate Made

Through the acidification and purification of whey protein at a low pH

Protein is hydrolysed, meaning the peptide bonds within protein molecules re broken down, leaving behind separate amino acids

Have superior bioavailability compared to other forms of whey protein

Deliver amino acids to the muscles faster than any other form of protein





Clear Vegan Protein

- Soluble pea protein hydrolysate ingredient, is said to provide functional benefits and serve as a vegan, allergen-free, and non-animalderived source of protein for low-pH beverages.
- provides neutral taste, low viscosity, and excellent stability and solubility with clear solution.







Foods and Beverages colored in shades of Aqua—Greens and Blues that are Evocative of Nature

From a wide range of sources like vegetables, fruits, spices, algae and/or other edible natural sources.

Obtained by physical and/or chemical extraction resulting in a selective extraction of the pigments relative to the nutritive or aromatic constituents.

Existed in forms of liquids, powders, gels, and pastes.

Green with health and blue with calm, create a sense of healthfulness and serenity by using these hues in functional confectionery





Purple Corn Extract Powder Color Foods

Ingredients derived from purple corn can function as a coloring option in some food applications

Manufacturers are turning to extract powders made from fruits and vegetables for both the functionalities that they offer and the potential to add important nutrients to formulations.



Natural Colorants from Fruits & Veggies

- Curcumin : Turmeric is a well-known spice, used widely in cookery.
- Its pigment, curcumin, is oil soluble and tends to fade in light, but has good heat stability.
- It gives a lemon yellow shade in food systems. Its applications include pickles, soups and confectionery.
- Chlorophylls /Chlorophyllins : Chlorophyll is the most widely distributed natural plant pigment, present in all green leafy vegetables. Recent development with extraction from the microalgae
- Chlorophylls are oil soluble and Chlorophyllins are water soluble and relatively stable when exposed to heat and light. Uses include sugar confectionery and dairy products. (Alfalfa Grass, Nettles, Parsley, Spinach)





Blue color is rare in natural : A natural brilliant blue coloring has been discovered as the new cyan blue, obtained from red cabbage

Anthocyanins : are water soluble pigments responsible for the attractive red, purple and blue colors of many flowers, fruits and vegetables. They are sensitive to pH change, being reddest in strongly acidic conditions and become more blue as the pH rises

(Black Grapes, Blackcurrants, Cherries, Elderberries, Red Cabbage, Strawberries)

Betanin : Color of beetroot when exposed to light, heat and oxygen.

 particularly suited to frozen, dried and short shelf-life products, such as ice creams and yoghurt

Multifunctional Ingredients

Flavor, appearance, texture, sustainability, and clear labels are all important concerns for consumers

Multifunctional ingredients also ensure a product's physical quality characteristics.

- Anti-aging drinks
- Wrinkle-free drinks



Waste (Food By-Product) Leads to New Ingredients

Inside of the cacao pod is lined with a soft flesh and contains the beans used to make chocolate and a sweet pulp that surrounds the beans.

In typical chocolate and cocoa ingredient production, much of the pulp is discarded.

Now it can be used in bakery, frozen desserts, juices, smoothies, snacks, and chocolate.

The taste of the cacao pod (pulp) ingredients can range from fruity to zesty with a light acidity.

It is now available as nutritious powders and extracts, and often sold as freeze-dried packs in its most natural form of sweeteners







Dietary fiber from Brewery Spent Grain Functional Properties :

- Most by-products are highly nutritious and can be excellent low-cost sources of insoluble dietary fiber, Bglucan, protein and bioactive compounds such as polyphenols and anti-oxidants.
- Most by-products are known to have good hydration for properties and water holding capacity.
- Oil holding Capacity of by-products is an essential functional property and perform emulsifying properties and flavour retention in meat and baked products.



Spent grain is a food by-product from wort production in the brewing process.



Boost Fiber Claims With Fruit Fiber Ingredient

Improve texture and enhance fiber amounts, newly developed fiber-ingredient derived from spent grain

Produce without preservative and allergen-free, can be used as a standalone snack.

Another benefit is made with high protein and sugar free with addition of other okara from soy byproducts



Process of Revitalising the Upcycled Food by-products



Enzymes for Soluble High-Fiber, Lower-Sugar Dairy

In 2019, DuPont Danisco reported the *Nurica*-lactase which allows dairy food and beverage manufacturers the ability to tweak the sugar, fiber, and lactose contents of the products to meet these claims.

A traditional lactase breaks down lactose into glucose and galactose, but the *Nurica*-lactase goes further and helps transform the galactose into galacto-oligosaccharides, which is the prebiotic soluble dietary fibers

Finally it results in a total sugar reduction of up to 35% and the formation of soluble dietary fiber.





Enzymatic Conversion of Lactose by Application of Enzyme Membrane Reactors





Biotechnology : New Spicy Foods

One trendy new insight :

Consumers prefer to experience flavor fantasies around the world

- Flavour think beyond vanilla : complicated and flavour profiles
- Eager to try spicy/salty combinations, spicy/sweet combinations, and spicy/tangy combinations.
- Particular in sauces, meat/ poultry/fish, and snacks as the top three categories that they would be most likely to try with a spicy option.



Smoking Method for Clean Label Smoked Salt

New technology enables the creation of a line of smoked sea salts without the use of liquid smoke or chemical additives.

Smoke flavor adds a rich dimension to foods and beverages and can help food manufacturers differentiate their products from competitors' products with using smoked salt.



Mix It Up With Mushrooms

Mushrooms are a popular food and ingredient, enjoyed for their umami and earthy flavors, health benefits, and texture that serves quite well as an alternative to meat.

There are even several types of mushrooms recognized as adaptogens.

Adaptogens—plant substances thought to manage stress and induce a sense of well-being

Umami is a pleasant savory taste which has been attributed mainly to the presence of sodium salts of glutamic and aspartic amino acids and 5'-nucleotides.



Mushrooms are unique for their umami content, meaning 'savory' or 'meaty' taste.



Multifunctional ingredients Make It Sustainable



Several flavor companies also rolled out some multifunctional samples with a **twist**.

- With the application of Adaptogen Coffee Latte, its natural coffee flavor, natural ginger flavor, and natural cinnamon spice flavor added a nostalgic taste to the latte made with oat milk and infused with an adaptogenic mushroom extract to boost energy, promote endurance, and support recovery.
- Ajinomoto featured MSG in applications not normally associated with the flavor enhancer, including adding a savory nuanced flavor to vanilla ice cream and a balanced tropical fruit flavor in a seasonal citra made with rice milk, oats, and MSG.



Food Technology and Trends

- No surprise that this macro trend continues to push food and beverage product innovation forward.
- Important that we continue to work on food innovation with maximizing the utilization of natural food resources, reduce food wastage, enhancing food taste, flavor, texture..
- Beyond minimizing environmental impacts, sustainability is a multifaceted promise to consumers, defined by a growing number of micro trends, including upcycling and social consciousness purchasing associated with human and animal welfare, food by-products and food security.
- Ingredients upcycled from food waste and by-products created during agricultural harvesting, production, or food processing.
- By-product from the dried ugly fruits and veggies (e.g. Kale, cranberry process), still got all of the health benefits of the plant and also the natural bright green, and red color ...





Food Innovation Center (FIC) Team Members





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COLUMN STATES

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Thank you





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現代包裝的演化過程簡介

傳統包裝形式至自動機械化







70~80年代之前,大部分市場上的食品包裝都是預制袋。以人工方式進行入袋及封口。 因產能不高及衛生控制情況並不理想,同時超市及零售市場慢慢發展起來,使很多商家都十分 苦惱。

- Polystar
- NIPPON POLYSTR CO.,LTD. (nippon-polystar.co.jp)

其後歐美,日本發明了製袋,充填,封口一體化的機器。按產品不同的形狀分為平 台式及垂直式。平台式機器主要使用於個裝的產品。



- ► Orihiro
- ▶ <u>汎用液体・粘体製袋充填包装機 Onpack-2030ASII YouTube</u>



垂直式機器主要使用於散裝及流質的產品。

- Toyo Jidoki
- Toyo Jidoki High Speed Doy Pouch Packer (9 Station) TT-9CW [20182] YouTube



及後因應預製袋的新款式的出現。自動給袋,充填,封口一體化機器面世。 使不同款式的包裝豐富了市場。

- Heat and Control
- Heat and Control and Ishida (HCI) Snacks Line Solutions YouTube



- Ishida QX 775
- Ishida QX-775 Tray Sealer Line. Application: Fresh Salad Into Bowls YouTube



由於近年保鮮技術及運輸物流的發展,出現了很多冷鏈保鮮頂封包裝。


- ► ULMA
- New all-in-one thermoforming machine TFS 200 MSV (MAP, skin and vacuum) YouTube

因應不同的產品,也變化出不同的特定方式來保鮮。

- Robotics
- Robotics in the Food Industry YouTube



	透氧率	透水率		透氧率	透水率
	O2 TR	WVTR		O2 TR	WVTR
	cc/m2 24hrs atm at 23°C	g/m2 24hrs at 38°C		cc/m2 24hrs atm at 23°C	g/m2 24hrs at 38°C
	0% RH	90% RH		0% RH	90% RH
OPP20	1900	6	AL9	1	1.1
OPP30	1800	5.8	LLDPE40	5000	18
OPP40	1700	5.5	LLDPE50	4500	17
PET12	85	55	KOP21	10	4
NY15	45	260	KNY17	8	12
CPP20	2000	6	KPET12	8	12
CPP30	1800	5.5	PEARL30	2200	9
CPP40	1700	5	PEARL40	2200	9
VMCPP25	25	1	MAT OPP20	1900	6
VMPET12	2	2	MB777	20	5
AL7	1	1.4			

Dry Lamination Process



MARUTO

Extrusion Lamination Process(押出)



Slitting Process

Slitting M'C



Bag Making Process















香港包裝器材中心有限公司 HONG KONG PACKING EQUIPMENT CENTRE LTD.



香港包裝器材中心有限公司 (HKPEC) 成立自一九七七年,為一間主要提供食品生產及各類型包裝設備之供應商,並 直屬日本丸東產業集團全資經營公司。

多年來為香港及國內知名客戶成功引入先進的自動食品生 產線及包裝設備,在行內已建立知名地位。

為照顧國內市場需要,於一九九五年在中國(廣州)設立辦 事處及維修中心,提供更緊貼之業務連繫及技術支援。





- 包裝設備
 (食品、電子、醫藥、玩具、製衣、物流業、工業等)
- 包裝材料 (多用途複合薄膜及包裝袋、收縮薄膜、食用保鮮膜、拉伸薄膜等)
- 食品生產及加工設備
- 品質檢測設備
- 酒店、餐廳、超市、食品製造工場及百貨業衛生設備及用品
- 一次及多次性食品容器













> 橫臥式包裝系列











垂直式 高速三邊、四邊封、 棱形袋、 條型包裝, 適合粒狀、粉狀、糊狀、液體產品。

垂直式 風琴包裝,配合排氣鈕, 適合咖啡產品。

垂直式 液體、高粘體自動充填包裝, 適合食品餡料產品。

垂直式 固體、液體自動入袋充填包裝, 適合食品產品。











封口包裝系列

具有自動連續式封口, 列印日期一次完成的 功能。 適合於聚乙烯或聚丙

稀單層薄膜和複合薄 膜塑膠袋,以及鋁塑 複合等軟包裝袋的封 口包裝。

supervac

真空包裝系列

適合滷製食品、肉品、 農產品、水產品、醃漬 物、素食品、豆餡、調 理食品、中藥材、電子、 醫療器材、藥品...等包 裝。



封口(杯/盒)包裝系列 適合於冷藏或海鮮食品,可

過古於冷藏或海鮮食品, 微波、防潮、新鮮冷凍食品、 冷/熱食物、農產品、化妝 品或藥品、工業產品等包裝。



NITTO









自動膠紙封罐系列 適合不同外型金屬罐膠紙 封口包裝。



FUSO INTERNATIONAL





自動入盒包裝系列 適合食品、玩具、電子、 藥品...等包裝。

自動茶包包裝系列





主要代理品牌



RHEON





Malxamisshi





















超小型包装寿司ロボット

握り寿司を特殊フィルムで包装。シャリの乾きとネタの 変色を抑え、作りたての鮮度を保ちます。 シャリを握りながら成形する、独自の握り成形機構 (特許)で、ソフトなシャリ玉に仕上がります。

機械寸法:680W×510D×1420Hmm 生産能力:1000~2000カン/時 ホッパー容量:約12.5L(約7.5kg) 電 源:単相100~240V 50/60Hz 消費電力:250W



簡単にフィルムが開封できる イージーオープン開封方式 (特許)



スーパー等のフリーチョイス販売、 回転寿司でのテイクアウトコーナー、 持ち帰り寿司、ホテル・式場の イベント、催事、パーティー、冠婚葬祭、 企業給食等、新しい包装寿司は 幅広い市場に対応します。







寿司・おむすび兼用 お櫃型ロボット 内部部品の交換で、 SSG-GTO 寿司とおむすびのどちらも握れます どこから見てもシャリ櫃そのもの。 機械イメージがなく、店舗カウンター内での 演出効果も抜群です。保温機構を内蔵し、 いつでもつくりたての美味しさを提供します。 機械寸法:直径445mm丸型 高さ390mm 生産能力:寿司 0~1800カン/時(20g時) おむすび 0~750個/時(100g時) ホッパー容量:約12L(約7.2kg) おむすび 電 源:AC100V 50/60Hz共用 寿司 消費電力:動作時 150W以下、待機時 65W以下

超小型シャリ玉ロボット SSN-F シリーズ

のり巻きロボットシリーズ



超小型シャリ玉ロボット SSN-FLA (ターンテーブル反時計回り)

シャリを練らず固めず、低密度(特許出願中)で 高精度なシャリ玉を供給。シャリを傷めない 独自計量方式で、よりふんわりと仕上げます。

機械寸法:350W×475D×583Hmm 生産能力:3600,3000,2500,2000カン/時(切換可) ホッパー容量:標準10L(約6kg) 電 源:単相100V 50/60Hz 消費電力:最大125W





SUZUMO

機械寸法:360W×546D×630Hmm
 生産能力:<細巻き>約400本<中巻き>約300本
 <本巻き>約270本/時
 ホッパー容量:約12.5L(約7.5kg)
 電 源:単相100V 50/60Hz
 消費電力:150W

自動安全のり巻きカッター SVC-ATA SFセフター

機械寸法:376W×281D×460Hmm
 生産能力:<中巻き・太巻き> 最大約550本/時
 <細巻き> 最大約1100本/時
 *細巻きは、2本を同時にカットした場合
 (テーブルの戻り時間を含む)
 電源:単相100V 50/60Hz 消費電力:50W

SFE79-

SUZI MO

周日









●容易辨识、容易操作 的彩色触控式面板

火星人⊛KN550的资料库最多 能储存100笔的产品数据







CORNUCOPIA® 配搭火星人® KN500

新雙黃裝置 Double Solid Feeder

●新雙黃裝置配合火星人_☉KN500製作優質的雙黃月餅。
●運用本裝置可減輕手工作業負擔,大幅提高雙黃月餅的生產效率。
●月餅外皮厚薄度經精密控制,產品規格均一。
●新雙黃裝置可使固形物與內餡之間不留空隙。

●KN500可連接打餅機、排般機、烤爐等達成全自動化的生產理想。





用KN550制作出各式各样的产品! (产品数量众多仅列举以下几项)











自動熱力攪拌炒機









EGG ROLLS エッグロール 蛋巻

全自動蛋卷燒成機





產品檢重系列



金屬檢測系列



X-射線 (X-Ray) 產品檢測系列







日式外帶餐具容器



環保微波(外賣)餐碗/餐盒





























生產設備及產品簡介



九東產業集團位於日本九州本部的生產機地。









包装に求められている機能は時代とともに多様化してきています。保護性は当然な から利便性も求められる時代に変化してきたた。 弊社は、高齢化社会、パリアフリー、PL法などを背景に利便性の重要さに注目し、開封

テレーベートのかっしるパープノーバートはなービーズが行うなレインネスとしてコロレビルカ における更なる技術開発、製品化を進めてきました。弊社のマルカットは易開封性を備 えた包材です。







包装に求められる機能は時代とともに多様化しています。商品の保護性は当然ながら利便性も求められる時代に変化してきました。 EZビールは、高齢化社会、バリアフリー、PL法などを背景に消費者の利便性を重視して開発したイージービール(易開封)フイルムです。

一般包装 酸素	EZビールの特長
	1. 開封が容易なイージービールフィ ルムです。 2. 条種 変現 多財 (DP_DF_PS)
内音物	A-PETAZ) INTRO TEST
	3. 原生省告示第20号に適合しています。
	EZビールの用述例
PRO INTERNAL	1. 容器用イージービール重材 セリー、プリン、ヨーグルト、茶碗蒸し、 味噌、もずく など
0 動意活動賞 (comi-24m-cm)2010:×6553(RH	2. イージービール袋 フェイスパック、和菓子 など
(工場) 所大分営業所福岡工場 所売加州営業所東京工場 我児園出版所 デ沖縄営業所	お問い合わせ (編明・出版用) 「「」の市産業株式会社 美国東京市 かみ用東京市 まかが出版用 より発見市 美国工作
EQUIPMENT CENTRE LTD.	第二、日本市13日、1122編集会都を1340542-11 2123年本部・5336-01122編集会都を1340542-73-3383 11204247-73-2825 FA00542-73-3383











以我們公司的專業的知識,與我 們的客戶開拓飛黃的末來。





Functional packaging to open up the future

E

RUTO

~



丸東功能性包裝材料





MARUTO Wavy Tear Pouch

MARUTO Wavy Tear Pouch

Easy to grip, easy to open

Japanese Patent No. 6087014





點解很難打開呢?







用波浪撕口易開袋來解決這個問題!

 \sim

預留空間,方便你抓緊開口,輕鬆地使用拉鏈袋

波浪撕口易開封口袋已取得專利!

特許第6087014号

波浪設計易搣易開









MARUTO Moisture Absorption Film

GOOD DESIGN

6



MARUTO Moisture Absorption Film



^{₽0INT2} 不用投入 乾燥劑

POINT3 多用途 袋裝設計 OK

吸湿くん MARUTO MOISTURE ABSORBPTION FILM

封膜與乾燥劑一體化的高性能封膜。

封膜本身具有吸濕機能,能有效保持袋內乾燥,防止袋內產品劣化。

1) MAF FILM TYPE

PET 12µm	
AL 7µm	
MAF LLDPE 60µm	

Ex) PET12/D/AL7/D/LLDPE 60

Absorption Capacity : 6g / m² Thickness : 60µm





Ex) Health Care product .

Stick Sachet .

EX) PET12/LDPE15/AL7/LDPE (MAFEX) 30/LLDPE30





- 即使在高温條件下,已吸收的水分也不會再度散發出來。
- 從過往局部性的吸濕變成全體穩定的吸濕。

吸湿くん MARUTO MOISTURE ABSORBPTION FILM



相比於傳統防潮劑好處

- 1. 為包裝內部提供全方位且持久的吸濕效果
- 2. 不需額外的投放設備,減低生產線成本
- 3. 減少生產過程中的風險,減低出錯引致的混亂及污染
- 4. 不會產生顧客誤服吸濕劑的問題


MARUTO Light Shield Film 不用鋁箔! 紫外線・可視光線 99.9% 阻隔率 R 包裝封膜

不論可視光還是紫外光都能阻擋99.9%的封膜。

遮光くん MARUTO Light Shield Film



- 能有效遮擋99.9%的可見光及紫外線。
- 並可與其他功能封膜合用,保護袋內產品質素。

遮光くん MARUTO Light Shield Film

<比常見鋁箔封膜優勝之處>







遮光性能與鋁箔封膜 完全相等 可應

沒有金屬成份 可應用於微波食品包裝

對金屬探測機不構成干擾

MARUTO ML Film

液體用小袋 高速充填用卷膜



充填 溫度	蒸煮袋	高溫		熱包				党溫	冷藏	殺菌溫度	筆	FDA
		95℃	90℃	85℃	30°C	75℃	70℃		ノマカ民人	NQ IAI /皿 /文	無初	適合
而+ 赤	ML-R									120℃	可	可
则于获		ML	-PF							90°C	可	不可
泛用				ML-PFH					30℃	可	可	
高速								ML-V		殺菌不可	不可	不可
內容物	咖哩 護理食品 寵物食品	果凍 拉黎	食品 麵湯	納豆醬 醬醬油 麵醬				納豆醬 拉麵湯 冰袋	芥末 黃芥末			



『ML-PFHvsML-PFH改』常温下充填適應性比較 *內部測試數據

製造條件)製品寬度:110mm 長度:60mm 充填速度:350個/分(21m/分) 内容物:水 内容量:5g 内容物温度:約30℃





MARUTO ECCO PRODUCTS

MARUTO Functional Packaging 功能性包裝材料





MARUTO環保產品是注重於環境 保護的包裝用品。我們丸東產業以 盡量採用可持續資源、減少資源消 耗和削減產生二氧化碳的方式,致 力製造有助於保護地球環境的包裝 器材。 1 减少有限資源的使用量

我們將減少包裝材料的厚度(採用適當設計)和使用植物由來的 原料,推廣減少使用石油副產品。

塑膠膜是石油的副產品。 不含化石資源的可再生生物有機資源被稱為生物質。 透過減少使用石油副產品、可抑制快將枯竭的石油資源 使用量。



2 採用對環境負荷低的材料(去除鋁箔·使用可生物降解的薄膜)

我們鼓勵及推廣在包裝材料中採用生物降解物質材料而不使用鋁箔材料。

錫箔在製造時比一般的塑料薄膜消耗更大量能源。 實施去除鋁箔,可削減在製造時所產生的二氧化碳,生物 降解薄膜因可被微生物分解為自然副產物,從而有助減輕 環境負荷。





MARUTO Functional Packaging 功能性包装材料





3 吸濕君

由於薄膜本身可吸取袋內的濕氣,故無需放置 乾燥劑。因為不使用乾燥劑也能防止袋內東西 受潮,可達削減資源(乾燥劑)之效果。



減省採購和庫存管理乾燥劑的成本,以至放置乾燥 劑的工序和人手!

4 遮光君

即使不使用鋁箔也能阻擋99.9%紫外線和可視光 線的產品。

由於不採用鋁箔等在製造過程中會消耗大量能源的 材料,可削減二氧化碳的排放量。



若屬不含鋁質的包裝材料,可於完成包裝的狀態下 接受金屬探測機的檢查。

此外,九東產業也經銷其他環境友善型產品。

■生物降解膠袋、背心袋
■使用生物聚乙烯的水杯、托盤、湯匙等
■紙飲管等環境友善型產品



於上述產品使用的原料,有採用可生物降解原料,亦有使用生質原料作為部分原料,與及採用紙質的 產品,是環境友善型產品的一部分。 本公司也經銷這類產品。



Thank you very much

Sustainable Adhesives are Cool Ron Gardiner





Ron Gardiner

- Vice Chair TIPS
- PMIOM3
- MAIP
- Employed by Eva-Tec
- 22 years Pack Tech with CAFRE
- Stick Together



EVA TEC

- Family Business
- Manufacture water based glues
- Partners for Henkel in Ireland
- Committed to building a sustainable future
- Supply Major Companies



Our World of Packaging is Changing



Plastics are seen as a Menace



#SayNoToPlasticBottles #PlasticKills

Hot Melt Adhesives

- Synthetic materials based on:
 - Polymers for strength
 - Resins for tack and adhesion
 - Wax as diluent
 - Stabilisers
 - Antioxidants
- Thermoplastic soften on heating, solidify on cooling

What happens as a Hot Melt cools



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What New in Hot Melts ?

- Plastics Tax good news for adhesives
- Cool Melts 170 to < 100 C
- Bio Melts –ve C Footprint
- Stitched Glue
- Pallet Stabilisation glue decreases use of plastics
- DRS washable hotmelt adhesives

170 to 100 -Lower temperature means less energy



- Lower application temperature saves £
- Reduces the chance of severe burns by not only the hot melt, but the equipment as well
- 96,4% less volatiles (smoke)



Nozzle

running at 120°C Hotmelt running at 175°C Hotmelt

Test before you Try



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DSC testing – measures Tm & Tg and Material Type



Viscosity versus Temperature



Surface tension of Substrate



Angle
C Volume
C Base
C Height

mage	Angle	Volume	Base	Height
l.	0	0	0	0
2	74.4	4.76	2.99	1.14
3	69.8	3.92	2.91	1.01

Bond Strength





Finally Distribution Testing & Launch





Bio Melts

TECHNOMELT.





Negative cradle-to-gate product carbon footprint (GWP 100 years, kg of CO2 equivalents)



Product made with 81% bio-based material using mass balance approach (ISCC certification)



Delivers well-known Supra performance and food safety



ANY QUESTIONS ?

 Would anyone like to work with me & mr Cool and try worlds first bio hot melt ?





The Importance of Materials Testing in Implementing new Sustainable Adhesives

THEi FIC Symposium II - New Food Ingredients and Packaging Design

Peggy McVey, Packaging Technologist, CAFRE





Peggy McVey

- University of Ulster: BSc 2.1 (Hons) Food Technology (1993)
- PiABC Level 5 Diploma in Packaging Technology (In progress)
- Green Isle Foods (Ireland)
- George Weston Foods Pty Ltd (Aust.)
- Kerry Ingredients (Ireland & North America)
- Dale Farm (Northern Ireland)
- CAFRE (Loughry Campus)



George Weston Foods Limited

FARM

Loughry Campus: Dairy Technology







Loughry Campus: Food Technology









Supporting Food, Pharma & Packaging Industries



Packaging Courses: PIABC Level 2 Award in Sustainable Packaging Technology

Key Components:

- Packaging roles and functions
- Packaging materials
- Packaging operations



- 21 guided learning hours
- Assessment: assignment
- Pass: 50 59%
- Merit: 60 69%
- Distinction: 70% +

Packaging Courses: PIABC Level 5 Diploma in Packaging Technology

Key Components:

Unit 1 - Understand the role and functions of packaging

- Unit 2 Understanding packaging materials and components
- Unit 3 Understand the management of packaging, production and business processes

Entry Requirements:

Qualifications / experience / competency

Assessment:

- Four x two hour examinations
- 5000 word research project



Packaging Testing

Performance

- Specification to requirements
- Material reduction
- New material
- Failure

Test Standards:

- ASTM
- ISTA

Food Packaging Centre: Materials Lab




Food Packaging Centre: Materials Lab











www.cafre.ac.uk

Food Packaging Centre: Distribution Lab







www.cafre.ac.uk

