CII – NATIONAL AWARD FOR ENVIRONMENTAL BEST PRACTICES
8th edition (28, 29 & 30 July 2021)

COMPANY: SPROUT PRIVATE LIMITED

PRESENTER : SANDEEP PHILIP
DESIGNATION : MANAGING DIRECTOR

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SPROUT PRIVATE LIMITED

PRESENTS

SPROUT GREENPAK

Home compostable plastic free water base coating for paper cups ,containers and take away boxes

Biodegradable Compostable Recyclable

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Trigger of project :

- Plastic coated paper cup ban in Kannur District of Kerala in 2017
- Total ban of Single use plastic in the State of Kerala on January 1,2020.

Uniqueness: Present market solution was PLA. This comes under the category of industrial composting (Requires 58 degree to start composting in a industrial setup. Our technology is Home Compostable (will compost naturally in backyards without any external factors. In addition, our technology uses barrier technology instead of extrusion process. Recyclability is 94 %. Can be run in both ultra sonic and heater paper cup machines smoothly.

Milestones :

- GO for exemption by Environment department of Kerala: 28-01-2021
- Biodegradable by CSIR- Trivandrum: 29-06-2020
- Plastic free by CIPET: 14-05-2020
- Food contact safe by CFTRI Mysore: 04-12-2020
- Inspection clearance by Pollution control Board: 13-02-2020

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MAJOR CHALLENGES FACED

- Since the coating is water base, it will not run in conventional coating machines which is presently available in Indian market. All were using extrusion process with granules in current coating machines. We had to alter machines to suit our requirements.
- Since most of the chemicals were imported, they were designed for ultrasonic high speed paper cup machines. In India we use 98% of conventional heater paper cup machines. The technology was not suitable for our machines. We had to do several trials and thus successfully made it suitable for conventional paper cup machines.
- Since the technology was not similar to government officials we had to face several legal battles to get the clearance from the Environment Department.
- Most of the people engaged in printing and punching of paper rolls were not co-operative since such alternatives will put an end to the LDPE coating business. This caused a major hurdle to us.
- Several setbacks from plastic coating material suppliers
- Heat saleability issues and leakage problems

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TANGIBLE BENEFITS

- Majority of paper cups and containers end up in land fill. An average 20000 tons of paper is used in paper cup industry. This can be recycled and creates a circular economy. Even if this is not possible, our cups and containers will be degraded in the soil in 90-180 days.
- The waste paper gets more rate for converters since its recyclable
- Will be a great step to solve the ocean pollution and climate change

SUSTAINABLE DEVELOPMENT GOALS

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INTANGIBLE BENEFITS

- Reducing the carbon footprint
- Creating responsible citizens with the help of a circular economy
- Helps to reduce cancer and brain disorders in people

As per IIT research by Prof. Sudha Goel on Microplastics and other harmful substances released from disposable plastic coated paper cups into hot water, 25000 micro plastics goes into human body every time you drink tea or coffee in a plastic coated paper cup.

(Journal of Hazardous materials 404(2021)124118)

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CANCER FREE GENERATION

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REPLICATION POTENTIAL

- Have successfully taken trials with about 250 paper cup manufacturing units in Kerala, Tamil Nadu, Karnataka and Maharashtra. Can be run in any paper cup machines without any modifications.
- Working with Kerala Suchitha Mission (An initiative of Swachh Bharat) to reduce single use plastics.
- Stated working with firms in UK and Ireland in an European union initiative implemented to reduce single use plastics.
- Helping with Haritha Karma Sena (Waste collection initiative) to implement traceability in recyclable paper cups and containers to create a circular economy.
- Working towards a greater goal to eliminate single use plastics by 2022 in India.

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NATIONAL BENCHMARKS

FEATURES	SPROUT GREENPAK	ITC FILOBEV	WESCO SUPER GREEN
Home compostable	Yes	No	No
COATING GSM	5-8 GSM	15-20 GSM	15-25 GSM
SEALING IN HEATER MACHINES	PERFECT	LEAK PROBLEMS	LEAK PROBLEMS
SEALING TEMPERATURE	150-160 degree	190-200 degree	200-230 degree
Recyclability	Yes	Yes	Yes
Coating Requirements (As per international standards is Below 10 gsm)	Yes	No	No
Smooth Running in Machines	Perfect	Causes damage to cutting blades	Causes damage to cutting blades
Cost per Ton	Rs. 105000/-	Rs. 128000/-	Rs. 110000/-

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Future Plans

- Working to reduce the coating to 2.5 gsm in order to make the paper more affordable. Presently a 40 % difference is available in the rate with current Plastic coated paper.
- To work with state governments and central governments to implement single use plastic ban and create a greener environment.
- To give social awareness and educating people in waste management thereby increasing the amount of recycling and creating a circular economy.
- Install more coating units in different parts of India and make the technology more popular and create a single use plastic free nation.
- To work with food delivery apps and restaurants to convert the packaging to more sustainable methods.

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MAJOR LEARNINGS

- Disposables are a major part of the food industry. The recent outbreak of corona and other diseases have shown the importance of disposables.
- 99 % of take away cups and containers are plastic coated and ends up in landfill.
- Many of the alternatives available in the market are costly and not affordable for the general public
- Many environmental alternatives like PLA(Poly Latic Acid) are industrial compostable and have been put red-list in many European countries.
- Many technologies available in the Indian market will not suit the Indian machines.

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File No.ENVT-B2/127/2019-ENVT

GOVERNMENT OF KERALA

Abstract

Environment Department- Hon'ble High Court Order dated 9.12.2019 in WP(C)33114/2019 filed by Sprout Private Limited- Complied -Orders issued

ENVIRONMENT(B) DEPARTMENT

G.O.(Rt)No.129/2019/ENVT Dated,Thiruvananthapuram, 31/12/2019

Read 1 High Court Order dt 9.12.2019 in WP(C) No.33114 of 2019 filed by Sprout Private Ltd

2 G.O(Ms)No. 7/2019/Envt dt 17.12.2019

3 G.O(Ms)No.6/2019/Envt dt 27.11.2019

ORDER

Sprout Private Ltd, a manufacturer of paper cups have filed WP(C)33114/2019 before the High Court aggrieved by the issuance of Government order read as 3rd paper above whereby Government have imposed a complete ban on the manufacture, storage, transport and sale of of singe-use plastic items in the State of Kerala w.e.f 1.1.2020 including plastic paper cups. The petitioner claim that they are involved in manufacture of paper cups using water based coated sheets , which are 100 % bio degradable and hence the Government order is detrimental to his interest and therefore approached Government with a representation dtated 5.12.2019 (Ext P8) requesting to exempt their products from the ban.

The Hon'ble High Court as per the order read as 1st paper above directed Government to take a decision on Ext P8 representation before 31.12.2019 after affording the petitioner an opportunity of hearing. Based on the Hon'ble High Court order , the petitioner (represented by advocate)was heard on 28/12/2019.

Government have examined the matter in detail and order as follows:

File No.ENVT-B2/127/2019-ENVT

Plastic has been posing both environmental as well as health hazard and the uncontrolled use of plastic has been a danger to the future mankind. Therefore State Government took a policy decision to ban single-use plastic items in the State w.e.f 1.1.2020. State Government have already issued a revised order vide G.O(Ms) No.7/2019/Envt dt 17.12.2019 issuing further clarification /modification to the earlier Government Order. As per the order, all plastic coated cups, plastic coated plates, plastic coated paper bags and plastic coated paper bowls are banned and compostable plastic having specification as in the Plastic Waste Management Rules, 2016 has been exempted from the ban.Paper cups using water based coated sheets , which are 100 % bio degradable does not come under the ban . The degradability/compostability has to be lab certified by the Kerala State Pollution Control Board.

The Hon'ble High Court order dated9/12/2019 in wp(c) No 33114 of 2019 is thus complied with.

(By order of the Governor)
VALSA.V
ADDITIONAL SECRETARY

To:

The Registrar, High Court of Kerala

M/s. Sprout Private Limited, Near Rubco Latex Factory, Sreekandapuram,Kannur-670631

Stock file/Office copy

Forwarded /By order

Section Officer

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राष्ट्रीय अंतर्विषयी विज्ञान तथा प्रौद्योगिकी संस्थान
NATIONAL INSTITUTE FOR INTERDISCIPLINARY SCIENCE AND TECHNOLOGY
वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद् | Council of Scientific and Industrial Research
इंडस्ट्रियल इस्टेट पी. ओ. पापनंकोड, तिरुवनंतपुरम, भारत - 695 019 | Industrial Estate P.O., Pappanamcode Thiruvananthapuram, India-695 019

Report No.: NIIST-ETD/PCB/ Bio-Deg/Sprout-01 Date: 29-06-2020

PART-II: BIODEGRADATION RESULTS

Biodegradability Testing and Analysis As Per ISO 14855-2:2018

1. Sample details	:	Sprout Private Ltd. Kannur Paper board/Sheets Qty. 2 -as received by the party
2. NIIST Sample Code	:	Sprout-01
3. Starting date of analysis	:	16-03-2020
4. Completion date of analysis	:	13-06-2020
5. Standard Method used	:	ISO 14855-2:2018-Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions — Method by analysis of evolved carbon dioxide
6. Details of analysis	:	Conditions of reaction • Compost composition: ETP sludge, municipal and vegetable waste • Compost moisture (dry basis): 39.58 % • Compost volatile solid (dry basis): 14.21% • Sample moisture (dry basis): 4.93 % • Sample volatile solid (dry basis): 97.87% • CO_2 evolved during 1st 10 days in blank vessels: 42.08 mg/g of volatile solids of compost. • Reaction temperature: 50 °C (±2 °C) • Volume of reaction vessel : 1000 ml

Authorised Signatory

(Contd.....)

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NATIONAL INSTITUTE FOR INTERDISCIPLINARY SCIENCE AND TECHNOLOGY
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Report No.: NIIST-ETD/PCB/ Bio-Deg/Sprout-01 Date: 29-06-2020

Percentage biodegradation of sample (Code: Sprout-01)

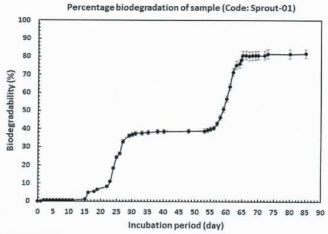

Fig. 1: Percentage (%) cumulative biodegradation of materials (Sample Code: Sprout-01)

Results:

S. No.	Sample Code	Standard Method used	Duration of degradation	Average Biodegradability (%)	Specified requirements as per ASTM D-6954
1.	Sprout-01	ISO 14855-2:2018	16-03-2020 to 13-06-2020 (89 days)	81.75	• Minimum 60% for single polymer/homopolymer after 180 days. • Minimum 90% for copolymer/polymer blends after 180 days.

Authorised Signatory

(Contd.....)

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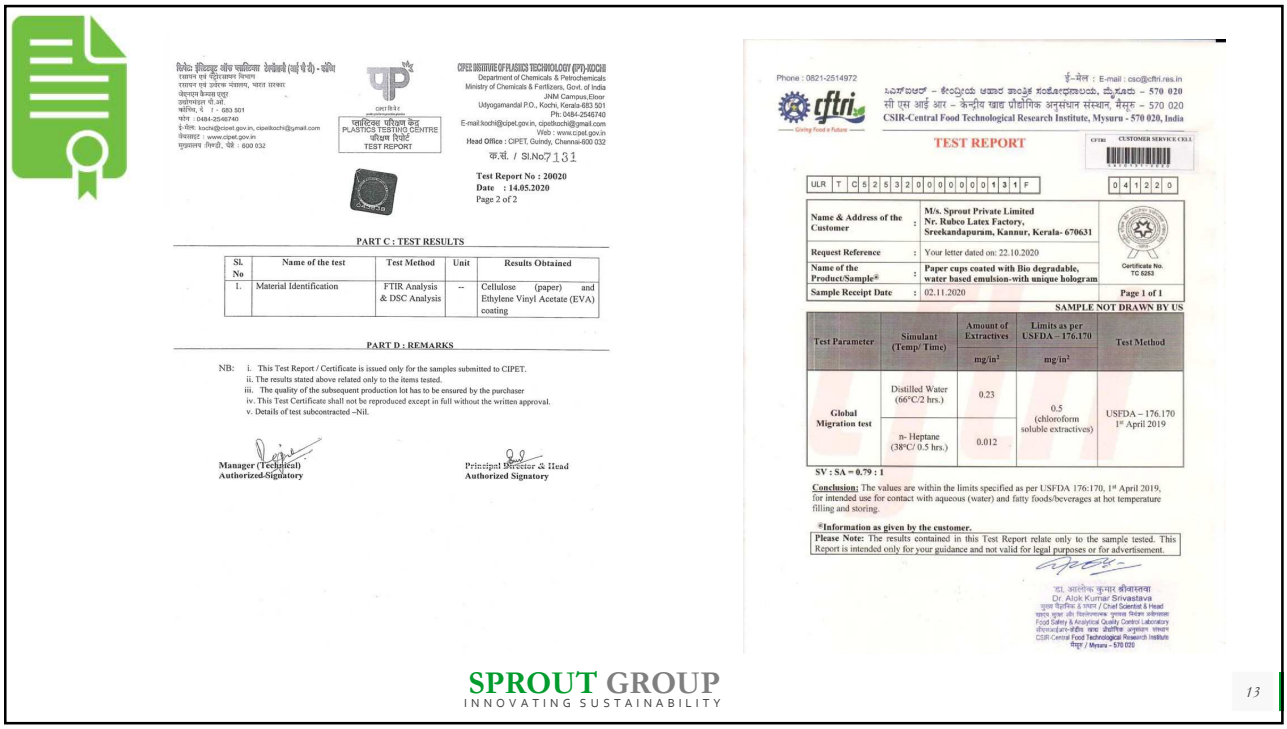

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प्लास्टिक परिक्षण केंद्र
PLASTICS TESTING CENTRE
परीक्षण रिपोर्ट
TEST REPORT

क्र.सं. / Sl.No 7131

Test Report No : 20020
Date : 14.05.2020
Page 2 of 2

PART C : TEST RESULTS

Sl. No	Name of the test	Test Method	Unit	Results Obtained
1.	Material Identification	FTIR Analysis & DSC Analysis	--	Cellulose (paper) and Ethylene Vinyl Acetate (EVA) coating

PART D : REMARKS

NB: i. This Test Report / Certificate is issued only for the samples submitted to CIPET.
ii. The results stated above related only to the items tested.
iii. The quality of the subsequent production lot has to be ensured by the purchaser
iv. This Test Certificate shall not be reproduced except in full without the written approval.
v. Details of test subcontracted –Nil.

Manager (Technical)
Authorized Signatory

Principal Director & Head
Authorized Signatory

Phone : 0821-2514972
E-mail : csc@cftri.res.in
CSIR-Central Food Technological Research Institute, Mysuru - 570 020, India

TEST REPORT

ULR T C 5 2 5 3 2 0 0 0 0 0 0 0 1 3 1 F

0 4 1 2 2 0

Name & Address of the Customer	**M/s. Sprout Private Limited Nr. Rubco Latex Factory, Sreekandapuram, Kannur, Kerala- 670631**	Certificate No. TC 6253
Request Reference	Your letter dated on: 22.10.2020	
Name of the Product/Sample*	**Paper cups coated with Bio degradable, water based emulsion-with unique hologram**	
Sample Receipt Date	02.11.2020	**Page 1 of 1**

SAMPLE NOT DRAWN BY US

Test Parameter	Simulant (Temp/ Time)	Amount of Extractives mg/in²	Limits as per USFDA – 176.170 mg/in²	Test Method
Global Migration test	Distilled Water (66°C/2 hrs.)	0.23	0.5 (chloroform soluble extractives)	USFDA – 176.170 1st April 2019
	n- Heptane (38°C/ 0.5 hrs.)	0.012		

SV : SA = 0.79 : 1

Conclusion: The values are within the limits specified as per USFDA 176:170, 1st April 2019, for intended use for contact with aqueous (water) and fatty foods/beverages at hot temperature filling and storing.

***Information as given by the customer.**

Please Note: The results contained in this Test Report relate only to the sample tested. This Report is intended only for your guidance and not valid for legal purposes or for advertisement.

डा. आलोक कुमार श्रीवास्तव
Dr. Alok Kumar Srivastava
Food Safety & Analytical Quality Control Laboratory
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Thank You

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