

WORKSHOP

BIOBASED MATERIALS RESEARCH: ADVANCES FROM ECOFUNCO AND BIONTOP EUROPEAN PROJECTS









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Paper-based packaging sustainability and recyclability

OUTLINE

- Short presentation of LUCENSE
- Overview and outlook of paper based packaging
- Recyclability with paper

LUCENSE

Industrial research, technology transfer and innovation consultancy to local SMEs and Industries



- Sustainability and Circular economy
- ICT for Industry 4.0
- Laboratory on cellulose based
 materials and products



INNOPAPER – Technological Cluster of Tuscany for the paper industry, a network of

- 146 enterprises of paper industry
- 22 research and competence centres

innopaper

Distretto Tecnologico Cartario



- Strategic information
- R&D projects
- Networking
- Dissemination and events
- Technical training

75% of Italian production of sanitary and hygiene paper

40% of Italian production of paper for cardboards

8.000 employees

Turnover 4,5 billion (1,4 export)

POR

Regione Toscana





CEPI aisbl Confederation of European Paper Industries





European Packaging Preferences 2020

Survey on consumer preferences, perceptions, and attitudes towards packaging.

Paper/cardboard is the preferred material for most attributes

Online Shopping:

 66% of consumers prefer products ordered online to be delivered in paper packaging rather than plastic packaging.

The Shopping Bag:

• Consumers ranked paper bags highest for environmental factors such as: *recyclability* (52%), *compostability* (47%) and *made with renewable materials* (43%).

Packaging Preferences:

• Paper and cardboard packaging ranks highest with consumers for sustainability attributes including: *home compostable* (72%), *better for the environment* (62%) and *easier to recycle* (57%).

Recycling Perceptions:

 Paper/cardboard packaging is considered to be the most recycled material, with 30% of consumers believing the European recycling rate to be over 60% (85% of paper and cardboard packaging is recycled*).

New potential markets for fibre-based products

- New policy approaches to industrial emissions
- Trends in materials costs
- Plastics packaging substitution



Report Material economics: a net-zero transition for EU industry (pulp and paper) 2020

Businesses eliminating or reducing packaging categories

250 businesses across all stages of the plastic packaging value chain, representing more than 20% of all plastic packaging used globally

Packaging categories being eliminated or reduced



Methods of elimination or reduction



Global commitment report 2020 - Ellen McArthur Foundation

Paper recyclability

Recyclability: the capacity of the material or product to be processed effectively from a technological and economic point of view in order to **recover the cellulose fibres** it contains and **to produce new paper and board**, employing the technologies predominantly used today in the paper industry to process paper for recycling.

UNI 11743:2019 test method and the Evaluation System 501:2019

Measurement of five different parameters

- 1. Coarse reject
- 2. Macrostickies
- 3. Fibre flakes
- 4. Adhesiveness
- 5. Optical inhomogeneity



1 Coarse Reject

Screening using a fractionator equipped with a plate with 5 mm diameter holes.

Rejects of paper or plastic, aluminium and other contaminants not passing through the grid.

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Fragmented material due to hotmelt glues, thermoseleant lacquers, etc.

This material, with high adhesiveness, causes problems in the mill during paper sheet formation.



3 Fibre Flakes

Screening test using a plate with 0.15 mm wide slots.

- Cellulose fibres still aggregated not passing through the grid.
- The main cause is the use of wet resistant resins, which reduces pulping efficiency.



4 Adesiveness and Optical Inhomogeneity On laboratory paper sheets made with the accepted fraction of the screening

This phase entails checking the adhesiveness and visual appearance of the sheets.



Evaluation of the noise level due to colored fragments on the sheet formation.



EVALUATION CRITERIA ATICELCA 501:2019

Trademark RICYCLABLE WITH PAPER - Aticelca® 501









Evaluation Criteria		Non Recyclabe with paper			
	Level A+	Level A	Level B	Level C	
Coarse reject (%)*	< 1.5	1.5 - 10	10.1 - 20	20.1 - 40	>40
Macrostickies Area Φ <2000μm.** (mm²/kg)	< 2.500	2.500 - 10.000	10.001- 20.000	20.001 - 50.000	> 50.000
Fibre flakes (%)***	< 5.0	5.0 - 15.0	15.1 - 40.0	> 40.0	
Adhesiveness	absent	absent	absent	absent	presence
Optical Inhomogeneities	level 1	level 2	level 3	level 3	



"Harmonised European laboratory test method to produce parameters enabling the assessment of the recyclability of paper and board products in standard paper and board recycling mills"

Unified European laboratory test method

Developed with the collaboration of the main European laboratories.

State by State Results Evaluation

When: end 2021 – beginning 2022

Thank you!

LUCENSE

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