Sustainable Innovative Materials and Technology transfer, case history

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Ljubljana.– 12th December 2014

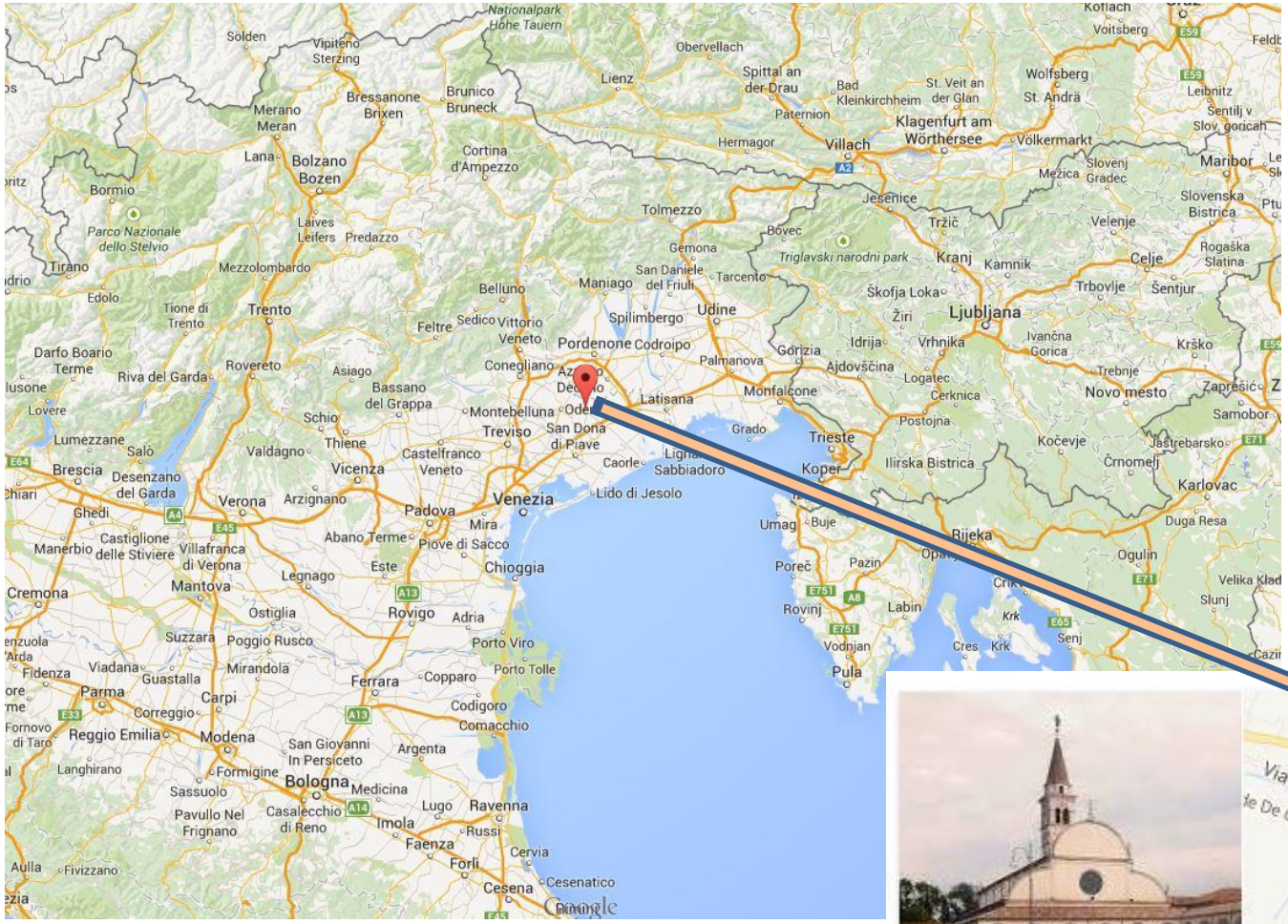
HOW TO INNOVATE?

BEST PRACTICE

POLOPLAST

SME company - ITALY

WHERE?



WHAT ?

CATERING DISPOSABLES

ICE CREAM

CAKES







- PLASTIC DISHES
- PLASTIC CUPS
- PLASTIC FLATWARE

POLOPLAST

QUALITY

INNOVATION

MADE IN ITALY

INNOVATION & DESIGN

COPPA BACKINO

COPPA ECO BOY

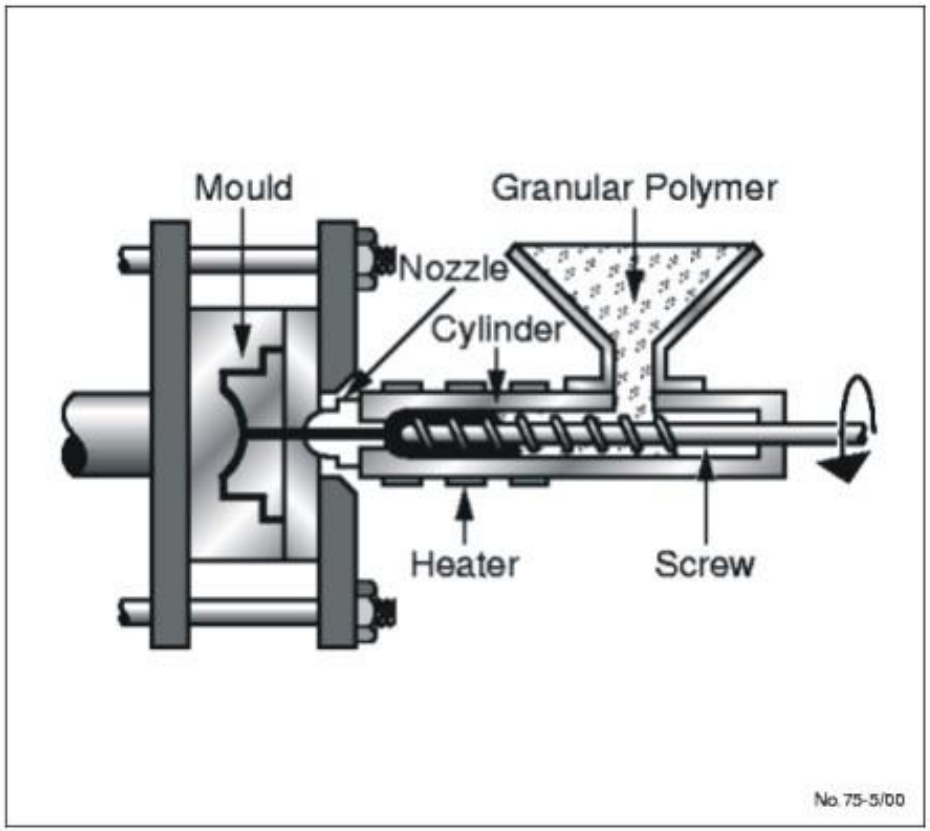
COPPA ELIKA

COPPA GOLOSA

COPPA GOYO

COPPA HILLARY

PROCESS – Injection Moulding



PP - Polypropylene
PS - Polystyrene

INNOVATION & SUSTANAIBILITY

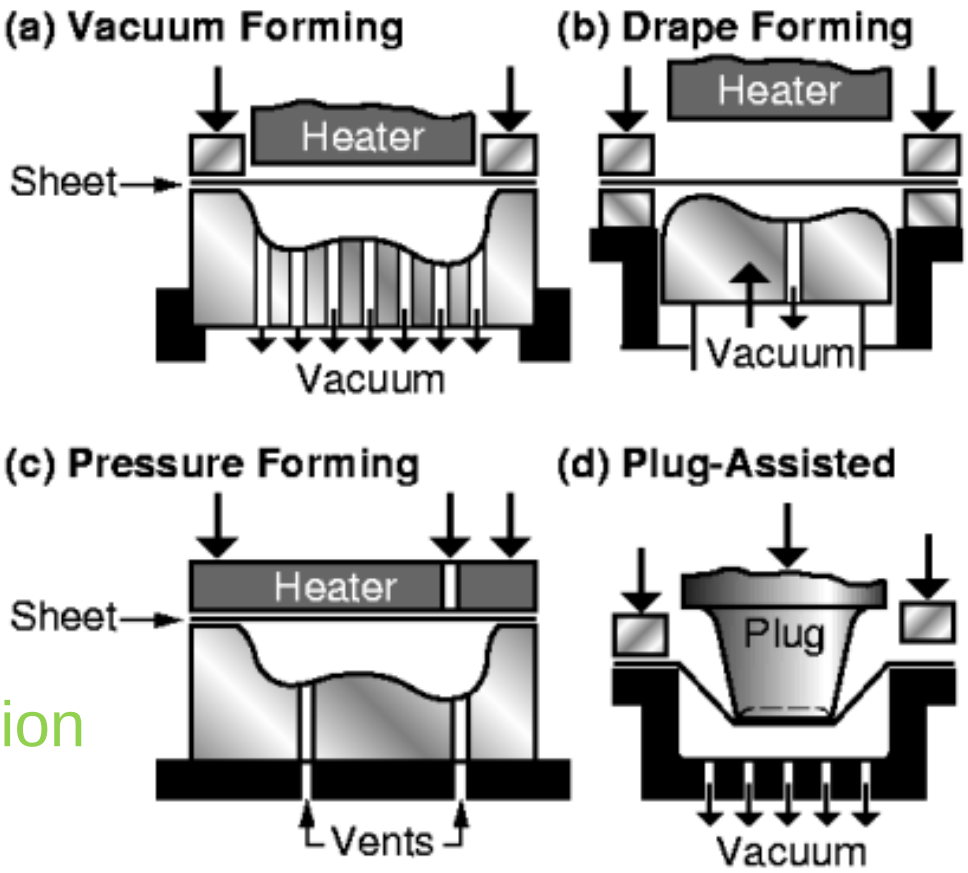
2008 THERMOFORMING

2011

expansion of the plant dedicated to Thermoforming: technologies and systems for

energy saving

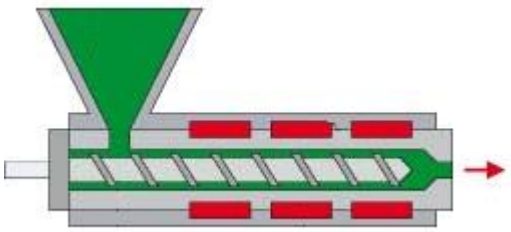
environmental protection



THE CHOICE OF MATERIALS…

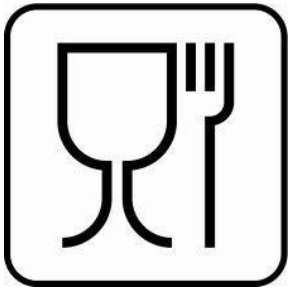
environmental protection

- Material costs



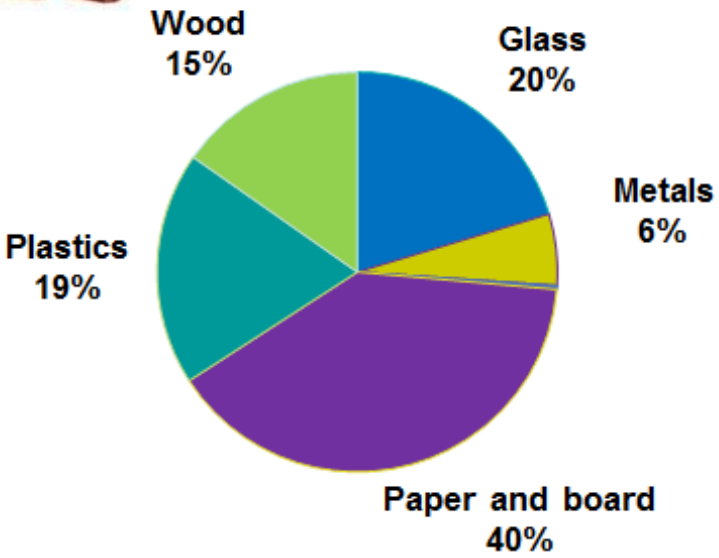
- Technologies involved in the production

- Compatibility with food contact



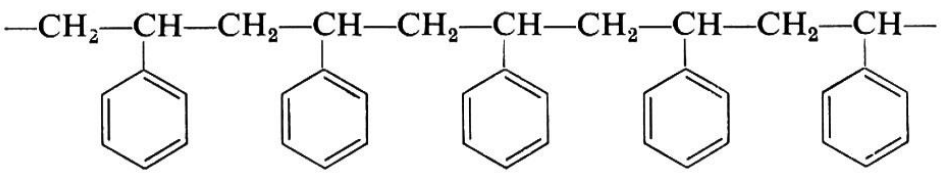
- Methods of transport

- Waste management

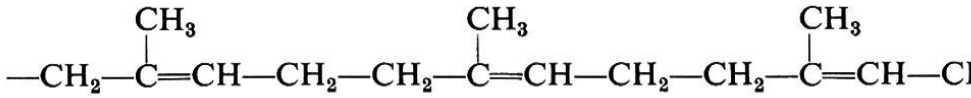


Source: Eurostat - Data Centre on Waste

WHAT ABOUT POLYMERS ?



Polyethylene (PE)

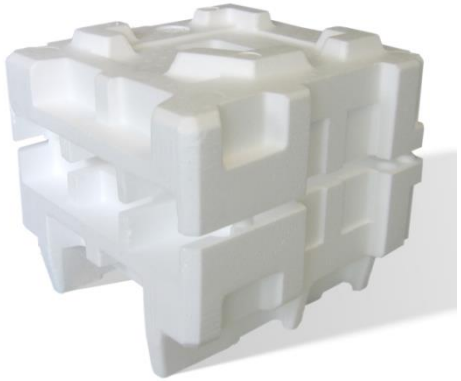


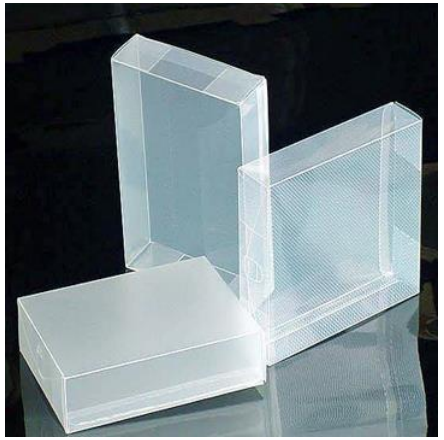
Polypropylene (PP)

Polyethylene Terephtalate (PET)

Polystyrene (PS)

APPLICATIONS

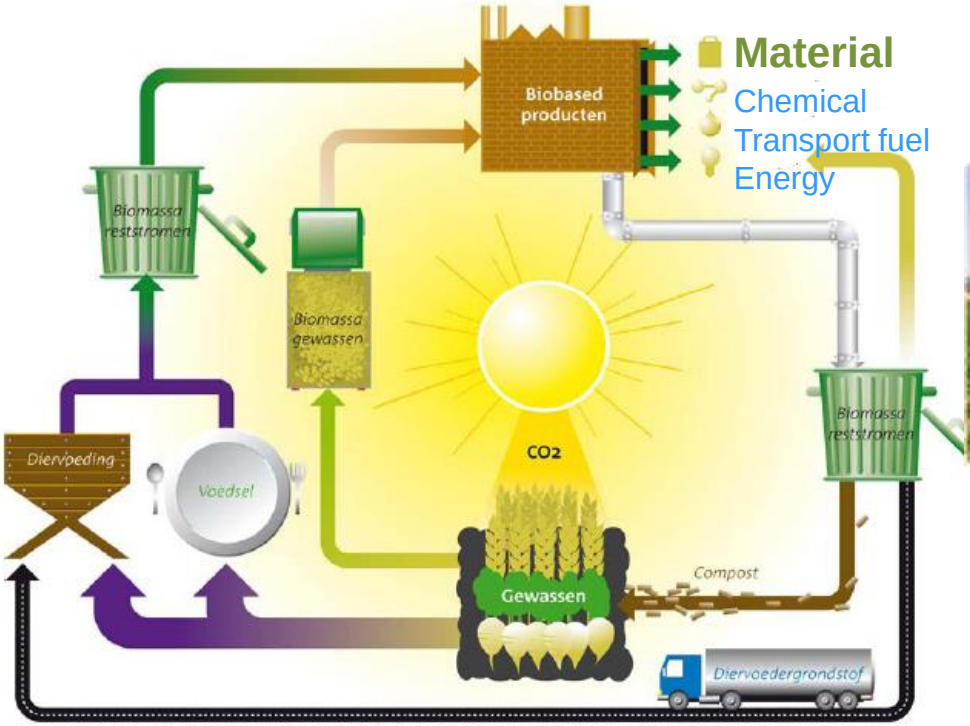




BIO-BASED PLASTIC

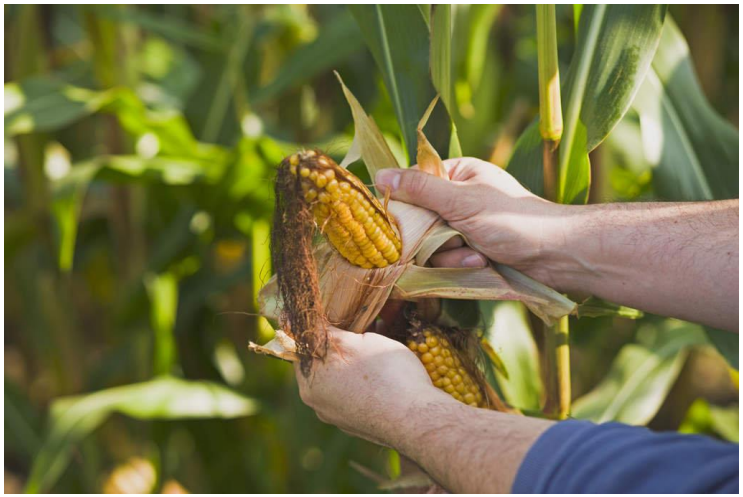
from

renewable ingredients / renewable biological resources / renewable raw materials



A bio-based material is a material made from substances derived from living (or once-living) organisms. Strictly the definition could include many common materials such as wood and leather, but it typically refers to modern materials that have undergone more extensive processing.

RAW MATERIALS



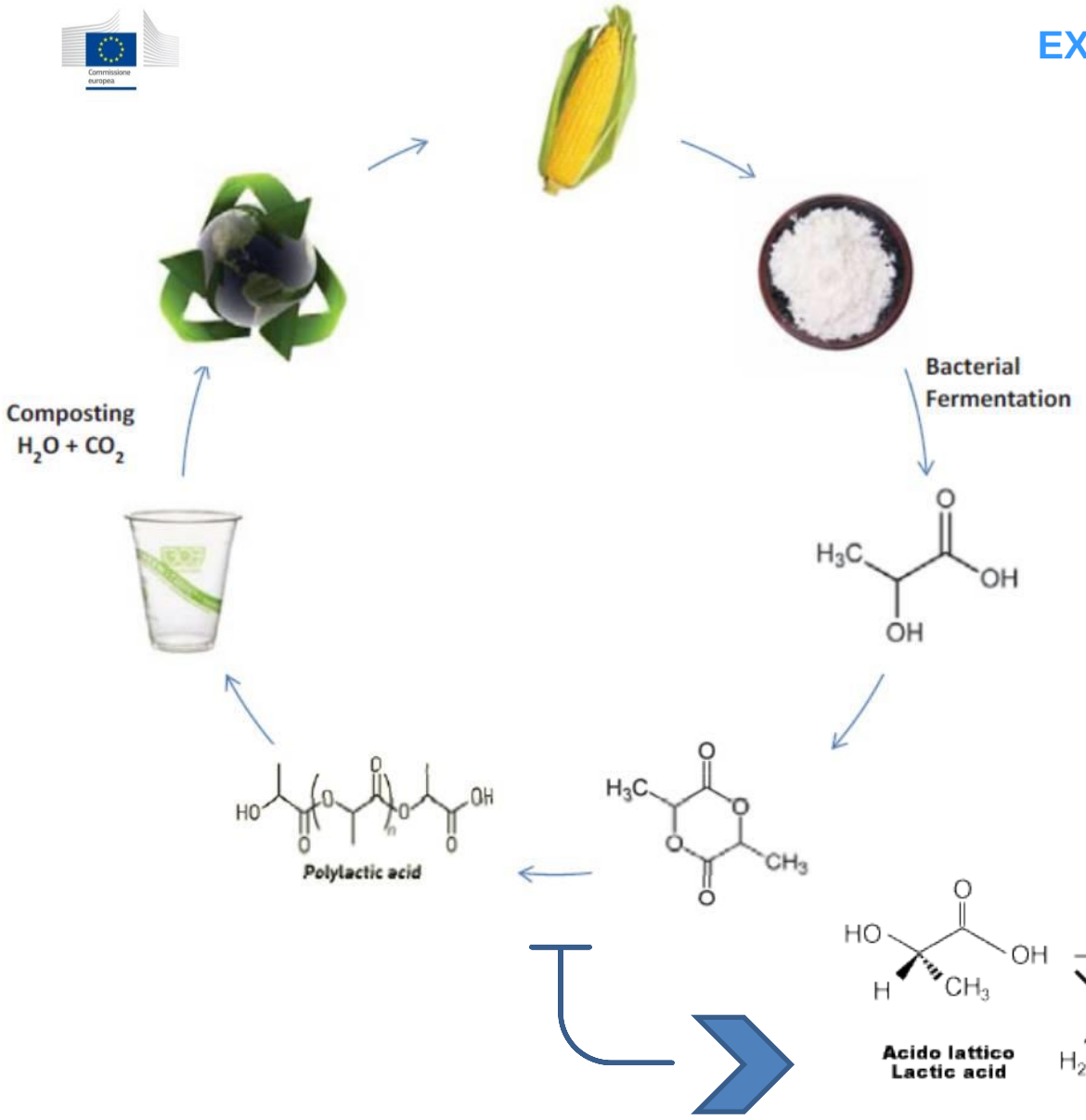
CORN STARCH

CASTOR OIL

SUGAR CANE

EXAMPLE

PLA



extensive processing

BIODEGRADABLE AND THERMOFORMABLE PLASTICS FROM PLA

Properties

Bio-based
Biodegradable
Compostable
Recyclable
UV resistant
Hypoallergenic

Working Processes

Injection moulding
Thermoforming
Blow moulding

Code NT6021

COMPOSTABLE FILM FOR FOOD PACKAGING

Properties

UV resistant
Suitable for food contact
Compostable
Reduced emissions
Bio-based
Biodegradable
Transparent
Thermal insulation
Electrical insulation
Antistatic

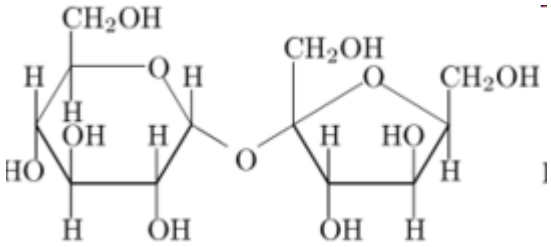
Working Processes

Lamination/coupling
Welding

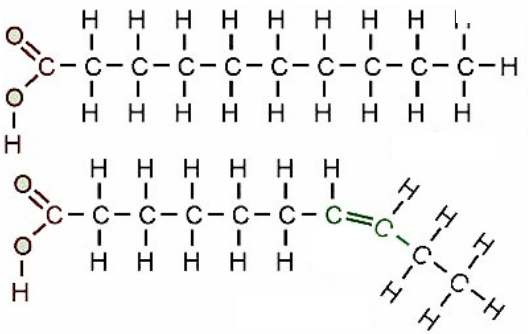
Code NT6046

PHA

Bacillus Subtilis



CARBOHYDRATES



LIPIDS

BIODEGRADABLE PLASTICS FROM PHA

Properties

Suitable for food contact
Compostable
Reduced emissions
Bio-based
Biodegradable
Biocompatible
Thermal insulation
Electrical insulation
Antistatic

Working Processes

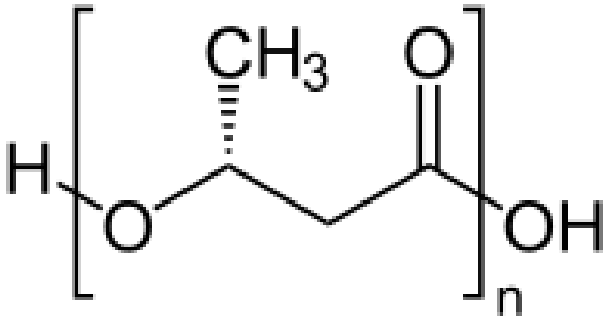
Injection moulding
Blow moulding
Extrusion

Code PO2652

MAIN TECHNICAL CHARACTERISTICS

Linear polyesther

- Termoplastic
- UV resistant
- low water absorption
- up to 70% of cristallinity
- Biodegradable (EN13432)
- Biocompatible

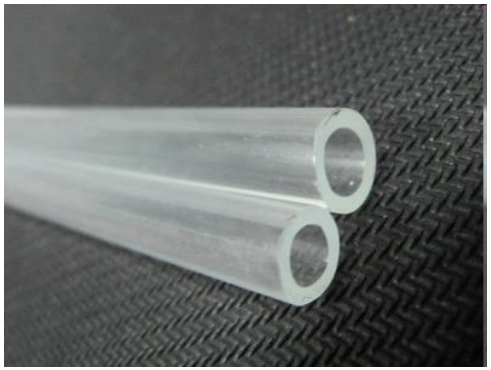


EUROPE	USA	USA	CHINA	JAPAN
EN13432	FDA	ASTM D 6400	BMG	GREEN PLA

APPLICATIONS

Injection moulding

Blow Moulding



Bio-elastomers

FILM

SHEET

MORE ?

COMMUNICATION

COMPOSTABLE INK

- Vinçotte standard
- water or solvent-based
- no heavy metals
- the ink % depends on product kind

Certified materials + Certified ink → **Design and product certification** →

Biodegradable FOAMS

From renewable resources

			EPS	
Thermal conductivity (MW/m·K)	35 g/l	34	33	30 g/l
Bending strength (kPa)	35 g/l	300	300	30 g/l
Compressive stress @ 10% deformation (kPa)	40 g/l	200	200	30 g/l
Compressive modulus (MPa)	40 g/l	4.0	3.0	30 g/l
Shear strength (kPa)	35 g/l	140	250	30 g/l
Shear modulus (kPa)	35 g/l	2.7	3.1	30 g/l
C-value (for drop testing) (-)	35 g/l	2.6	2.7	30 g/l

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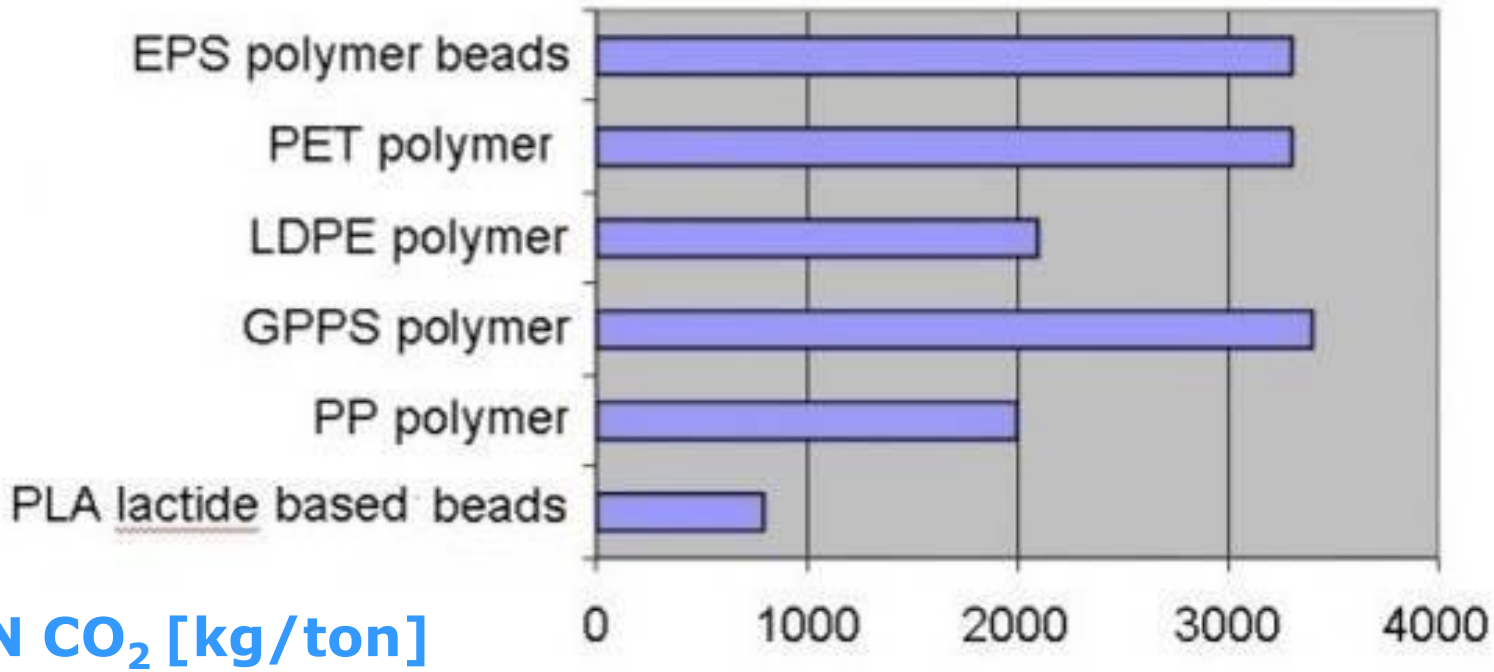
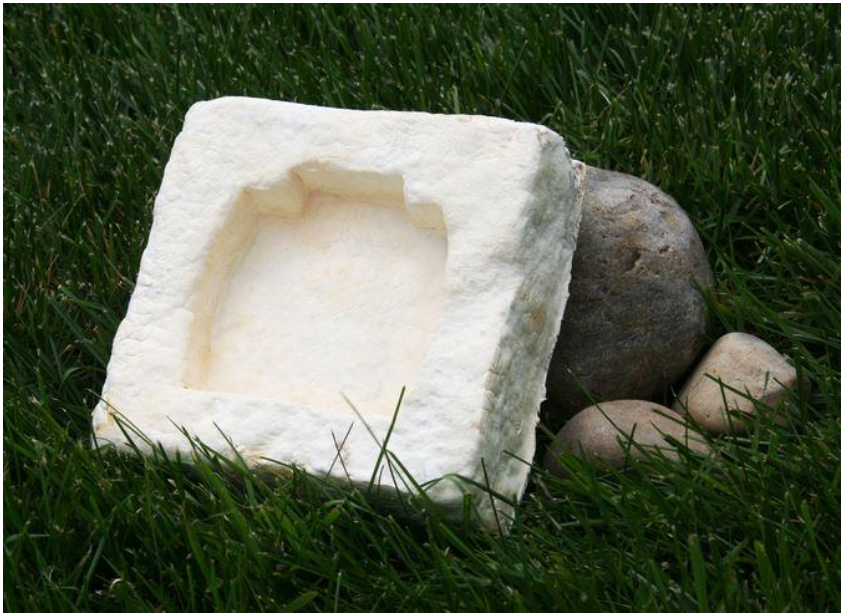
ecofriendly



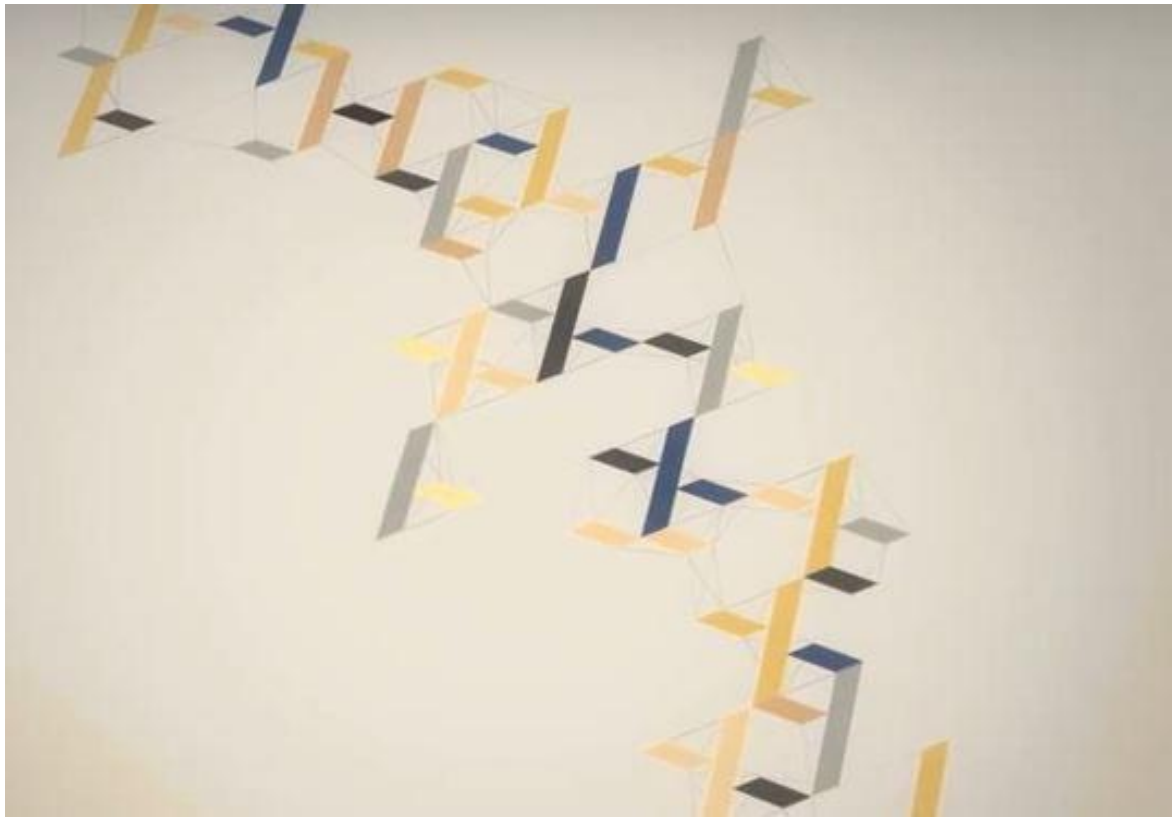
EMISSION CO_2 [kg/ton]

PACKAGING DERIVED FROM MUSHROOM MYCELIUM



TO PROTECT/ TO STORE

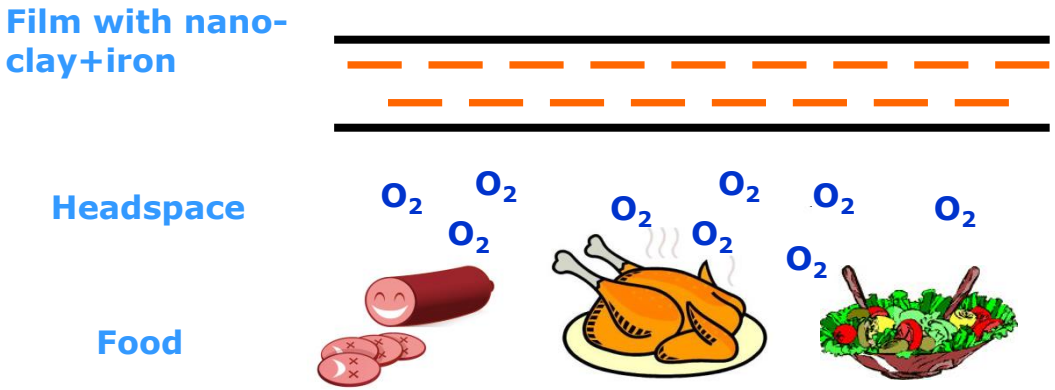
SMART PACKAGING



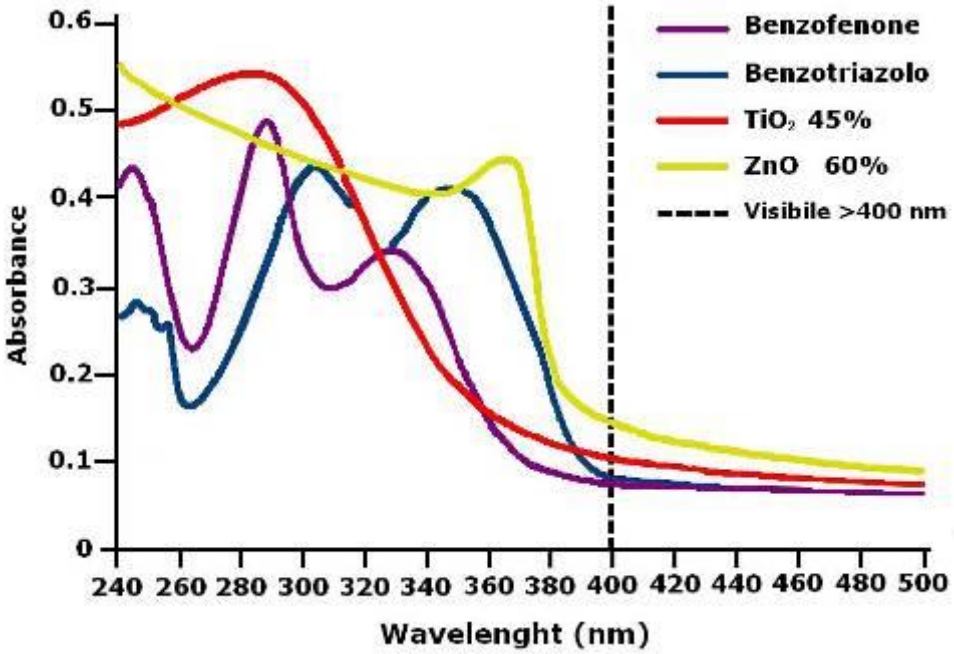
THE PACKAGING OF THE FUTURE

NANO-FILLERS

- LDPE, HDPE, PET, PLA and Others
- Antimicrobic with the addition of silver ions



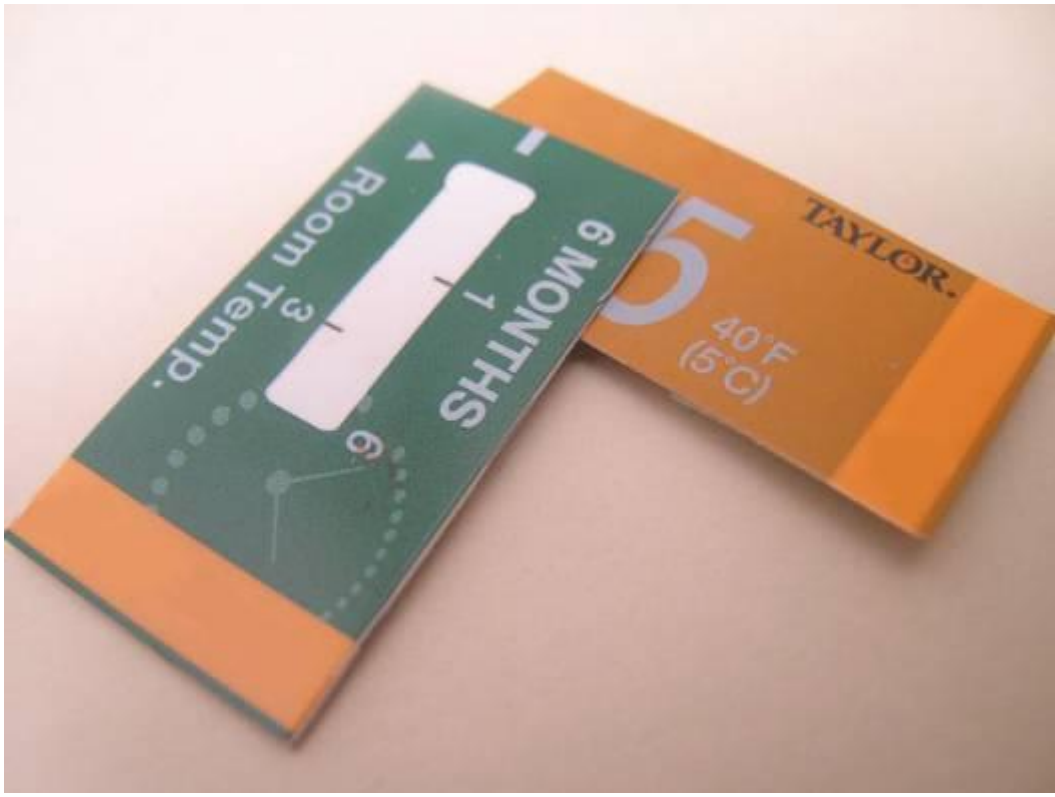
Inorganic (TiO2 – ZnO) UV Radiations Absorbers



- suitable for food contact
- reversible reactions
- no yellowing
- optically performant
- available as dispersion powder or masterbatch (PE o PP)
- suitable for not polar polymers

LIFETIME COMMUNICATION

From few minutes till years



A way to decrease food wastage

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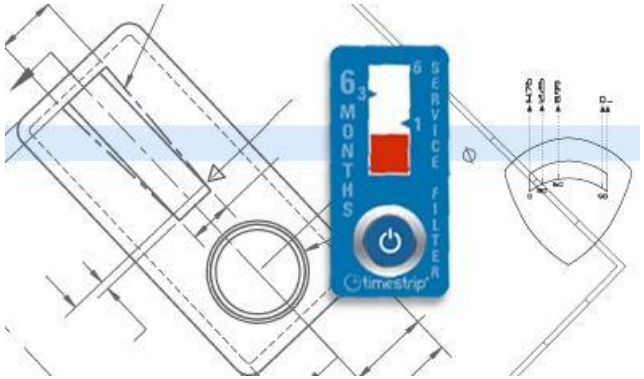
CUSTOM SOLUTIONS

Monitoring TIME

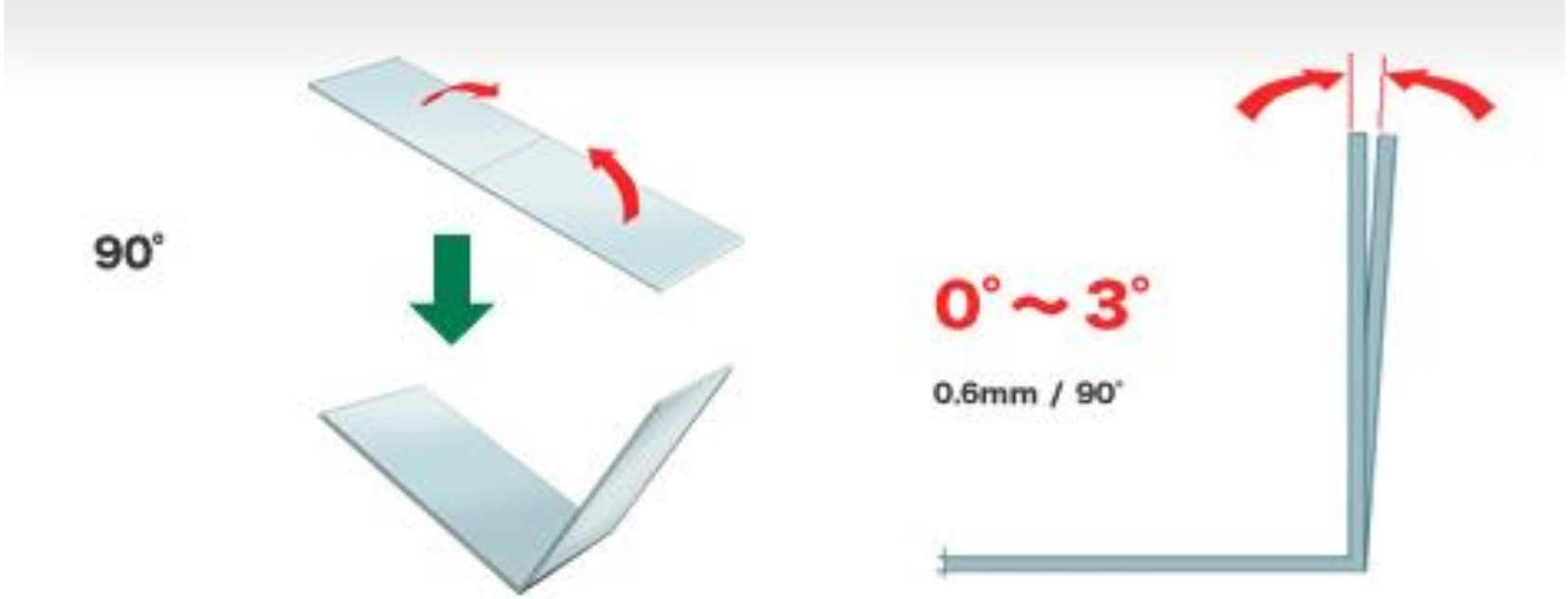


Monitoring TEMPERATURE

TO MONITOR – TO INFORM – TO PROTECT

TO REMEMBER – TO PROMOTE

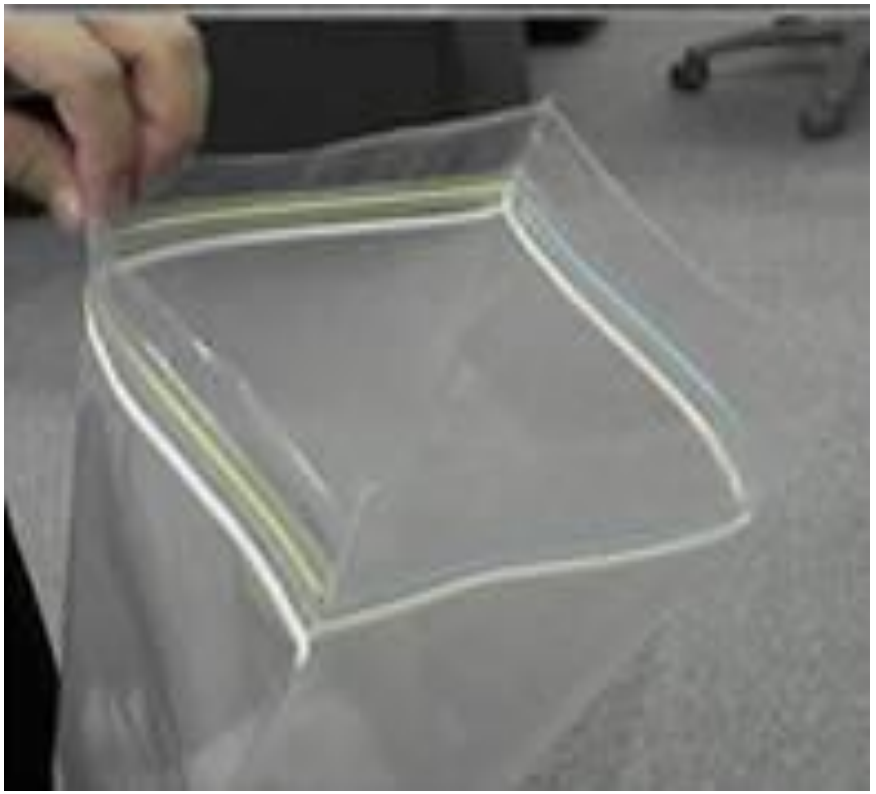
Shape Retaining Polymers

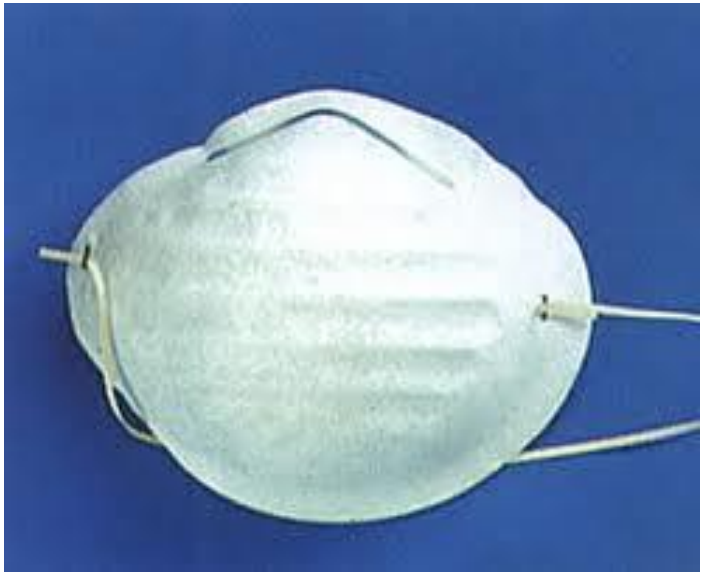


100% PE

Very small “returning angle”

APPLICATIONS





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THANKS !

Galileo
PARCO SCIENTIFICO E TECNOLOGICO

PADOVA