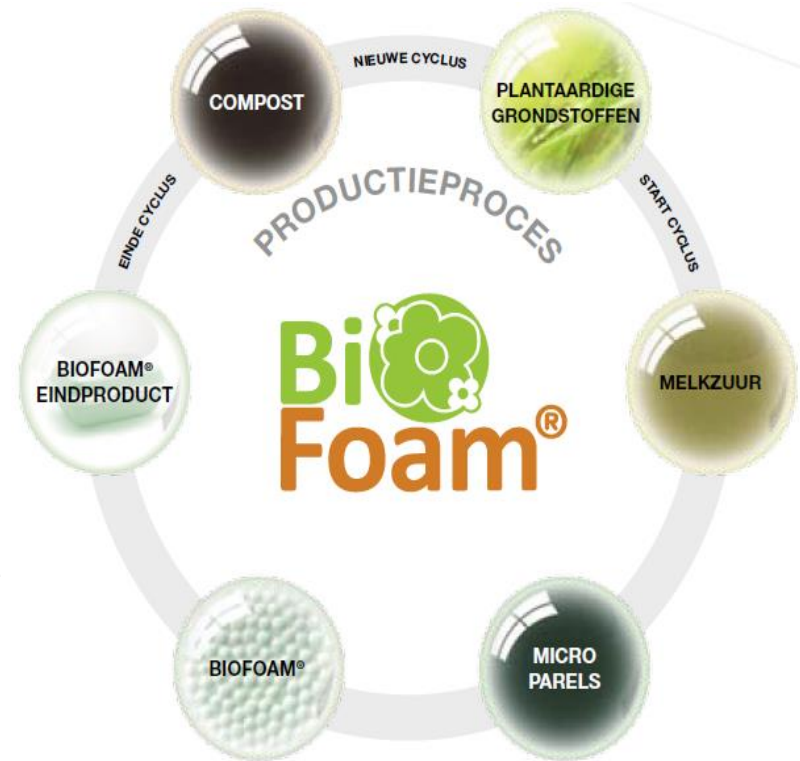


**Biobased initiatives**  
**Arras June 20<sup>th</sup> World Economic**  
**Forum**

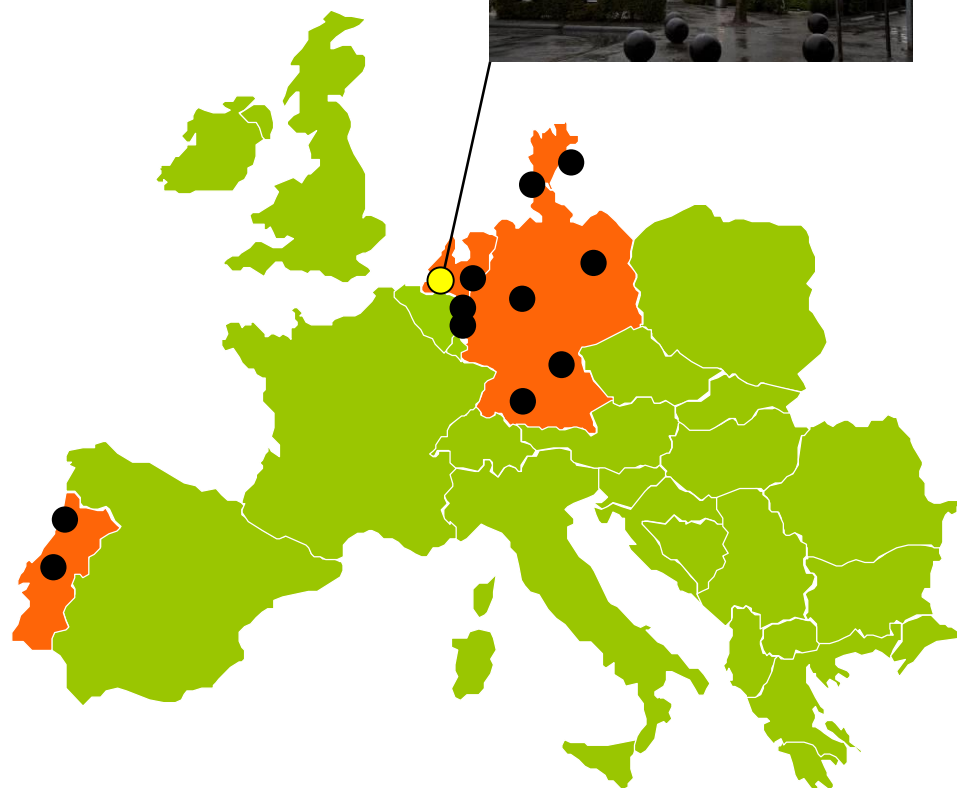
**Synbra**

- Company introduction;
- PLA foaming&molding;
- BioFoam® properties;
- Market strategy;
- BioFoam® success stories;
- PS loop cooperative initiative



# ***Company introduction***

# Company introduction



- Dutch holding of 13 companies (about 900 employees);
- Synbra Technology supplies Expandable PolyStyrene (EPS) beads to other Business Units;
- They convert EPS beads into foamed beads and products;
- Focus on Sustainable Insulation Systems (SIS) and Industrial Products & Solutions (IPS);
- Synbra Technology supports with material innovation(s).

# PLA / BioFoam® process



ROP of  
lactide



Compounding



BioBeads®



Impregnation  
with CO<sub>2</sub>



Prefoaming



Impregnation  
with CO<sub>2</sub>



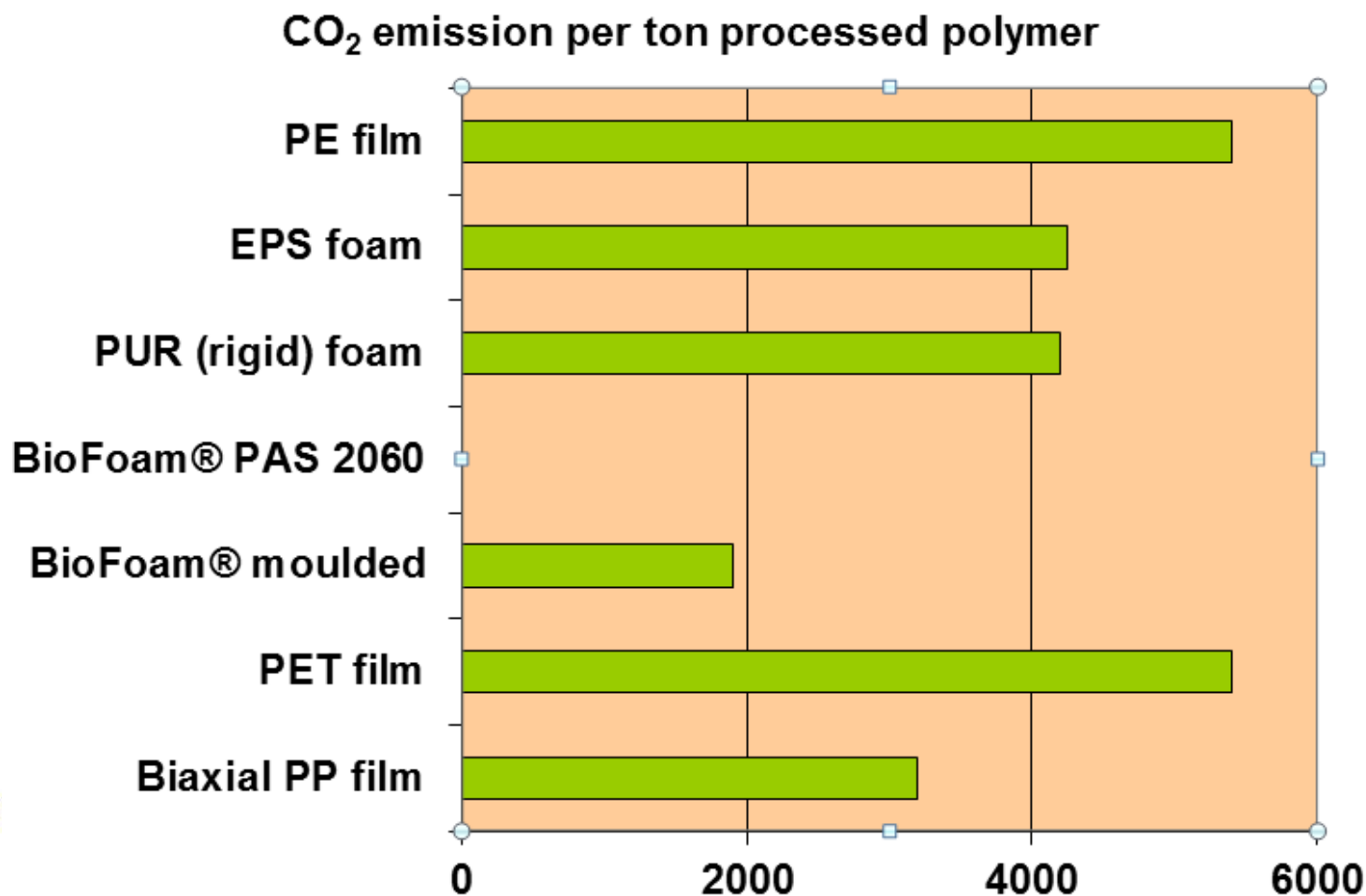
Moulding or  
low density  
foaming





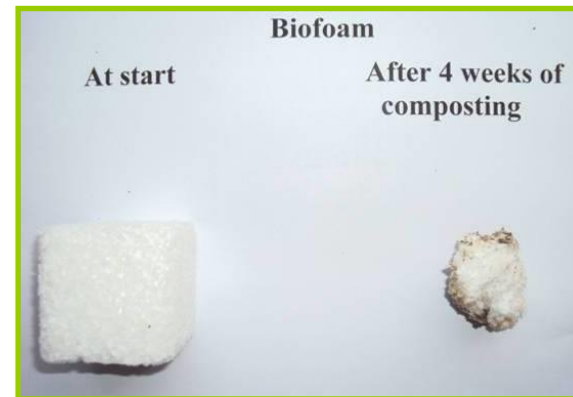
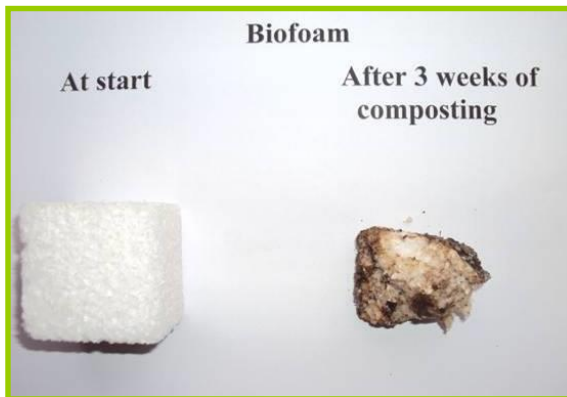
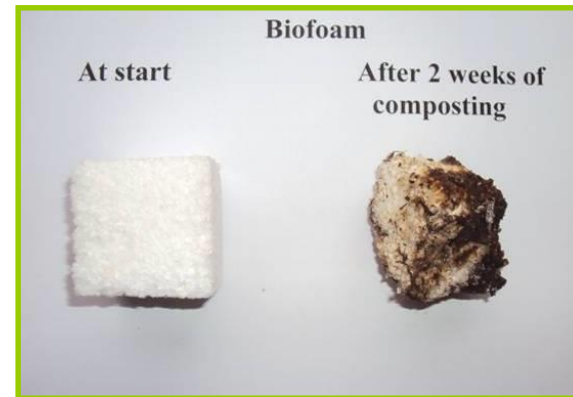
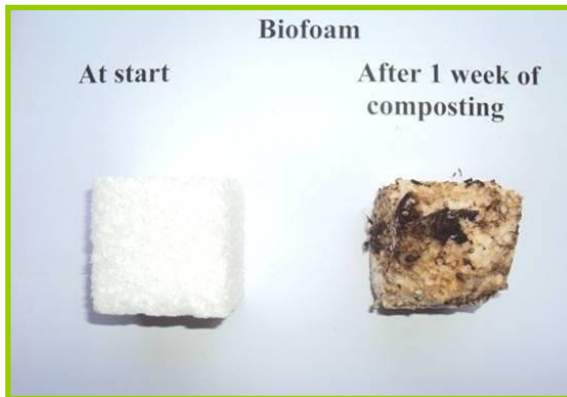
# ***BioFoam® properties and USP's***





Synbra LCA Tool 2.0, based on LCA according to ISO 14040 & 14044, prepared by Tobias Borén (AkzoNobel) and reviewed by Martin Patel (Utrecht University) review Thinkstep Sept. 2016

# Disintegration/composting



54 g/l  
@ 70°C

Home composting (at 30°C) → not possible  
PLA/BioFoam is not a solution for littering!



- Small series and sampling at T&I
- Commercial production at Synprodo in Wijchen
- Transport from NL to other countries
- Prepare copy – paste to non Synbra companies (partners) in Europe
- Partners on other continents
  - LOI in USA/Mexico with #1
  - Cooperaton in UK, Italy /Turkey formalised
  - Cooperation in several other EU countries , still under NDA
  - Partner in Korea, under NDA

# ***BioFoam® success stories***



thermo komfort®



Pearls for cavity wall insulation

→ improved insulation value with graphite

BioFoam Green →  $\lambda=34$  W/m.K

BioFoam Grey →  $\lambda=32$  W/m.K







Plates for interior wall insulation



**IsoBouw**

# BioFoam® applications (IPS)



Cooled transport

Fish boxes

Internet shipments







**Greeny**  
THE REAL ECOBOX  
MADE OF BIOFOAM®



Take-away packaging for icecream:


- Introduced at Sigep in January 2016;
- Market launch (brown) in Italy in July 2016

**SULPOL®**  **DOMOGEL** **ERREMME**

# points to take away



## BioFoam® is:

1. Based on non-GMO renewable feedstock  
→ carbon neutral
2. Food approved by 
3. Biodegradable → providing an additional & sustainable end-of-life option;
4. Cradle to cradle Silver certified;
5. Available in larger quantities produced in a commercial molding site.
6. Free from Carciogenic/mutagenic/reprotoxic compounds



### PRODUCT OPTIMIZATION SUMMARY

- ✓ Cradle to Cradle Certified™ Banned List compliant
- ✓ Material Health optimization strategy developed
- ✓ No exposure from carcinogens, mutagens, or reproductive toxicants





- <https://polystyreneloop.org/>