

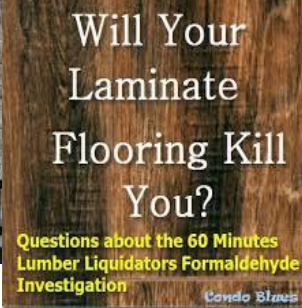
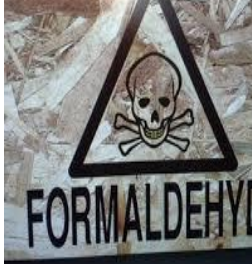


ADVANCED BIOMATERIALS

Products from Waste
October 2020



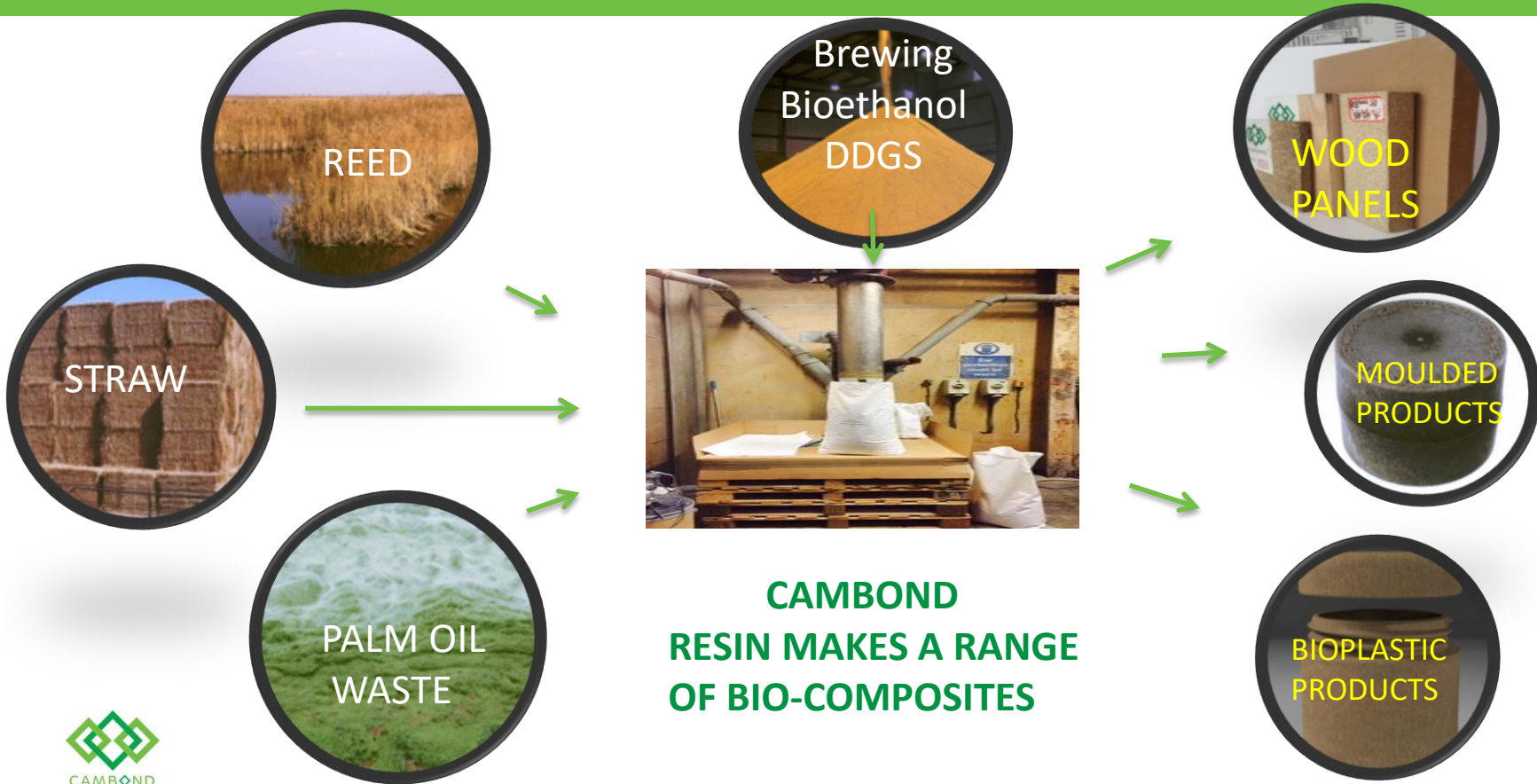
WORLD PROBLEMS- MATERIALS



EU woodpanel market €45Bn - >100 Companies

EU Plastics market €350Bn >60,000 Companies

CAMBOND INNOVATION AND SUPPLY CHAIN



DDGS – Cambond Resin Feedstock

- ◆ **Cambond resin is made from DDGS – Distillers Dried Grains and Solubles**
- ◆ Dried residue after the starch fraction of corn/wheat/barley is fermented to **produce** ethanol and carbon dioxide.
- ◆ **DDGS** is the main by-product of brewing and is often used as animal feed.
- ◆ DDGS is main by product of bioethanol production.
- ◆ **UK produces more than 1.5M tonnes a year.**
- ◆ EU produces more than 15.5M Tonnes a year.

- ◆ **DDGS is a global commodity available everywhere.**

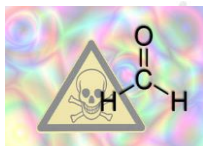
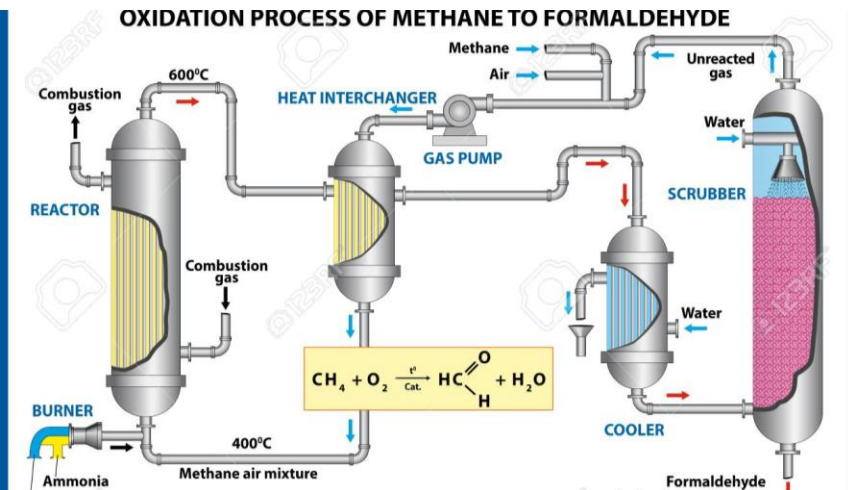
- ◆ **Cambond IP covers the use of DDGS as a resin.**



Formaldehyde

vs

Cambond



- Toxic
- High Energy
- Regulated



- Food Grade
- Non-toxic
- 40%CO_{2e} ↓



CIRCULAR ECONOMY POSSIBILITIES

Agriculture produces >2Billion tonnes waste biomass.

More than 50M tonnes of plastic waste in EU.

Could the existing supply chains use these to manufacture sustainable products?

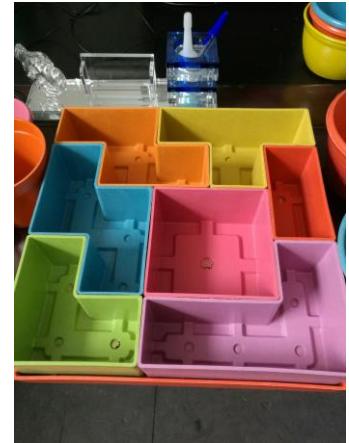


ANTHROPOCENE MINING



A New Generation of Green Products

- ◆ Resin can be used to combine biomass with polymers and other materials for 'greener' plastics.
- ◆ Reduces plastic in many products
- ◆ New generation * Carbon – ve biomass products



CAMBOND INNOVATION -



Biomass/polymer composites
Low carbon
Low cost
EXISTING SUPPLY CHAIN

CAMBOND SOLUTIONS – COFFEE RETAIL



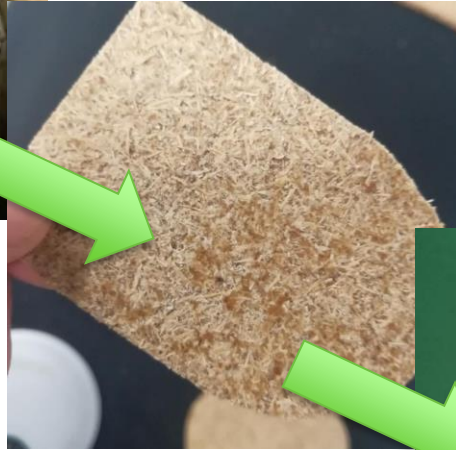
Wasbeans cup



CAMBOND SOLUTIONS – BEER WASTE

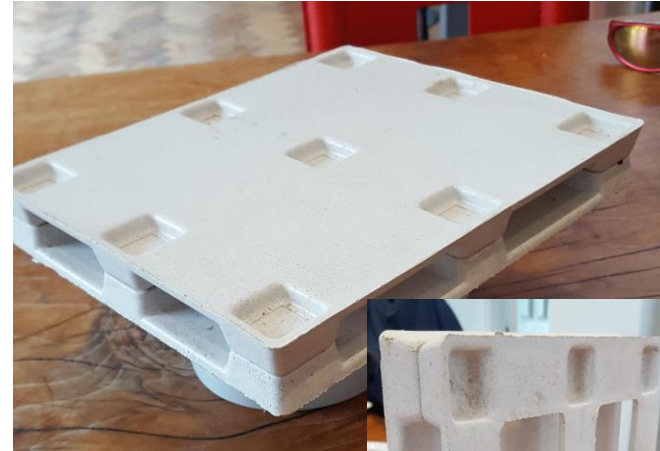


Beer Waste into Products



Products safe to feed
to chickens!

PROBLEM TO PRODUCT EXAMPLE – PLASTIC PALLET



WASTE PLASTICS – MANUFACTURING – SUPPLY CHAIN
REPLACE EXISTING PRODUCT WITH LOW CARBON ALTERNATIVE
INSERT INTO EXISTING SUPPLY CHAIN



COMMERCIALISATION – VALUE PROPOSITION

- ◆ Cambond technology
 - Better use of waste streams
 - Cleaner environmentally friendly manufacturing
 - Reduce COST of manufacturing feedstocks
 - Low toxic chemicals, solve environmental
 - Carbon footprint (<40%)
- ◆ Cambond technology reduces carbon helps clean environment.



CAMBOND



Dr. G Roberts
2014 Top Innovations Awards



Shell Springboard
2018



Prof. X Zhao
2014 Royal Society of Chemistry
Emerging Technology Business



Coffee Excellence 2018



Design Council 2017



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