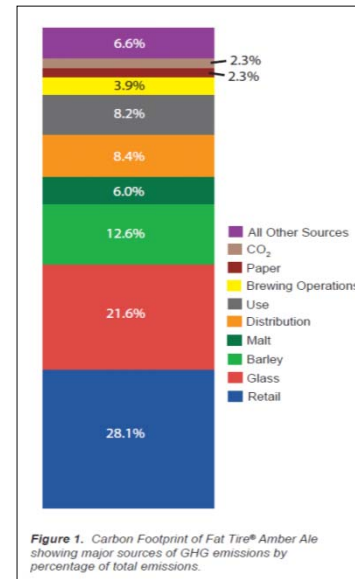


Definition of Sustainability:

Since the 1980s, human sustainability has implied the integration of economic, social and environmental spheres to: **“meet the needs of the present without compromising the ability of future generations to meet their own needs.”**

Sustainability is on top of the agenda of all major brewery groups as well as the leading craft breweries. Major efforts have been and still are made to reduce water and energy consumption for beer production.

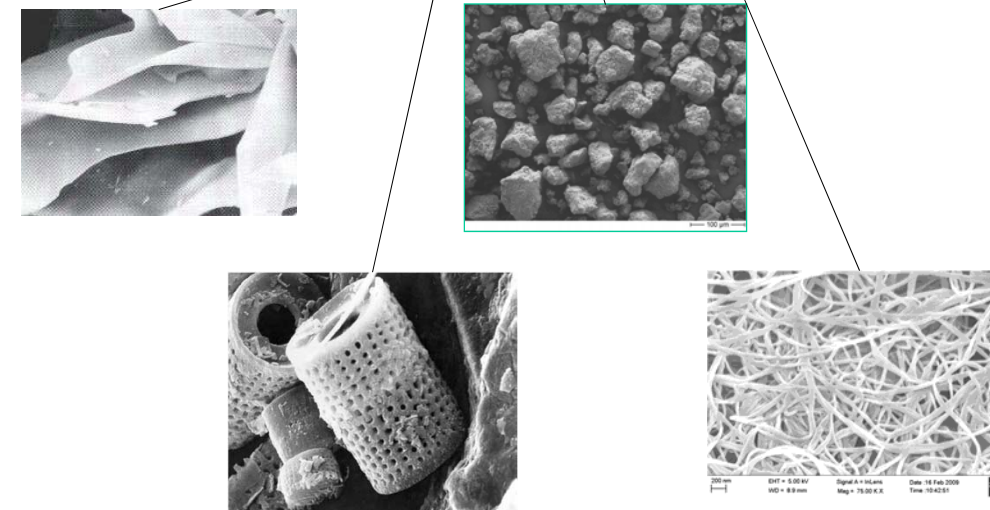
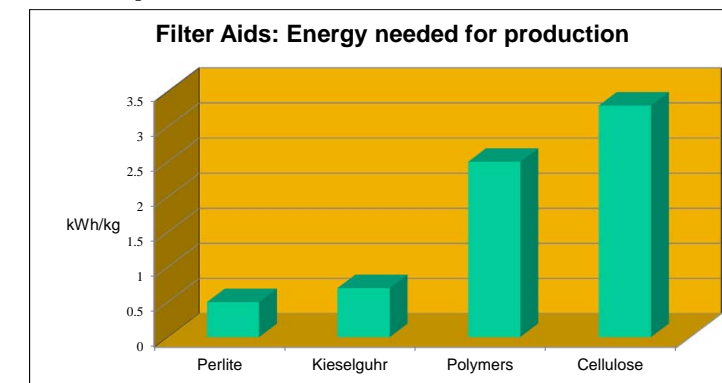
Carbon Footprint of Beer Production (by New Belgium Brewing): Brewing Operations (yellow) accounts for only 3.9% of the carbon footprint, if you consider the entire chain from raw material to the consumer. Filtration again is only a fraction of the brewing process with regard to carbon footprint.



Filter Aids for Precoat Filtration:

- Perlite
- Kieselguhr (D.E.)
- Polymers (regenerable)
- Cellulose (Viscose)

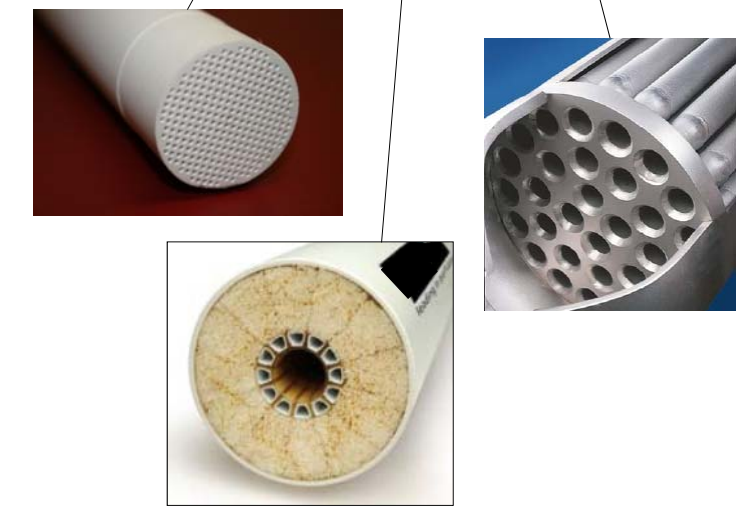
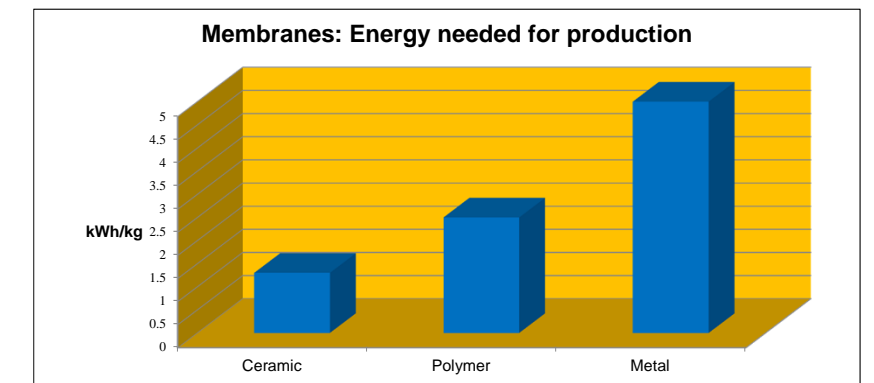
Comparing the available filter aids, it is obvious that the traditional minerals need substantially less energy for production than cellulose or polymers, but polymers have the advantage that they can be regenerated and therefore have a similar over all carbon footprint as D.E..



Membranes for Crossflow Filtration:

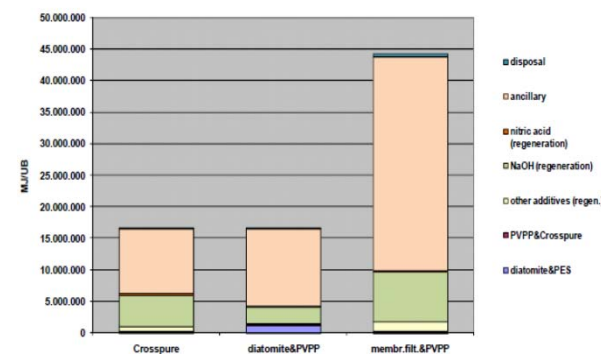
- Ceramic (Al₂O₃, SiC, ZrO)
- Polymer (PES, PA, PTFE...)
- Metal (Stainless steel)

Looking at the membranes used for filtration, we see a different situation. Polymers have a much shorter life time (< 2 years) compared to ceramic (> 8 years) or even metal (virtually unlimited, but rarely used because of the high price) and therefore a substantially higher carbon footprint.

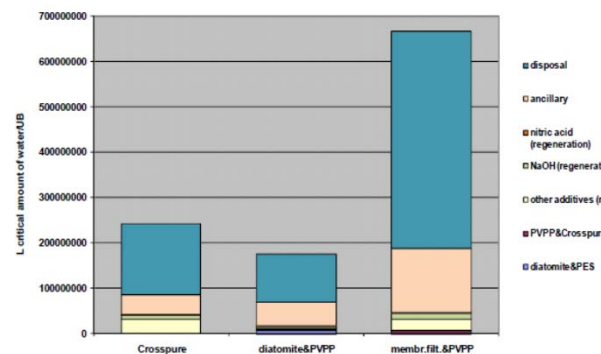


Beer Filtration is predominantly done either with pre-coat filtration or with membrane filtration. In spite of the bad image of D.E. the traditional pre-coat filtration has a substantially lower impact on the environment than membrane filtration. This was confirmed with an DEKRA-certified Eco-Efficiency Analysis by BASF in 2010:

Energy Consumption



Water Consumption



Greenhouse Gas Emissions

