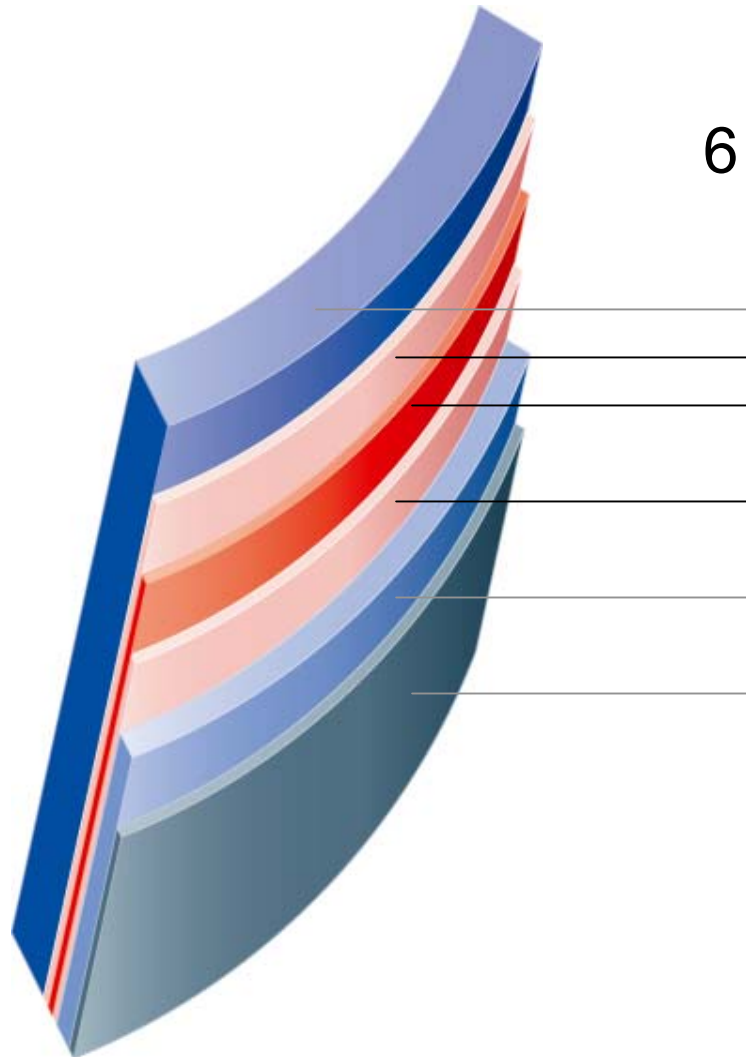




Continuous Coextrusion with 6 Layers



6 Layers



Inner layer: HDPE (new material)

Adhesive

Security Layer

EVOH

Adhesive

Intermediate layer: HDPE Regrind

Outer Layer

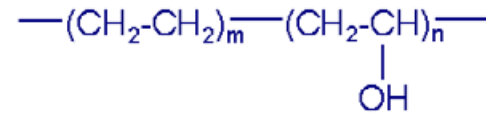
additional UV-protection of the filling good, conductive, non-chargeable layer, etc.



What is EVOH?



- EVOH is a random copolymer of ethylene and vinyl alcohol.



- **Where is EVOH used?**
 - Food industry
 - Pharmaceutical and cosmetic industry
 - Chemical industry
 - Agriculture



EVOH properties



**Resistance
to oils and fats**

**Resistance and barrier
to organic solvents**

Toluene, Xylene, MEK, Fuel...

EVOH

Gas barrier

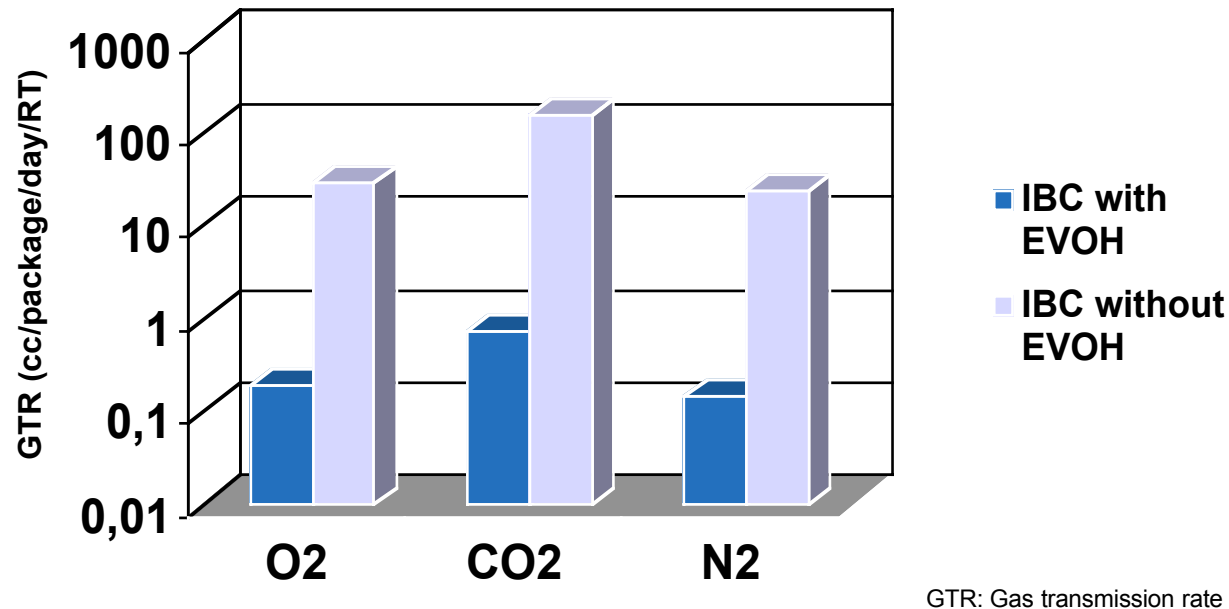
O₂, N₂, CO₂...

Aroma and odor barrier

D-limonene, Orange essence...



O₂, CO₂ and N₂ transmission through ECOBULK with EVOH-barrier



EVOH - Gas barrier properties (IBC with EVOH compared to IBC without EVOH)

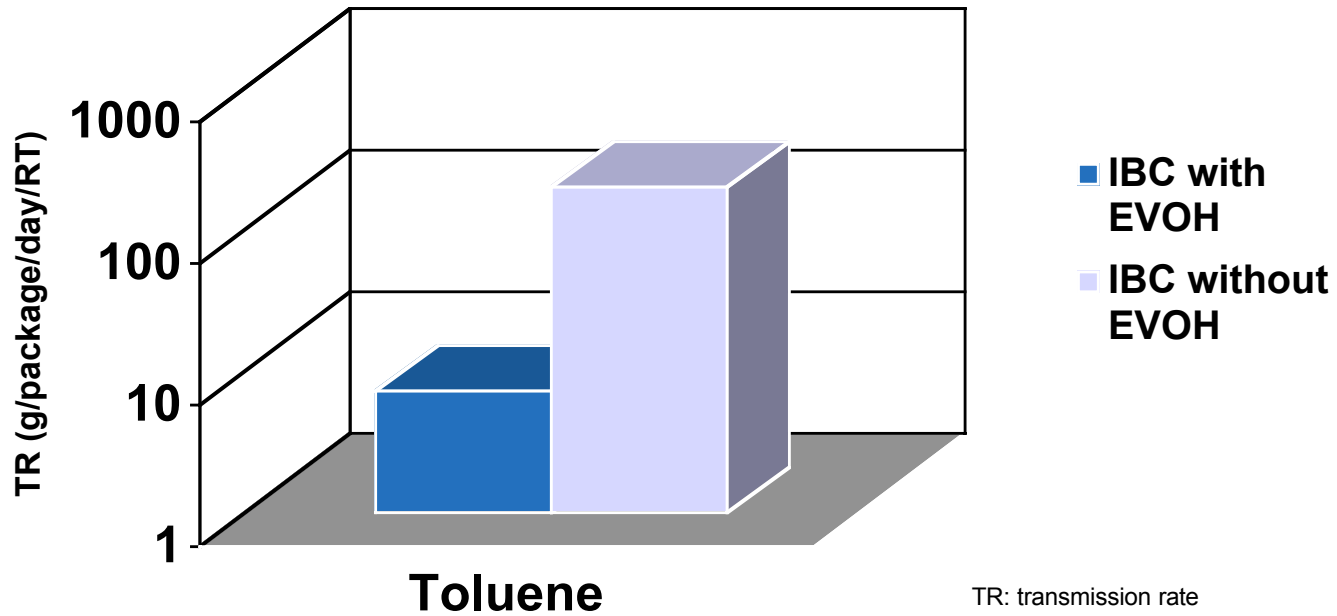
Barrier to oxygen: **+ 15.000 %**

Barrier to carbon dioxide: **+ 20.000 %**

Barrier to nitrogen: **+ 16.000 %**



Toluene transmission through ECOBULK with EVOH-barrier

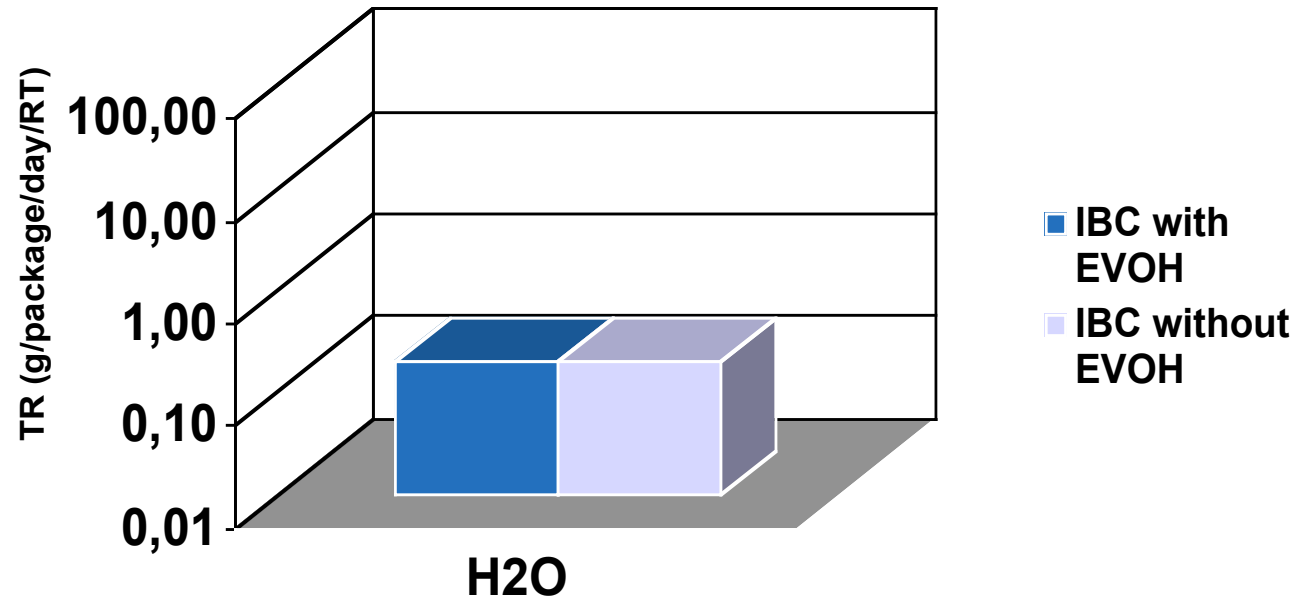


**EVOH - barrier properties
(IBC with EVOH compared to IBC without EVOH)**

Barrier to toluene: **+ 2.816 %**



H₂O transmission through ECOBULK with EVOH-barrier

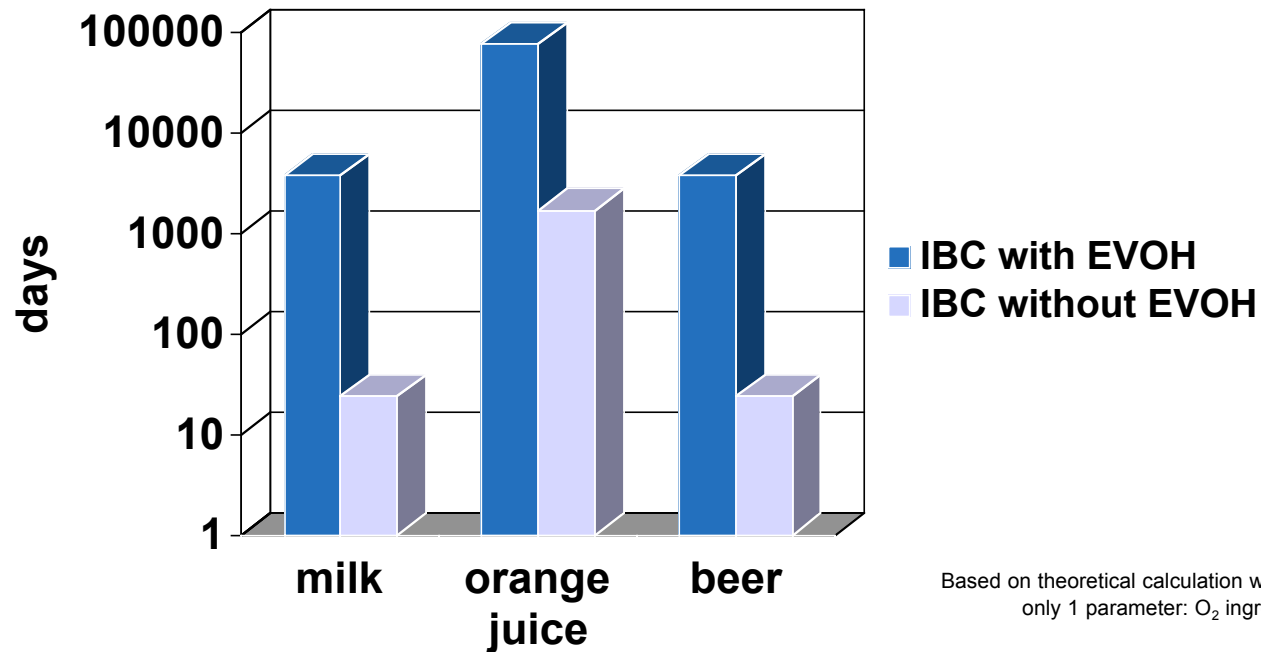


**EVOH - barrier properties
(IBC with EVOH compared to IBC without EVOH)**

Barrier to water: same transmission as IBC without EVOH



Shelf life calculation ECOBULK with EVOH-barrier

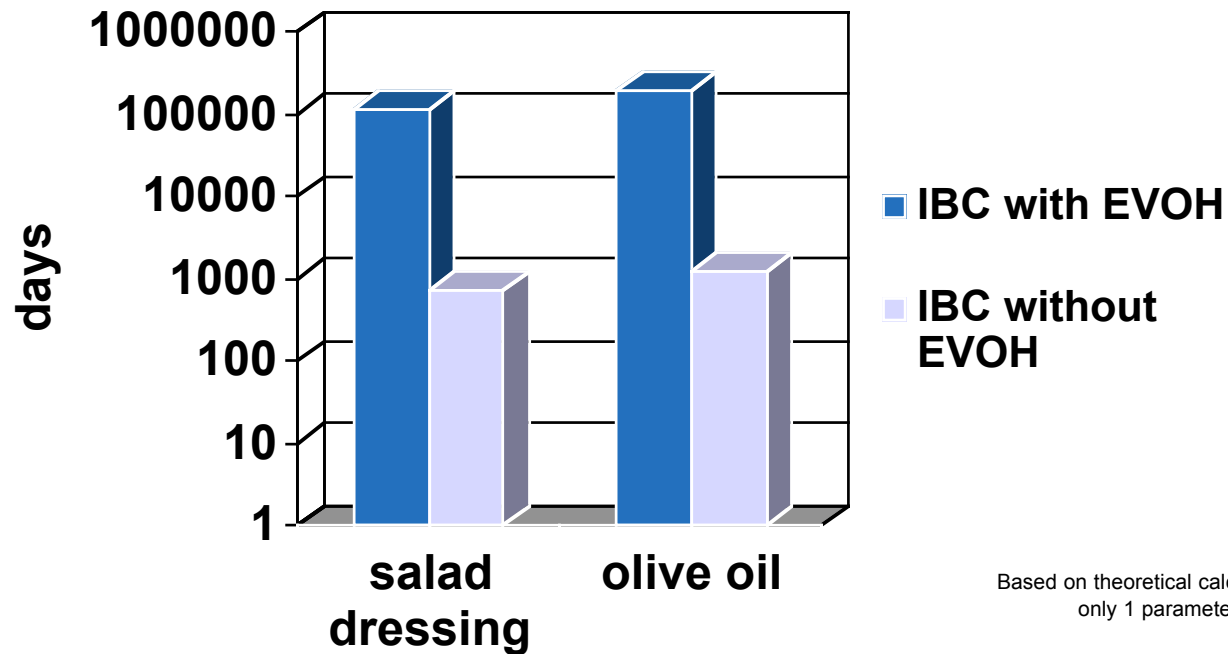


EVOH - Increase of shelf life (IBC with EVOH compared to IBC without EVOH)

Milk:	+ 15.000 %
Orange Juice:	+ 4.000 %
Beer:	+ 15.000 %



Shelf life calculation ECOBULK with EVOH-barrier



Based on theoretical calculation with
only 1 parameter: O₂ ingress

EVOH - Increase of shelf life (IBC with EVOH compared to IBC without EVOH)

Salad dressing: **+ 15.000 %**

Olive oil: **+ 15.000 %**