# FERVER
## 2004 - 2017

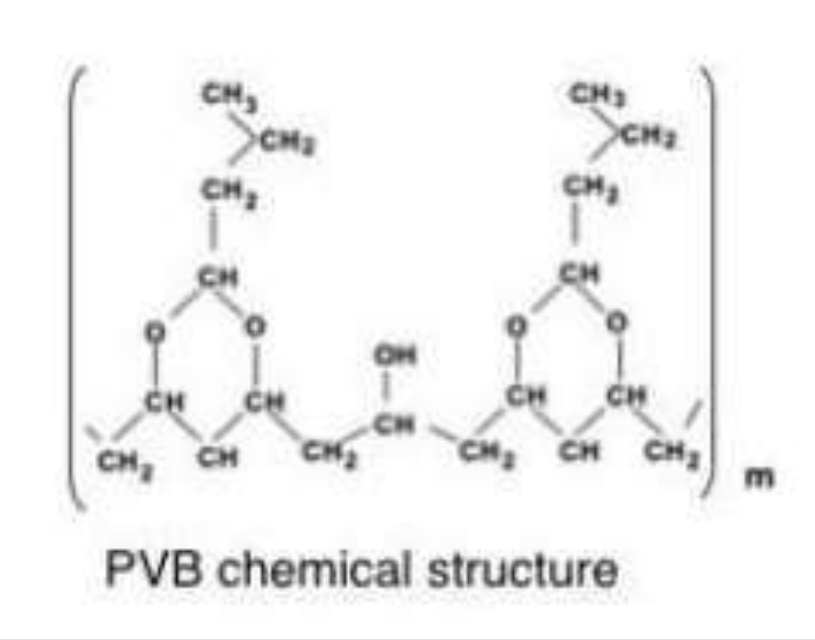
**F**édération **e**uropéenne des
**R**ecycleurs de **ver**re

European Federation
of Glass Recyclers

www.ferver.eu

# PolyVinylButyral

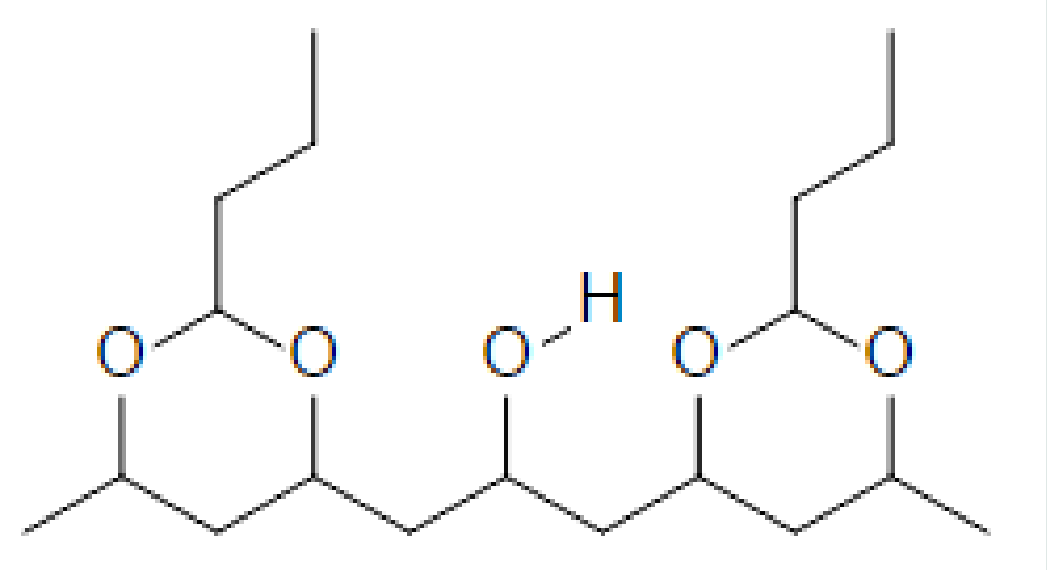
- Polymer prepared from chemical reaction between:
  - Polyvinyl alcohol
  - Butyraldehyde
- Mostly processed to foils



# PolyVinylButyral

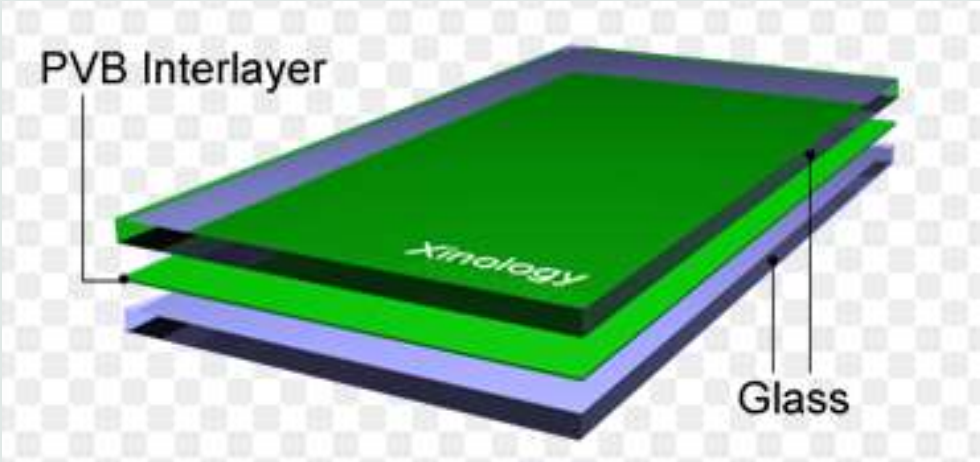
## Properties

- Thermo plastic
- Without halogens
- Elastic
- Adhesive ability
- Resistant to acids
- Resistant to alkalis
- Resistant to UV
- Corrosion resistant
- Water resistant



# PolyVinylButyral

## Utilisation




- Laminated safety glass:
  - Windshields
  - Buildings
- Coatings/ Ink
  - Alternative PVC coatings on textile
  - Use in roofing material
  - Substitution for tar or bitumen
- Binding agent /compatiliser
  - Still looking for utilisation in this field

# PolyVinylButyral

## Recycling

- Break glass → changing the chemical properties
  - Viscosity
  - Optical clarity
  - …
- Separate
- Granulate

# PolyVinylButyral

## Recyclers

- Shark solutions (DE)
- Carotrans (BE)
- Hainaut Plast Industry (Fr)
- Matco N.v. (BE)

# PolyVinylButyral

## Producers

- Solutia (BE)
- Kuraray Europe (DE)
- Sekisui (JP)

# PolyVinylButyral

## Projects

- RECYCLED-PVB Design and development of a demonstrative pilot plant for the recycling of polyvinyl butyral
  - → Life 09 Project (EU-commission)
  - → 2010-2013
  - → Spain
  - → Fundación Lurederra

# PolyVinylButyral

## Projects

- RECYCLED-PVB Design and development of a demonstrative pilot plant for the recycling of polyvinyl butyral
  - → Extraction-separation module (max mechanical separation)
  - → Results: similar properties to commercial PVB
  - → Patent

| Feature | PVB on the market | Recycled PVB |
|---|---|---|
| Density ($g/cm^3$) | 1.064 | 1.069 |
| Hardness | 85 | 87 |
| Tensile strength ($Kgf/cm^2$) | 288 | 272 |
| Elongation at break (%) | 225 | 211 |

# PolyVinylButyral

## Projects

- Design and construction of a windscreen recycling line (WS-REC)
  - → Eco-Innovation Project (EU-Commission)
  - → 2011-2014
  - → Spain
  - → Technological Centre Lurederra

# PolyVinylButyral

## Projects

- Industrial scale purification of PVB from windshield waste and preparation for Re-Use to close the material Life-Cycle
  - → Eco-Innovation Project (EU-Commission)
  - → 2014-2017
  - → Germany/ Czech Republic
  - → Saperatec, SPL servis