

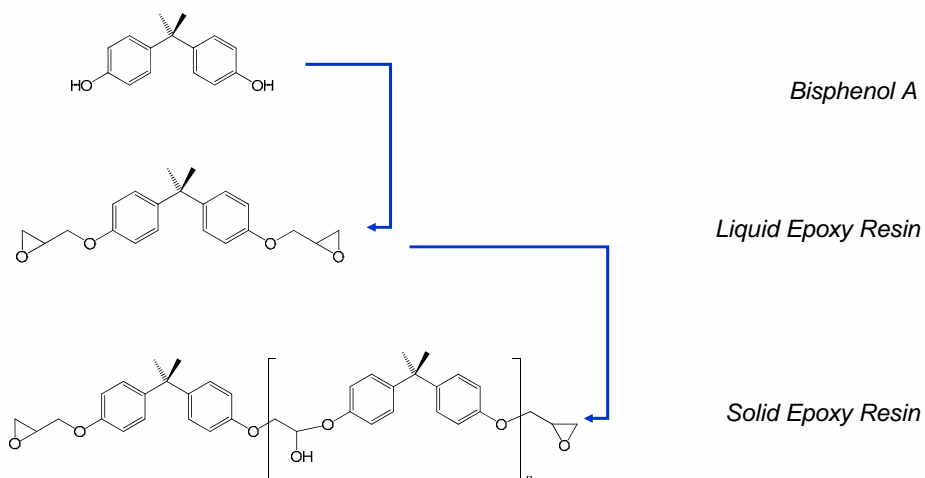
## Module 38 – Brominated epoxy resins chemistry

### Objectives

- Understand the chemistry of the brominated product range
- Understand how it compares with the chemistry of the bisphenol A resins
- Understand why brominated resins are interesting
- Understand how the brominated epoxy resins are characterized

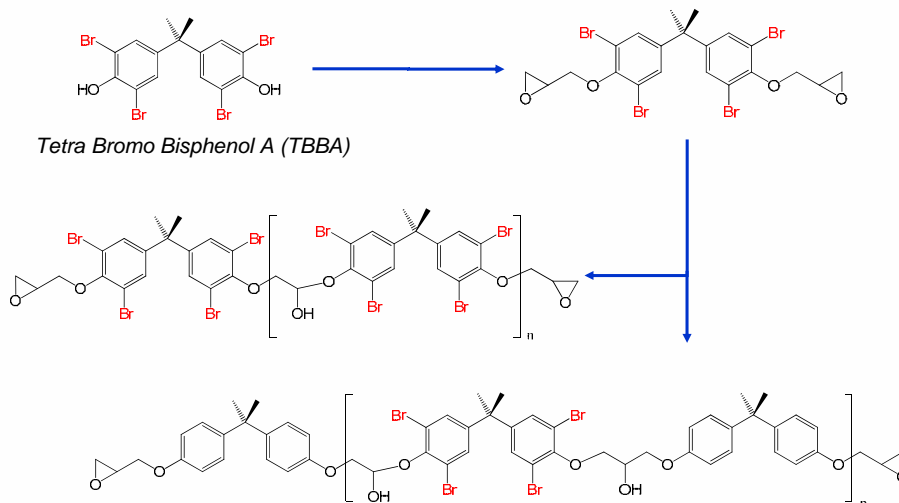


## Reminder: bisphenol A epoxy resins chemistry





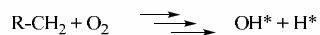
## Brominated epoxy resins chemistry



## Why add bromine?

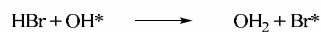
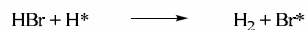
- Fire propagates thanks to reactive

- Hydrogen radicals ( $H^*$ )
- Hydroxyl radicals ( $OH^*$ )



- Brominated compounds

- Release  $HBr$
  - Produce less reactive  $Br^*$
- $\Rightarrow$  Fire stops propagating





## Characterization

- **Epoxy Equivalent Weight (gr/eq.)**

*How much resin do I need to take in order to have one epoxy group?*

- **Viscosity**

*How easily will the resin flow?*

- **Volatiles**

*How much resin does the solution contain?*

- **Bromine content**

*How much flame retardant atoms are in there?*



## Summary

- Understand the chemistry of the brominated product range
- Understand how it compares with the chemistry of the bisphenol A resins
  - » Similar to bisphenol A epoxy resins chemistry
- Understand why brominated resins are interesting
  - » Flame retardant properties
- Understand how the brominated epoxy resins are characterized
  - » Similar to bisphenol A epoxy resins
    - Solid content
    - Viscosity
    - EEW
    - Bromine content