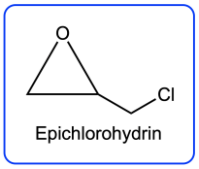
CONCEPT: STEP-GROWTH POLYMERS: EPOXY RESIN



Epichlorohydrin

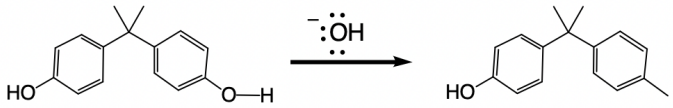
Epoxy Resin Formation Mechanism

- The number of steps equals _____ the number of moles for BPA + _____.

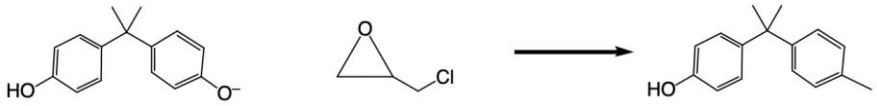
EXAMPLE: Provide the mechanism for the reaction between 2 mole of BPA and 1 mole of epichlorohydrin within a basic solution.

Step 1	Step 2a	Step 2b	Step 3	Step 4	Step 5
Deprotonation	Nucleophilic Attack	Nucleophilic Attack	Deprotonation	Nucleophilic Attack	Protonation

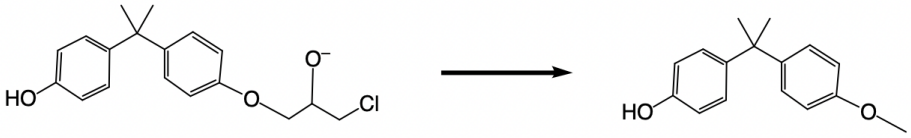
STEP 1: _____ of the first hydroxyl group of BPA.



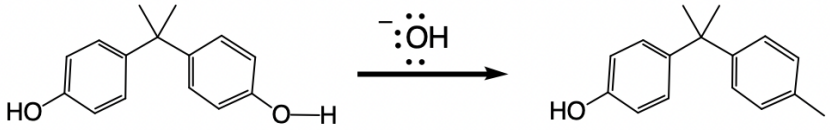
STEP 2a: BPA alkoxide ion attacks the _____ substituted epoxide C via base catalyzed epoxide ring opening.



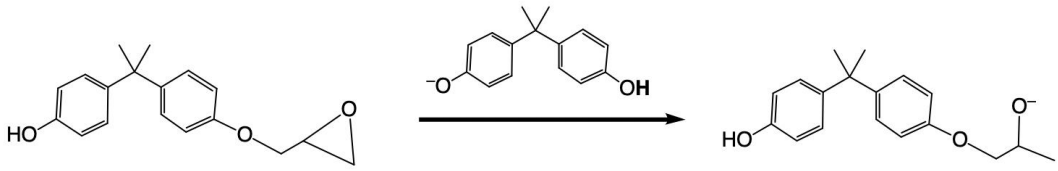
STEP 2b: The epoxide ion attacks the other epoxide ____ to kick out the ____.



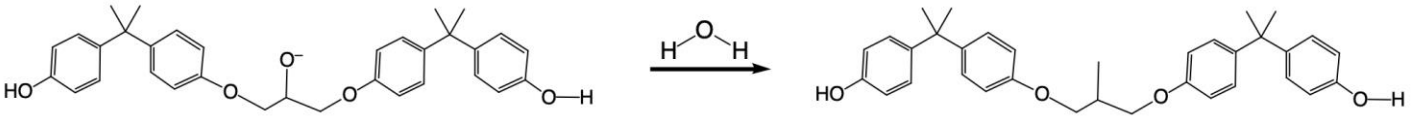
STEP 3: A second mole of BPA is deprotonated.



STEP 4: BPA alkoxide ion attacks the _____ substituted epoxide C via base catalyzed epoxide ring opening.



STEP 5: _____ of the conjugate base anion by water forms the epoxy resin.



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PRACTICE: Draw the epoxy resin polymer created from the reaction of 2 moles of epichlorohydrin and 3 moles of bisphenol A.