

PTC Reactions

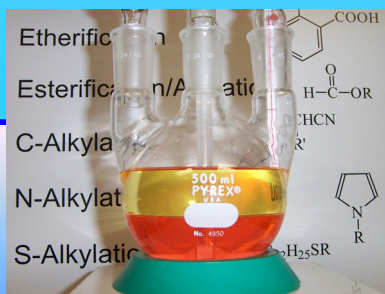
- Etherification
- Esterification
- Transesterification
- N-Alkylation
- C-Alkylation
- S-Alkylation
- Other Mercaptan Reactions
- Dehydrohalogenation
- Michael Addition
- Aldol Condensation
- Oxidation
- Epoxidation
- Chloromethylation
- Hydrohalogenation
- Hydrogenation
- Borohydride Reduction
- Chiral Reactions
- Darzens Condensation
- Condensation Polymerization
- Polymer Modification

Displacements Using

- cyanide
- fluoride, bromide, iodide
- azide
- thiocyanate
- sulfide
- hydroxide
- inorganic nucleophiles

Displacements Using

- benzyl chloride
- allyl chloride
- alkyl halides
- benzoyl chloride
- acyl halides
- methanesulfonyl chloride
- sulfonyl halides
- epichlorohydrin
- PCl_3 , POCl_3
- other phosphoro halides
- anhydrides



to improve process performance call (856) 222-1146
or visit www.ptcorganics.com

Contact PTC Organics

PTC Process Performance Benefits

**Increase
Yield**

**Reduce
Reaction Time**

**Improve
Selectivity**

**Replace Expensive
Hazardous Strong Base**

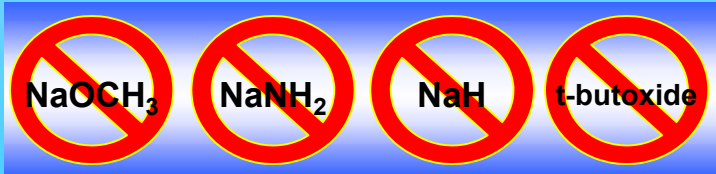
**Eliminate, Reduce
or Replace Solvent**

**Reduce
Excess Reactants**

**Use Water-Sensitive
Reactants Without Drying**

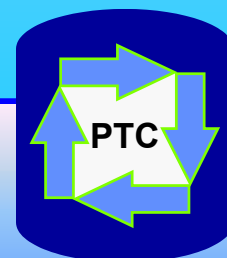
**Reduce Hazardous or
Expensive Reactants**

**Avoid Isolation
of Intermediates**



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BREAKTHROUGH PROCESS IMPROVEMENT

using Phase Transfer Catalysis

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PTC Organics, Inc.

The Industrial Phase Transfer Catalysis Experts

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