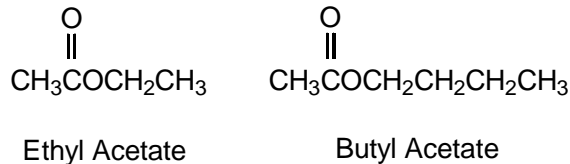


***Ethyl Acetate/Butyl Acetate (97/98S5)***

This report focuses on ethyl and *n*-butyl acetate, which are used widely as solvents in the paints and coatings industry. This report reviews the commercial production technologies for these two esters and evaluates recent developments especially with respect to their production economics.



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Ethyl and *n*-butyl acetate are most commonly prepared by esterification, that is, reaction of acetic acid with the corresponding alcohol, which results in the elimination of water. A recent development in this process is coproduction of ethyl and *n*-butyl acetates, which avoids campaigning and achieves higher onstream time for the combined plant.

In the case of ethyl acetate, two additional process routes are available.

- The “classic” Tischenko process via acetaldehyde that has been used commercially for almost 50 years.
- Direct addition of ethylene to acetic acid using new technology developed separately by BP Chemicals and Showa Denko.

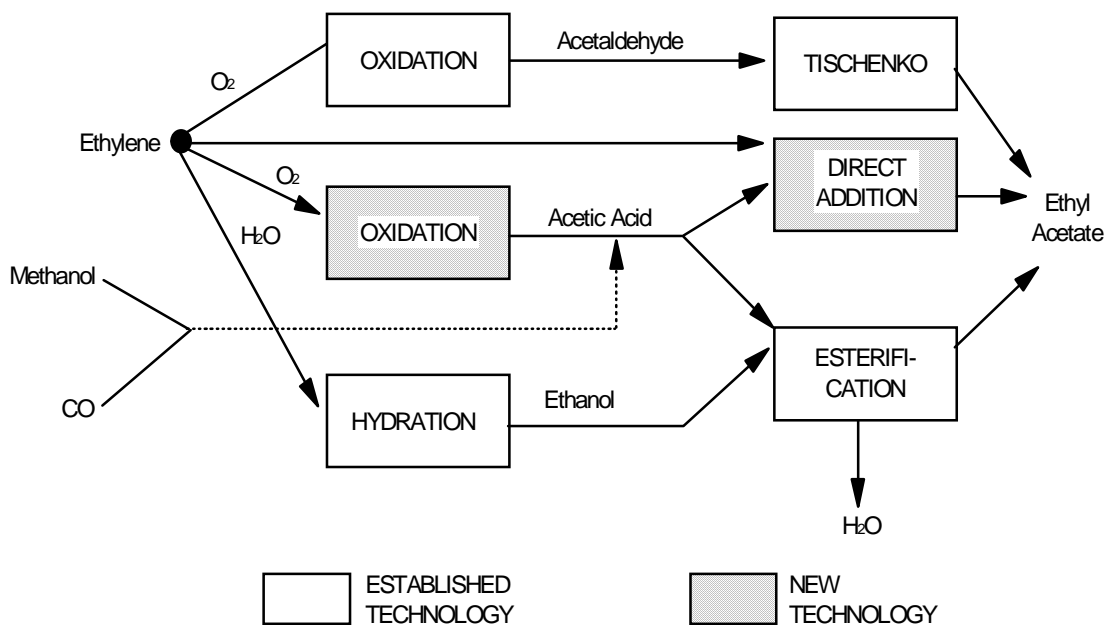
Therefore, prospective producers of ethyl acetate must choose the most cost effective of three basic technologies, and current producers must evaluate the potential impact from competitors using direct addition technology.

The routes to ethyl acetate are depicted in the figure on the following page.

The major end use for ethyl acetate is as an active solvent in formulations for protective coatings (lacquers and enamels), inks, and adhesives. It is also used as a process solvent in pharmaceuticals and organic chemical synthesis. Because it is a naturally occurring compound in many fruits, ethyl acetate has found applications in the food industry as a flavoring component and process extractant. The Clean Air Act requires elimination of HAP solvents from most coating formulations by 2003. Since ethyl acetate is often the

substitute of choice, it is currently benefiting from the regulation. However, environmental pressure to reduce solvent use in coatings will take its toll on ethyl acetate over the long term.

### ROUTES TO ETHYL ACETATE



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The major end use for butyl acetate is as a medium-boiling solvent for lacquers and enamels. It readily dissolves most common resins and is used as the standard reference for determining relative evaporation rates. Butyl acetate is an active solvent for cellulosic resins, chlorinated rubber, polystyrene, and methacrylate resins. Other applications include process solvents and extractants in the processing of oils and pharmaceuticals. Like ethyl acetate, butyl acetate has some minor applications in food and personal care products.