

PERP Program

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Chem Systems' Process Evaluation/Research Planning program has published a new report, ***Maleic Anhydride (99/00-5)***.

Since the early 1990s the global maleic anhydride (MAN) business has undergone significant change, both in market structure and technology.

The use of benzene as a MAN feedstock has been overtaken in favor of *n*-butane. The latter technology is materially more efficient and in most cases more cost effective. However, where certain market conditions exist, benzene and mixed C₄ olefin/paraffin streams are used as feedstocks. Significant quantities of MAN are still available as a co-product from phthalic anhydride (PAN) production.

The main use for maleic anhydride, by far, is still in the production of unsaturated polyesters (UPR). While this is likely to remain the case there has been considerable restructuring of the UPR business. For example, in the United States the UPR industry has rationalized into a handful of major players. A similar rationalization may occur in Europe. Buying patterns continue to change.

Asian and Latin American markets show the promise of future demand growth despite recent economic setbacks. Even Central and Eastern Europe are seeing respectable demand growth for maleic anhydride as the UPR industry develops.

MAN continues to be used for fine and performance chemical production. A number of maleic anhydride producers, e.g. DSM Chemie Linz and Lonza in Europe are integrated downstream into fine chemical production.

The development of process technology to convert MAN to butanediol and THF is also driving change in MAN markets and technologies. Thus, we find that MAN, once considered a very mature material, is undergoing a renaissance of renewed interest and innovation.

Most of the commercial plants operating on *n*-butane today are of the fixed bed design. Most of them have been adapted from benzene-based plants, although new fixed bed plants very similar to benzene-based plants continue to be built. There are, however, significant differences in the details of the processes. With no hydrocarbon recycle in benzene or butane-based systems, the process is run for maximum yield - not selectivity.

