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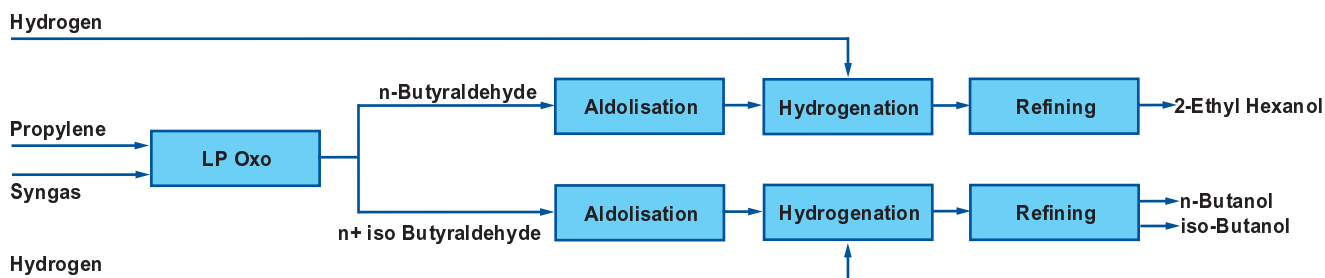


Oxo Alcohols

Oxo Alcohols

Davy Process Technology Limited has achieved a world leading position in low pressure hydroformylation technology in collaboration with Union Carbide Corporation, a subsidiary of The Dow Chemical Company.

The LP OxoSM Process is extensively used to produce normal and iso-butyraldehydes from propylene for subsequent conversion to the work-horse plasticizer alcohol, 2-ethylhexanol, or to butanols for solvent uses. This technology now accounts for the majority of the world's butyraldehyde production. Dow operates three LP Oxo plants and licences have been granted for 22 plants. This rhodium catalysed process was first developed as a replacement for inefficient high pressure cobalt catalysed processes, and since then, it has undergone continual improvement and refinement to reduce operating and capital costs. Apart from its wide use with propylene, the technology has been developed for converting normal butenes to the new plasticizer alcohol 2-propylheptanol, and it has been applied commercially to produce alcohols from higher olefins, notably the production of C11 to C14 higher alcohols from olefin cuts produced from Fischer-Tropsch synthesis.





In the most widely adopted application of the LP Oxo Process (see above), normal and iso-butyraldehydes are produced by reacting propylene with synthesis gas (a mixture of carbon monoxide and hydrogen) in the presence of a homogeneous modified rhodium catalyst. The reactions are carried out at moderate temperature and pressure, i.e. less than 100 deg C and less than 20 bar g. These mild operating conditions, ensure very efficient utilisation of raw materials with low by-product formation, relatively simple product work-up and low energy requirements. Different LP Oxo SELECTORSM Technology options are available offering various selectivities of conversion to butyraldehyde, depending on the need for the usually less desirable iso-butyraldehyde, which cannot be used to produce 2-ethylhexanol.

LP Oxo plants are easy to operate, have shown high availability with low environmental impact and require low maintenance. The relatively simple flowsheet, moderate design conditions and absence of exotic materials of construction result in low investment costs. This process is a winner of the Kirkpatrick Chemical Engineering Achievement Award.

LP OxoSM and SELECTORSM are service marks of The Dow Chemical Company.

