ALKOXYLATION TECHNOLOGY

THE INHERENT SAFE AND ECONOMIC WAY

YOUR PARTNER FOR TECHNOLOGIES
Buss ChemTech AG is recognised by the major manufactures as the world leader in supplying Buss Alkoxylation Technology, which is

- inherently safe
- reliable in performance
- consistently excellent product quality

Backed by a wide products portfolio, extensive experiences with commercial plants with growth ratios up to 1:65, safety studies, laboratory and pilot experiments and a constant research & development programme we provide you with a complete engineering package up to a turn-key plant for producing derivatives of ethylene oxide and propylene oxide.

**Process Sections**

A typical Buss Ethoxylation Plant consists of three sections:

- Pretreatment
- Reaction
- Posttreatment

Each section is operated in batch mode and all sections can operate simultaneously so that there are three batches being processed in the plant at the same time.

**Pretreatment**

Initiator and catalyst are metered into the pretreatment vessel and dehydrated under vacuum according to the product recipe.

**Reaction**

Buss’ Ejector-Mixer ensures efficient mixing and mass transfer performance while the heat transfer capacity is rated to match the maximum reaction rate. The ethylene/propylene oxide feed rate is controlled by monitoring conditions in the reactor to ensure safe and fast reaction. When the reaction is completed, residual oxide is quickly reduced to 1 ppm for EO and 100 ppm for PO, respectively. All reactions are carried out under inert conditions so that the formation of explosive gas mixture is completely eliminated. The total amount of oxide in the system is monitored and controlled, so runaway reaction is avoided even in case of loss of cooling. The section is closed and isolated and no oxide containing gas is released.

**Posttreatment**

Product neutralisation, blending, bleaching and stripping can take place here.

**Safety**

Buss Alkoxylation Technology has been developed following the Inherently Safe Design (ISD) guidelines to eliminate potential risks already during the process development phase. There are intrinsic levels of safeguards such as:

- Elimination of possible ignition sources
- Reactions operate under inert conditions
- Explosion-pressure-rated plant design

The unique operating principle of the reaction system ensures that there are no rotating parts in the gas phase. Additionally, the reactor system
is designed to prevent the build-up of static electrical charges. The unique Buss Reaction Mixer ensures no oxide droplets and no product droplets in the gas phase. Despite these primary precautions, we operate under inert gas conditions permanently controlled by an independent safety automation system. The high performance of the reaction mixer ensures ethylene oxide is consumed as fast as it is taken into the system. To protect the staff as well as the environment in a very unlikely worst-case scenario the standard plant design is “shock resistant”.

**Productivity**

- Very high ethylene oxide dosing rates (> 1000 kg/h/m³)
- No nitrogen atmosphere effect on reaction rate
- Short cook-down times
- High throughput

**Product Quality (without stripping)**

- Residual EO < 1 ppm for alcohol and alkyl phenol derivatives
- Dioxane < 4 ppm for alcohol and alkyl phenol derivatives
- Colour < 20 APHA for alcohol and alkyl phenol derivatives

**Product Portfolio**

Extensive production technologies are available for derivatives of fatty alcohols, -acids, -amines and -ester, from alkyl phenols, castor oil, sorbitan, oleates, methanol, allyl alcohol, butanol, MEG, DEG, bis-phenol A and glycerine as examples. Our experience in unique speciality products, combined with our comprehensive R&D services in laboratories and pilot facilities grant our clients optimised processes leading to cost-effective and perform solutions.

Buss Alkoxylation Technology is the standard for safety.
Buss ChemTech is recognised by the major manufactures as the world leader in supplying Buss Alkoxylation Technology, which

- Is inherently safe
- Is reliable in performance
- Grants consistently excellent product quality
- Allows a growth ratio up to 1:65

Buss ChemTech is a technology and engineering provider in the field of chemical reaction technologies, fluorine chemicals and the production of anodes for the aluminium industry. It has its own development centre open also for client-specific developments.

Buss ChemTech offers the full range of services as

- Feasibility studies and site assessments
- Conceptual design
- Process hazard analysis
- Basic and detail engineering
- Process automation
- Material or total plant supply
- Project management
- Commissioning and training
- After-sales service