Intalox PACKED TOWER SYSTEMS

KOCH-GLITSCH

INTALOX PACKED TOWER SYSTEMS™ technology from Koch-Glitsch provides predictable and reliable separation columns containing well-matched high performance packing and state-of-the-art liquid and vapor distributors. Koch-Glitsch's global experience is second to none and includes thousands of columns in distillation, absorption, stripping, liquid-liquid extraction and heat transfer applications.

The combination of INTALOX high performance internals and IMTP® high performance random packing provides the highest random packing performance available in the industry.

Koch-Glitsch has developed a series of liquid distributors with attributes to maximize packed tower performance. These attributes are well understood and have been incorporated into INTALOX high performance distributors. Koch-Glitsch introduced a distributor rating system for quantifying distribution quality and performance. Distribution uniformity is rated as a percentage, where 100% indicates ideal uniform distribution. A low percentage rating indicates a high variation of liquid flow over the cross sectional area of the tower. In addition, the distributor must provide a sufficient gas passage area to avoid a high pressure drop or liquid entrainment.

INTALOX distributors aim towards 100% distribution quality by applying the following criteria:

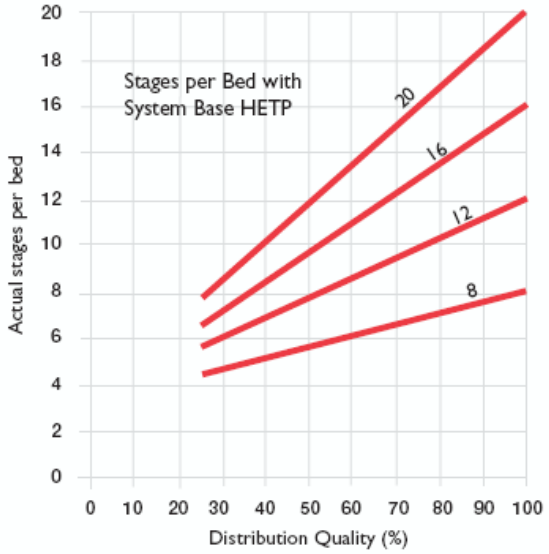
a) Drip points are preferable on a uniform triangular pattern, or alternatively on a square pattern
b) Drip points are uninterrupted by gas chimneys or mechanical supports
c) Drip points are properly spaced to the vessel wall
d) Equal liquid flow from each drip point

The significance of the Koch-Glitsch distribution quality rating system is the accurate prediction of tower performance.

INTALOX distributors are applied in:

- Distillation services with high stage counts per bed
- Distillation services with low relative volatility
- High purity product distillation services
- Distillation services operating near the minimum reflux or close to a pinch point
- Absorption and stripping applications with close approach to equilibrium
- Heat transfer services with close approach temperatures

The effect of liquid distribution quality on tower performance is illustrated below:



A tower containing deep beds of IMTP high efficiency random packing, designed to achieve many theoretical stages or transfer units, is very sensitive to liquid distribution quality.

Feed devices are critical to the performance of the liquid distributor and the packed column. Depending on the specific service, Koch-Glitsch offers a wide range of INTALOX liquid, vapor, mixed phase and flashing feed devices.

- INTALOX liquid phase feed pipes are designed to prevent excessive liquid velocity in the distributor to minimize liquid gradients and momentum effects.
- INTALOX vapor phase feed devices are designed to reduce the kinetic energy of the vapor feed before entering the packed bed.
- INTALOX mixed phase feed devices are designed to provide sufficient disengagement of vapor from the liquid prior to feeding the distributor.
- INTALOX suppressed flashing feed devices are designed to avoid vaporization inside the pipe system and to provide sufficient disengagement of vapor from the liquid prior to feeding the distributor.

Vapor distribution is an important part of INTALOX packed tower systems. A tower with poor vapor distribution will experience an unequal liquid-to-vapor ratio over the tower cross-sectional area, resulting in a reduction of tower performance. Koch-Glitsch can supply a variety of vapor distributors to ensure that the high efficiency packing meets its separation performance objectives.