



HCl Medium Concentration

Hydrochloric Acid

PLINKE's Hydrochloric Acid Processing Technologies address the treatment of acid, acidic streams and waste air. PLINKE technologies can be applied in different processes and applications depending on the client's needs:

- Concentration of HCl byproduct from chemical processes (*e.g. phosgenation*) for recycle or sale to third parties
- Concentration of diluted HCl streams from vent scrubbers
- HCl removal from waste water for yield or environmental reasons

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Pre-Concentration Pre-Concentration is used to treat raw Hydrochloric Acid with low HCl content to achieve up to 24 wt% HCl concentration. Water is removed overhead by rectification while the water/Hydrochloric Acid azeotrope is removed in the bottom stream. According to the operating pressure, the azeotropic concentration is between 18 and 24wt% HCl. Volatile and non-volatile impurities are also removed from the HCl stream during Pre-Concentration.

Medium Concentration Hydrochloric Acid at 30–35wt% concentration can be produced from any diluted raw Hydrochloric Acid. Using extractive rectification, weak Hydrochloric Acid is mixed with an extraction agent and fed into the rectification column. Water is absorbed by the extraction agent and the volatility of the Hydrochloric Acid stream is increased. At the head of the column, medium concentration Hydrochloric Acid is refined. Diluted extraction agent is obtained in the sump, reconcentrated in an external evaporator and fed back into the column. CaCl_2 , MgCl_2 or H_2SO_4 may be used as extractive agents to remove water. The dual-pressure process is also available for the production of medium concentration Hydrochloric Acid. In the first step, pre-concentrated acid at 22–24wt% HCl is split into the head product with about 30–35wt% HCl and the sump product azeotropic acid using rectification under pressure. In the second step, the azeotropic acid is restrengthened by evaporating water at vacuum conditions up to 22–24wt% HCl and then recycled to the first step. As an alternative, the azeotropic acid can be restrengthened using concentrated HCl gas.

High Concentration In order to produce high concentration HCl gas up to 100wt% HCl, the same process configuration as for medium concentration can be applied, while varying the operating conditions.

Purification Spent Hydrochloric Acids of various origins containing organic and inorganic impurities can be recovered and purified using PLINKE's technology.