

CiSCO Ammonia (NH₃) Scrubber

Application:

When Ammonia (NH₃) is present in the sample stream, a CiSCO NH₃ Scrubber is installed to help protect the CEMS analyzers and maintain sample flow. The NH₃ scrubber is installed upstream of the analyzers.

Use of the Ammonia Scrubber:

NH₃ may cause clogging of the sample stream in the sample handling system and the analyzers at the temperatures downstream of the heated sample line. Clogging is a result of the buildup of ammonium salts that may be detected as a white powder.

The CiSCO NH₃ scrubber is designed to remove NH₃ from the sample stream and prevent the formation of ammonium salts. This is achieved by exposing the sample gas to phosphoric soaked beads. NH₃ will react with Phosphoric acid to form ammonium phosphate. This reaction is unique to NH₃ and will not interfere with other constituents in the sample stream.

Phosphoric acid may absorb moisture present in the sample stream, causing phosphoric acid to liquefy. Therefore, the scrubber must be installed vertically to allow this liquid to drain to the bottom where it will not interfere with the sample gas constituents. A clear plastic site glass near the bottom of the scrubber allows visual inspection of the accumulation of the liquid phosphoric acid solution.



CiSCO Ammonia Scrubber:
Part # 83000055

Replacement:

The life span of the scrubber is dependent upon the amount of exposure to NH_3 and moisture in the sample stream. Replace the scrubber per the recommendations in the CEMS Operation and Maintenance Manual, if visible ammonium salts are detected in sample handling system and/ or excessive liquid accumulation is detected at the base of the scrubber.

Installation:

An NH_3 scrubber is installed by CISCO at the factory. Each replacement scrubber will have inlet and outlet $\frac{1}{4}$ " NPT ports. Remove the spent scrubber by unscrewing the $\frac{1}{4}$ " NPT tube adapter fittings and install the new scrubber by reusing these fittings. Be sure to align inlet and outlet according to the flow direction arrow located on the scrubber and use fresh Teflon sealer on the fitting threads to prevent leaks.

Disposal:

The spent NH_3 scrubber is not hazardous and may be discarded casually.

The byproduct of the NH_3 and phosphoric acid reaction is ammonium phosphate which is safe to handle. Phosphoric acid may exist in small concentrations and do not pose an immanent health hazard.