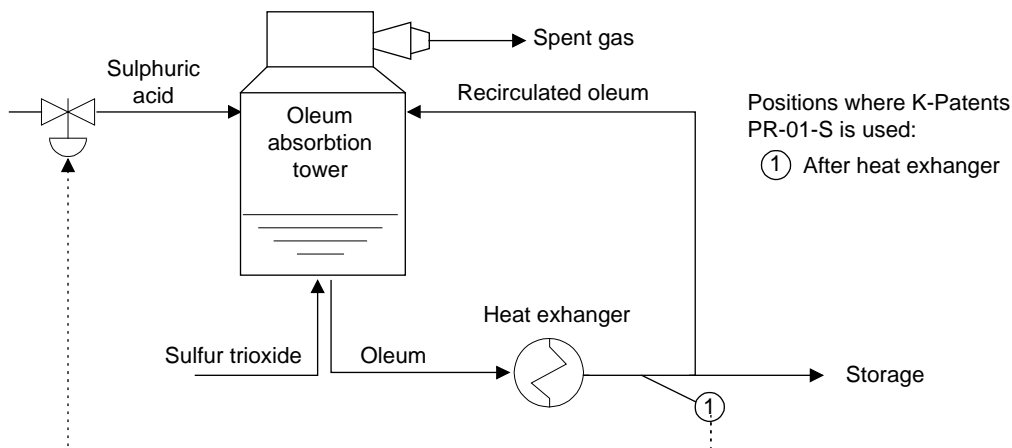


Oleum

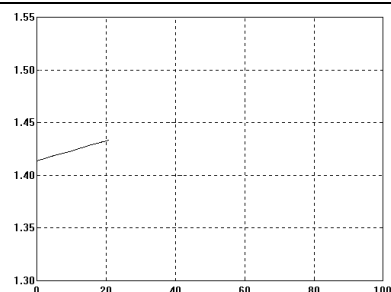


Oleum

Typical end products

Sulphuration of organic compound

Chemical curve: R.I. per Conc% b.w.



R.I. Ref. temp. 20°C

See also

Sulphuric acid 4.09.09

Introduction

Sulphur trioxide (SO₃) is nearly insoluble in water, but excessively soluble in strong sulphuric acid (H₂SO₄) (concentrations > 98%). The outcome of this mixture is fuming sulphuric acid, better known as oleum. Oleums are rated depending on the percentage of sulphur trioxide present in the solution. The most common

use for oleum is the organic synthesis.

Application

Oleum is produced industrially in contact plants, where sulphur trioxide-containing gases are passed through an oleum tower. These towers contain recirculated oleum and sulphuric acid, which irrigate sulphur trioxide. Typically, 30-60% of the sulphur trioxide present in the gas is absorbed because of oleum vapor-pressure limitations. Since absorption of SO₃ is incomplete, gas leaving the oleum absorption tower must be processed in a subsequent sulphuric acid absorption tower.

Depending on the desired product concentration, the tower is irrigated with 22% or 35% oleum at a temperature of 40-50°C (104-122°F). By addition of concentrated sulphuric acid from the absorber the desired oleum concentration is gained. Finally oleum is cooled in a heat exchanger.

Installation

K-Patents Process Refractometer, PR-01-S is installed in a control loop measuring the concentration of oleum to insure the right final concentration. End product is viscous and warm, containing small air bubbles, which cause errors in density meters. These errors can be avoided by using digital refractometer that supplies accurate and reliable concentration measurement.

Measurement ranges in this application are: concentration 22-35% and temperature 60-80°C (140-176°F).