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phosphoric acid production

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Chapter one

Introduction

Phosphoric:- also called orthophosphoric acid, (H_3PO_4), is the most important acid, used to make phosphate salts for fertilizers. Pure phosphoric acid is a crystalline solid (melting point $42.35^\circ C$);. The crude acid is prepared from phosphate rock, while acid of higher purity is made from white phosphorus . Phosphoric acid exists in different strengths or concentrations, with physical forms ranging from a clear odorless colorless liquid or a transparent solid, depending on the concentration and temperature. The most common form is orthophosphoric acid (H_3PO_4). It is commonly called phosphoric acid, and is one of the oldest known and most important phosphorous compounds. It is made in vast quantities, usually as an 85-percent acid, by the direct reaction of ground phosphate rock (calcium phosphate) with sulfuric acid. This yields "green acid," which contains typically 25- to 50-percent H_3PO_4 and is heavily contaminated with impurities, including anions such as chloride and sulfate (likely an excess of sulfuric acid), which might be expected to cause equipment corrosion problems if used to modify asphalt. Green acid is mainly used to produce fertilizer; some is further refined to phosphoric acid of food-grade quality .Phosphoric acid is also made by the direct burning of phosphorus and subsequent hydration of the oxide commonly known as P_2O_5 . The grades of phosphoric acid (i.e., orthophosphoric acid (H_3PO_4))) available commercially have acid concentrations of 50, 75, 85, 100 percent. (1)(2) .

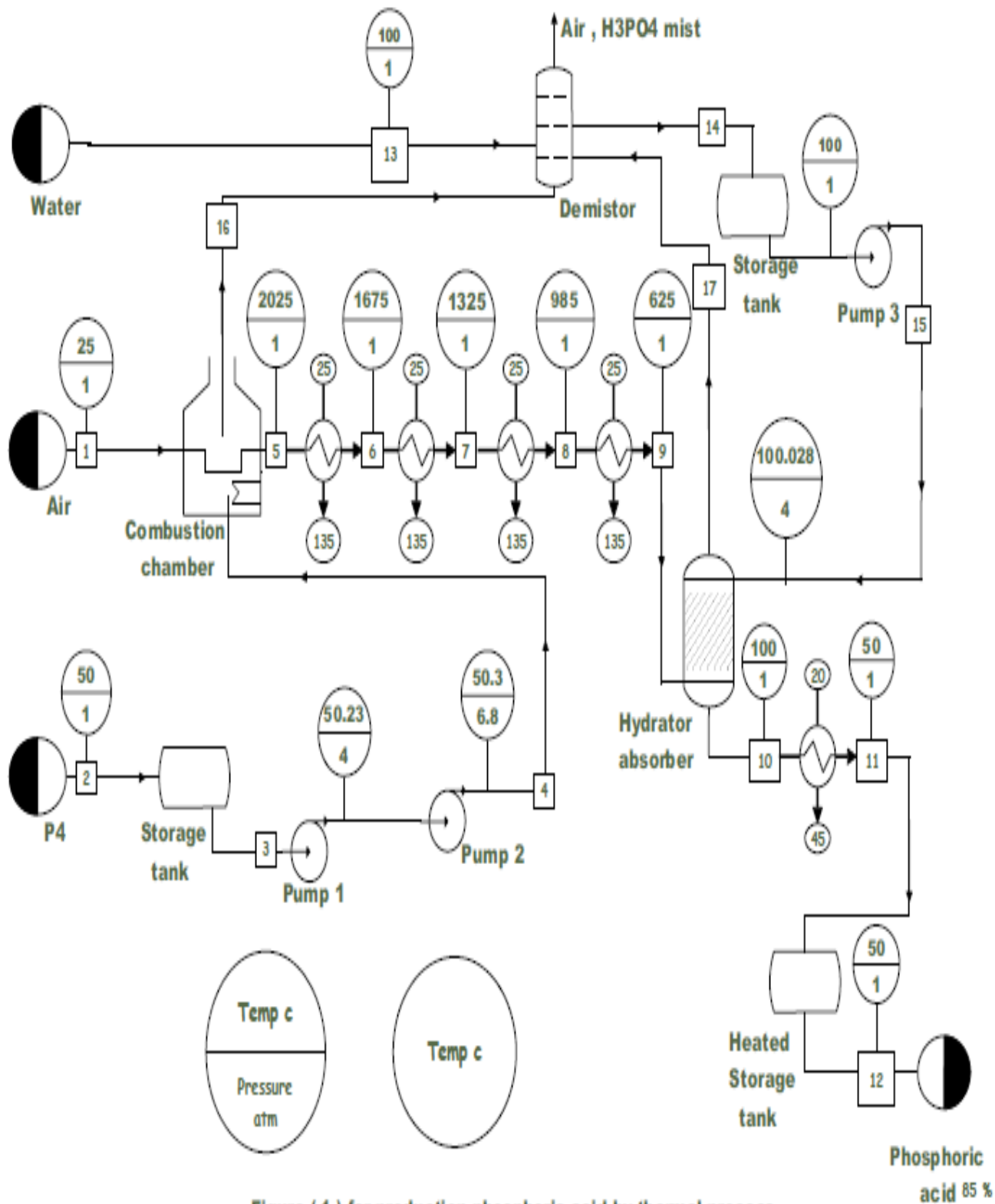


Figure (1) for production phosphoric acid by thermal process