

**PROCESS FOR PRODUCING PHENOL COMPRISING A STEP OF
HYDROALKYLATION OF BENZENE TO CYCLOHEXYLBENZENE**

ABSTRACT

In a process for producing phenol, benzene is reacted with a source of hydrogen containing methane in the presence of a hydroalkylation catalyst under conditions effective to produce a hydroalkylation reaction effluent comprising cyclohexylbenzene, benzene, hydrogen, and methane. A first stream comprising hydrogen, methane, and benzene is removed from the hydroalkylation reaction effluent and the first stream is washed with a second stream containing cyclohexylbenzene to produce a benzene-depleted hydrogen stream containing hydrogen and methane and a wash stream containing cyclohexylbenzene and benzene.

(Figure 1)