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ABSTRACT

The present invention provides a process for improving the catalytic activity of small and medium pore acidic zeolite catalyst which comprises the steps of treating a zeolite with a phosphorus compound to form a phosphorus treated zeolite and combining the phosphorus treated zeolite with $AlPO_4$. Optionally the phosphorus treated zeolite is calcined. The step of combining the zeolite with $AlPO_4$ may optionally be followed by steaming the combined catalyst. Examples of useful phosphorus containing compounds useful in treating the zeolite include phosphoric acid, ammonium mono or dihydrogen phosphate, organic phosphites, and organophosphines. Preferably the phosphorus containing compound is an ammonium acid phosphate. An additional alternate embodiment provides a process for increasing the hydrothermal stability of a zeolite catalyst which comprises first treating a zeolite with a phosphorus containing compound then blending with $AlPO_4$. The catalyst of the invention may be combined with other catalysts or used alone. The invention may be used in a process for cracking hydrocarbons which comprises contacting a hydrocarbon feedstock with a catalyst prepared as described above.



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