Catalysts are substances that speed up reactions by providing an alternative pathway for the breaking and making of bonds. Key to this alternative pathway is a lower activation energy than that required for the uncatalysed reaction.

If the catalyst is in the same phase as the reactants, it is referred to as a ***homogeneous*** catalyst. A ***heterogeneous*** catalyst on the other hand is in a different phase to the reactants and products, and is often favoured in industry, being easily separated from the products, although it is often less specific and allows side reactions to occur.

One of the most popular heterogeneous catalyst is aluminosilicates. The catalytic activity of aluminosilicates with respect to the hydrogen redistribution reaction is shown to be due exclusively to exchangeable ions and hydrolytic acidity. There is no important difference between the two kinds of acidity. Silica gel is found to contain active, "hydrolytic," and nonactive OH groups. Silica gel acquires ion-exchange capacity and catalytic properties exclusively as a result of substitution of aluminum for the protons in hydrolytic OH groups. There is a linear relationship between the content of hydrolytic ions of aluminum and activity. It is shown that H-aluminosilicates are unstable and spontaneously convert by inner exchange to Al-aluminosilicates. Consequently, the exchange acidity of aluminosilicates is due solely to the presence of exchangeable ions of aluminum on their surface. The exchangeable aluminum is a strong Lewis acid. The ability of aluminosilicates to acquire catalytic activity only in the presence of traces of moisture is assumed to be a result of complex formation of the exchangeable aluminum with water.