is maximized can be challenging. In efforts to meet these challenges, much research has been conducted not only on the components and additives utilized in the bodies, but also on the physical properties of shaped bodies so formed. However, many of the shaped porous bodies developed to date have yet to provide the full spectrum of desired properties for these materials.

[0005] Desirably, shaped porous bodies would be provided that could optimize a plurality of properties, or at least optimize at least one property without substantial detriment to another. Such shaped porous bodies would provide improvements to products, e.g., catalysts, in which they were used.

SUMMARY ~~OF THE INVENTION~~

[0006] The present disclosure~~invention~~ provides shaped porous bodies having an optimized pore size distribution as well as an enhanced surface area. More particularly, it has now been discovered that shaped porous bodies having a pore size distribution wherein the percentage of total pore volume present in pores having diameters less than one micron is minimized can be provided, and yet also exhibit surface areas of greater than 1.0 m^2/g. As such, diffusion resistance issues presented in conventional shaped porous bodies having a greater fraction of total pore volume in pores having diameters of less than one micron can substantially be avoided. The shaped porous bodies yet exhibit surface areas, e.g., 1.0 m^2/g, that provide the desired or required loading and dispersion of the desired reactants and/or catalytic species, and also provide enhanced surface area on which the reactions or separations can take place. These shaped porous bodies thus provide improved end-use products, such as catalysts, based upon them which in turn, can be employed in processes to produce additional end-use products downstream thereof.

[0007] In a first embodiment~~aspect~~, the present disclosure~~invention~~ provides a rhenium-promoted epoxidation catalyst comprising at least one catalytic species and rhenium deposited on a shaped porous body. The shaped porous body desirably comprises a minimized

percentage of total pore volume being present in pores having diameters of less than one micron, and a surface area of at least about 1.0 m^2/g. Desirably, the shaped porous body comprises a maximized percentage of total pore volume being present in pores having diameters of between about 1 micron and about 5 microns. The shaped porous body may desirably comprise alpha-alumina, which may further desirably be fluoride affected. The catalyst desirably comprises silver, and may comprise additional promoters in addition to rhenium, and in certain advantageous embodiments comprises rhenium and cesium.

[0007a] In a first aspect, there is provided a rhenium-promoted epoxidation catalyst comprising at least one catalytic species and a promoting amount of rhenium deposited on a shaped porous body, wherein the shaped porous body comprises less than 20% of its total pore volume being present in pores having diameters of less than 1 micron, and a surface area of at least about 1.3 m^2/g, wherein the catalyst exhibits a higher activity and/or selectivity when used in an epoxidation process than a catalyst supported on shaped porous bodies having a greater percentage of their total pore volume in pores having diameters of less than one micron.

[0008] Because the pore size distribution of the shaped porous body is optimized, i.e., with a minimized percentage of the total pore volume being present in pores having diameters smaller than 1 micron, the catalyst may exhibit reduced diffusion resistance, as may be shown by increased activity, or increased efficiency, or both increased activity and increased efficiency over catalysts based upon shaped porous bodies having a greater percentage of their total pore volume in pores having diameters of less than one micron. Surprisingly, the shaped porous bodies yet exhibit surface areas of greater than or equal to 1.0 m^2/g so that the activity and/or efficiency of catalysts based upon the same is yet acceptable or enhanced over catalysts based upon shaped porous bodies having a greater percentage of their total pore volume in pores having diameters of less than one micron.

[0009] A process for making a catalyst is provided in a further embodiment~~aspect~~, the process comprising selecting a shaped porous body comprising a minimized percentage of the total pore volume being present in pores having diameters of less than one micron and a surface area of greater than or equal to about 1.0 m^2/g and depositing at least one catalytic species on the shaped porous body.

[0009a] In a second aspect, there is provided a process for making a rhenium-promoted epoxidation catalyst comprising: a) selecting a shaped porous body comprising less than 20% of its total pore volume being present in pores having diameters of less than 1 micron, and a surface area of at least about 1.3 m^2/g; and b) depositing at least one catalytic species and a promoting amount of rhenium on the shaped porous body.

[0010] The advantageous pore size distribution and surface area yet provided to the shaped porous bodies are expected to translate to improvements in one or more catalyst properties, which in turn, are expected to provide improvements to the processes in which the catalysts are utilized. As a result, and in yet another embodiment~~aspect~~,

the present disclosure~~invention~~ provides a process for the epoxidation of an alkylene. The process comprises reacting a feed comprising one or more alkylenes and oxygen in the presence of the catalyst based upon a shaped porous body comprising a minimized percentage of the total pore volume being present in pores having diameters of less than one micron and having a surface area of at least about 1.0 m^2/g. The catalysts of the present disclosure~~invention~~ are expected to provide at least one enhanced property to the process, desirably without a concurrent substantial detriment to another.

[0011] The advantages provided to such processes can be further leveraged by utilization of the alkylene oxides produced thereby in further downstream processes, and such processes are thus provided in yet another embodiment~~aspect~~ of the present disclosure~~invention~~. More specifically, the present disclosure~~invention~~ also provides a process for preparing a 1,2-diol, a 1,2-diol ether, a 1,2-carbonate, or an alkanolamine. The process comprises converting an alkylene oxide into the 1,2-diol, 1,2-diol ether, a 1,2-carbonate, or alkanolamine, wherein the alkylene oxide is prepared by a process utilizing a catalyst based upon a shaped porous body comprising a minimized percentage of its total pore volume being present in pores having diameters of less than one micron and a surface area of at least about 1.0 m^2/g.

DESCRIPTION OF THE DRAWINGS

[0012] These and other features, aspects and advantages of the present invention may be further understood and/or illustrated when the following detailed description is considered along with the attached drawings.

[0013] FIG. 1 is a graphical depiction of the relationship between porosity and pore volume;

[0014] FIG. 2 is a graphical depiction of the cumulative intrusion (% of total pore volume) vs. pore size (microns) determined by mercury porosimetry for shaped