

# Thermal conductivity of porous catalyst pellets.

University of Salford - Thermal Conductivity of Beds of Spherical Particles

**Introduction**

**7 Steps in a Catalytic Reaction**

1. Mass transfer (diffusion) of the reactant(s) from the bulk fluid to the external surface of the catalyst pellet
2. Diffusion of the reactant from the pore mouth through the catalyst pores to the immediate vicinity of the internal catalytic surface
3. Adsorption of reactant A onto the catalyst's surface
4. Reaction on the surface of the catalyst
5. Desorption of the products from the surface
6. Diffusion of the products from the interior of the pellet to the pore mouth at the external surface
7. Mass transfer of the products from the external pellet surface to the bulk fluid

We shall now focus on steps 1, 2, 6, and 7. Because the reaction below does not occur in the bulk phase (only at the surface, if  $z = \text{delta}$ ), we shall first consider steps 1 and 7.

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Description: -

-Thermal conductivity of porous catalyst pellets.

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Notes: MSc thesis, Chemical Engineering.

This edition was published in 1973



Filesize: 39.16 MB

Tags: #Thermal #Conductivity #of #Alumina #Catalyst #Pellets

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The porous catalyst pellet shown in Figure 1 has an overall radius  $R$  and a thermal conductivity  $k$  (which may be assumed constant).

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Solved: 11B.11 Temperature Rise In A Spherical Catalyst Pe...

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Chemical Engineering Science 1994, 49 5 , 709-726.

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