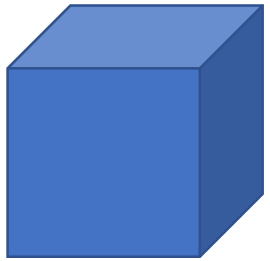
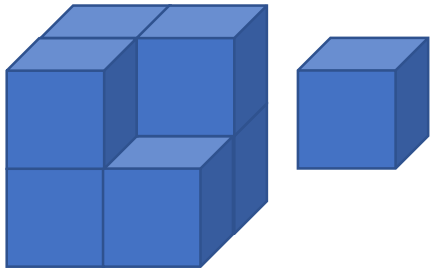
If a large particle is broken down into smaller particles, the total surface area increases. Increasing the surface area can increase the rate of a reaction as more surface area is available for the reaction. Surface Area (SA) of a cube = $6s^2$, where s = the length of one side.



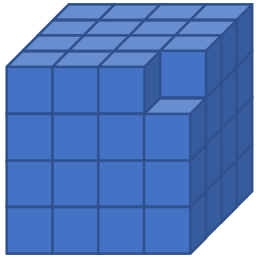
1 particle
5mm/side

$SA = 6 \cdot 5^2 = 150mm^2$



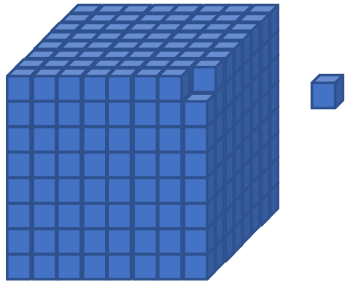
8 particles
2.5mm/side

$SA = 6 \cdot 2.5^2 \cdot 8 = 300mm^2$



64 particles
1.25mm/side

$SA = 6 \cdot 1.25^2 \cdot 64 = 600mm^2$



512 particles
0.625mm/side

$SA = 6 \cdot 0.625^2 \cdot 512 = 1200mm^2$

When a particle is broken down into smaller pieces, the surface area increases.