

**Experiment 37.1: To investigate effect of surface area on the rate of a reaction –  
Action of dilute hydrochloric acid on marble chips**

**Results Table A: Large Marble Chips**

|  |                 |
|--|-----------------|
| <b>Mass of marble chips / g</b>                              | <b>5.00 g</b>   |
| <b>Mass of conical flask + dilute hydrochloric acid / g</b>  | <b>45.00 g</b>  |
| <b>Total mass of conical flask + acid + marble chips / g</b> | <b>155.00 g</b> |

|                               |        |        |        |        |        |        |        |        |        |        |
|-------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| <b>Time / min.</b>            | 0.0    | 0.5    | 1.0    | 1.5    | 2.0    | 2.5    | 3.0    | 3.5    | 4.0    | 4.5    |
| <b>Mass / g</b>               | 155.00 | 154.69 | 154.49 | 154.38 | 154.32 | 154.27 | 154.23 | 154.20 | 154.18 | 154.17 |
| <b>Total loss in mass / g</b> | 0      | 0.31   | 0.51   | 0.62   | 0.68   | 0.73   | 0.77   | 0.80   | 0.82   | 0.83   |

|                               |        |        |        |        |        |        |        |        |        |        |
|-------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| <b>Time / min.</b>            | 5.0    | 5.5    | 6.0    | 6.5    | 7.0    | 7.5    | 8.0    | 8.5    | 9.0    | 9.5    |
| <b>Mass / g</b>               | 154.17 | 154.17 | 154.16 | 154.16 | 154.16 | 154.15 | 154.15 | 154.15 | 154.15 | 154.15 |
| <b>Total loss in mass / g</b> | 0.83   | 0.83   | 0.84   | 0.84   | 0.84   | 0.85   | 0.85   | 0.85   | 0.85   | 0.85   |

**Results Table B: Crushed Marble Chips**

|  |                 |
|--|-----------------|
| <b>Mass of crushed marble chips / g</b>                              | <b>5.00 g</b>   |
| <b>Mass of conical flask + dilute hydrochloric acid / g</b>          | <b>45.00 g</b>  |
| <b>Total mass of conical flask + acid + crushed marble chips / g</b> | <b>155.00 g</b> |

|                               |        |        |        |        |        |        |        |        |        |        |
|-------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| <b>Time / min.</b>            | 0.0    | 0.5    | 1.0    | 1.5    | 2.0    | 2.5    | 3.0    | 3.5    | 4.0    | 4.5    |
| <b>Mass / g</b>               | 155.00 | 154.48 | 154.27 | 154.20 | 154.19 | 154.18 | 154.18 | 154.18 | 154.18 | 154.17 |
| <b>Total loss in mass / g</b> | 0      | 0.52   | 0.73   | 0.80   | 0.81   | 0.82   | 0.82   | 0.82   | 0.82   | 0.83   |

|                               |        |        |        |        |        |        |        |        |        |        |
|-------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| <b>Time / min.</b>            | 5.0    | 5.5    | 6.0    | 6.5    | 7.0    | 7.5    | 8.0    | 8.5    | 9.0    | 9.5    |
| <b>Mass / g</b>               | 154.17 | 154.17 | 154.16 | 154.16 | 154.16 | 154.15 | 154.15 | 154.15 | 154.15 | 154.15 |
| <b>Total loss in mass / g</b> | 0.83   | 0.83   | 0.84   | 0.84   | 0.84   | 0.85   | 0.85   | 0.85   | 0.85   | 0.85   |