**Energy in Reactions**

**Energy Path Diagram:**



|  |  |
| --- | --- |
| Activation energy (Ea) | Energy needed to \_\_\_\_\_\_\_\_\_\_reactant \_\_\_\_\_\_\_\_\_\_\_ thus \_\_\_\_\_\_\_\_\_\_\_\_the rxn |
| Activated complex? (Ea’) | “top of the hill” where the reactant atoms\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_due to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_.  |
| Enthalpy | \_\_\_\_\_\_\_\_\_\_\_\_\_ involved in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_change |
| ΔHrxn represents | Energy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ during a reaction : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – \_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |  |
| --- | --- | --- |
|  | **Endothermic** | **Exothermic** |
| Sign |  |  |
| Descriptive Words |  |  |
| Drawing | **system** | **system** |
|  | **Endothermic** | **Exothermic** |
| Chemical Reaction Placement | A + B  OrA + B 🡺 C ΔH=  | A + B  OrA + B 🡺 C ΔH= |
| Rxn Path Diagram |  |  |

*Examples*

|  |  |  |
| --- | --- | --- |
| **Process** | **Exo or****Endo** | **Explanation** |
| Si + 2Cl2 → SiCl4 ΔH = -657 kJ  |  |  |
| An ice cube melts after being left out on the table. |  |  |
| 2HgO → 2Hg + O2 ΔH = + 181 kJ  |  |  |
| Burning a match. |  |  |
| 2 N2O5 (g) + 110 kJ 🡺 4NO2(g) + O2(g) |  |  |
| Making ice cubes. |  |  |
| P4O10(g) + 6H2O(l) 🡺 4 H3PO4(aq) + 424 kJ |  |  |
| A puddle of water evaporates. |  |  |
| 2H2O2(l) 🡺 2H2O(l) + O2(g) + 200kJ |  |  |
| Gas molecules condensing on the side of a glass of iced tea.  |  |  |