# Physical and Chemical Changes

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## Data

### Data Table 1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Activity** | **Color of Initial Items** | **Color of Final Items** | **Initial Temp. (°C)** | **Final Temp. (°C)** | **Observations** | **Type of Change** | **Explanation** |
| 1 | Both HCl and NaCO3 are clear | Clear | HCl - 19  NaCO3 - 19 | 20.5 | Violently Bubbled and fizzed when mixed  Temperature increased  Solution is still clear, but has air bubbles inside it | Chemical | The violent eruption in the solution when mixed indicated a chemical change. There was no state change. |
| 2 | Water is clear and Sodium Polyacrylate is a white power | Murky white/grey | Water is 20 degrees | 20 | Water immediately turned into a gel-like substance. When the thermometer was inserted, it The imprint stayed | Physical | The water changed its state from a liquid to a solid. |
| 3 | CuSO4 is is blue  Na2CO3 is clear | Cloudy Blue | CuSO4 - 20  Na2CO3 - 20 | 19 | The solutions immediately formed a white, cloudy substance in the blue liquid. | Chemical | A new substance was formed in the mixing |
| 4A | The tea candle is white | White |  |  | The candle burned. The wick is now blackened. | Chemical | Combustion is a chemical change, and the state of the object is not changing. |
| 4B | White/Clear | Clear |  |  | The ice melted and is now water | Physical | The state of the ice changed, indicating physical change. |
| 5 | Sugar is white, water is clear | Murky white | Water - 20 | 20 | It’s just watery sugar | Physical | The state didn’t necessarily change, and we really just have water and sugar together. It could theoretically still be separated. |
| 6A | NaOH is clear  Phenolphthalein is clear | Pink | NaOH - 20 | 20.5 | The drop of Phenolphthalein immediately turned red. | Chemical | The change in color and the fact that the solution doesn’t seem reversible. |
| 6B | HCl is clear  NaOH/Phen is pink | Pink | HCl - 20 | 30 | The solution stayed the same color, but heated up 10 degrees | Chemical | The chemical reaction created enough energy to raise the temperature by about 10 degrees. |
| 7 | CuSO4 is blue  NaOH is clear | White-ish blue | Both are 20 | 22 | The solution congealed into a blue gel. | Chemical | The temperature was raised, which means a chemical change took place. |
| 8 | Blue water is blue  Yellow water is yellow | Dark Green | Both are 20 | 20 | The solution turned dark green | Chemical | The solution changed color, and it would be impossible to separate the two solutions back to their original state. |
| 9 | HCl is clear  Mg is silver | The Mg turned white before dissolving | HCl - 20 | 32 | The ribbon started fizzing and jumping around. | Chemical | The solution heated up. |
| 10 | CuSO4 is blue  Salt is white | A split blue and greenish gradient | CuSO4 - 20 | 20 | The salt sank to the bottom | Physical | The solution could be evaporated to retrieve the original substances. |
| 11 | CuSO4/salt blue/green | The aluminum is blackened | CuSO4/salt - 20 | 26 | The Aluminum started to bubble and blacken | Chemical | Heat was created, and the aluminum can’t be returned to its original state. |
| 12 | CuSO4 is blue  Naila is silver | The nail has a rust colored coat on it | CuSO4 - 20 | 20 | The nail began rusting, but it’s just a thin coat over it | Chemicall | The nail has a rust-like substance on it. (After looking it up, it’s the copper appearing visible on the nail.) |