Chemical Changes & Physical Changes

Classify each change in the following table as either chemical or physical. Explain your classification.

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| **Change** | Chemical or Physical? | Explanation |
| A sheet of paper is crumpled into a ball. |  |  |
| A sheet of paper is set on fire and burns to ashes. |  |  |
| Steel wool is placed in a glass of salty water. The steel wool rusts. |  |  |
| A sheet of flexible, colourless plastic is left outside, in bright sunlight, and becomes yellow and brittle over time. |  |  |
| A teaspoon of white sugar (sucrose) dissolves in a glass of warm water. |  |  |
| Vinegar is poured over a teaspoon of baking soda. The white baking soda powder fizzes, and bubbles form. |  |  |
| A red-hot nail is inserted into a large block of ice. Steam is formed as the nail contacts the block, and water flows away from the nail. |  |  |

BLM 2-32, Chemical Changes and Physical Changes

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| Change | Chemical  or  Physical? | Explanation |
| A sheet of paper is crumpled into a ball. | Physical | Only the shape of the paper changed. No new substances were formed. |
| A sheet of paper is set on fire and burns to ashes. | Chemical | The paper underwent a chemical reaction to form new substances (carbon, carbon dioxide, carbon monoxide, and water). |
| Steel wool is placed in a glass of salty water. The steel wool rusts. | Chemical | The rust that formed is a new substance. |
| A sheet of flexible, colourless plastic is left outside, in bright sunlight, and becomes yellow and brittle over time. | Chemical | The change in colour to yellow is a clear giveaway that a chemical reaction took place. The change in the property of flexibility suggests that a new compound was formed. The light allowed the plastic to react with oxygen to form different compounds. |
| A teaspoon of white sugar (sucrose) dissolves in a glass of warm water. | Physical | The sugar dissolved into the water to form a solution but did not undergo a chemical reaction. No new substances were formed. |
| Vinegar is poured over a teaspoon of baking soda. The white baking soda powder fizzes, and bubbles form. | Chemical | The fizzing indicates the formation of a gaseous substance, carbon dioxide. |
| A red-hot nail is inserted into a large block of ice. Steam is formed as the nail contacts the block, and water flows away from the nail. | Physical | A state change has occurred, but no new substances are formed. |