**Lab Procedure for Samples Handout**

Note to teacher: This file contains 16 sheets to guide group testing of different amounts of corn starch, water, vinegar and glycerin; 4 sheets each.

**Phosphorescence in bioplastic:** **Changing the amount of corn starch (1 of 4)**

**SAMPLE NAME:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_10 g CS

Reaction scheme:

|  |  |
| --- | --- |
| **corn starch** | **10 grams** |
| water | 60 ml |
| vinegar | 5 ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

|  |  |
| --- | --- |
| **Procedures** | **Observations** |
| 1. In a 1,000-ml beaker, add **10 grams of corn starch** (using weigh paper and a balance) |  |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker |  |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker |  |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP.  |  |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined |  |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker |  |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) |  |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout |  |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker |  |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING |  |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir \*\*BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES\*\* |  |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name |  |
| 13. Let the phosphorescence bioplastic dry and harden overnight |  |

**Phosphorescence in bioplastic:** **Changing the amount of corn starch (2 of 4)**

SAMPLE NAME: **\_\_\_\_\_\_\_\_\_ \_\_\_\_ g CS**

Reaction scheme:

|  |  |
| --- | --- |
| **corn starch** | **\_\_\_\_\_\_\_ grams** |
| water | 60 ml |
| vinegar | 5 ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

|  |  |
| --- | --- |
| **Procedures** | **Observations** |
| 1. In a 1,000-ml beaker, add **\_\_\_\_\_\_\_\_\_ grams of corn starch** (using weigh paper and a balance) |  |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker |  |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker |  |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP.  |  |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined |  |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker |  |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) |  |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout |  |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker |  |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING |  |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir \*\*BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES\*\* |  |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name |  |
| 13. Let the phosphorescence bioplastic dry and harden overnight |  |

**Phosphorescence in bioplastic:** **Changing the amount of corn starch (3 of 4)**

SAMPLE NAME: **\_\_\_\_\_\_\_\_\_ \_\_\_\_ g CS**

Reaction scheme:

|  |  |
| --- | --- |
| **corn starch** | **\_\_\_\_\_\_\_ grams** |
| water | 60 ml |
| vinegar | 5 ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

|  |  |
| --- | --- |
| **Procedures** | **Observations** |
| 1. In a 1,000-ml beaker, add **\_\_\_\_\_\_\_\_\_ grams of corn starch** (using weigh paper and a balance) |  |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker |  |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker |  |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. |  |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined |  |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker |  |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) |  |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout |  |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker |  |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING |  |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir \*\*BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES\*\* |  |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name |  |
| 13. Let the phosphorescence bioplastic dry and harden overnight |  |

**Phosphorescence in bioplastic:** **Changing the amount of corn starch (4 of 4)**

SAMPLE NAME: **\_\_\_\_\_\_\_\_\_ \_\_\_\_g CS**

Reaction scheme:

|  |  |
| --- | --- |
| **corn starch** | **\_\_\_\_\_\_\_ grams** |
| water | 60 ml |
| vinegar | 5 ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

|  |  |
| --- | --- |
| **Procedures** | **Observations** |
| 1. In a 1,000-ml beaker, add **\_\_\_\_\_\_\_\_\_ grams of corn starch** (using weigh paper and a balance) |  |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker |  |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker |  |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. |  |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined |  |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker |  |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) |  |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout |  |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker |  |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING |  |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir \*\*BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES\*\* |  |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name |  |
| 13. Let the phosphorescence bioplastic dry and harden overnight |  |

**Phosphorescence in bioplastic:** **Changing the amount of water (1 of 4)**

SAMPLE NAME: **\_\_\_\_\_\_\_\_\_ \_\_\_\_\_ml water**

Reaction scheme:

|  |  |
| --- | --- |
| corn starch | 10 grams |
| **water** | **60 ml** |
| vinegar | 5 ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

|  |  |
| --- | --- |
| **Procedures** | **Observations** |
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) |  |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker |  |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker |  |
| 4. Add **60 ml of water** (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. |  |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined |  |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker |  |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) |  |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout |  |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker |  |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING |  |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir \*\*BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES\*\* |  |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name |  |
| 13. Let the phosphorescence bioplastic dry and harden overnight |  |

**Phosphorescence in bioplastic:** **Changing the amount of water (2 of 4)**

SAMPLE NAME: **\_\_\_\_\_\_\_\_\_ \_\_\_\_\_ ml water**

Reaction scheme:

|  |  |
| --- | --- |
| corn starch | 10 grams |
| **water** | **\_\_\_\_\_\_\_\_ ml** |
| vinegar | 5 ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

|  |  |
| --- | --- |
| **Procedures** | **Observations** |
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) |  |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker |  |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker |  |
| 4. Add \_\_\_\_\_ **ml of water** (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. |  |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined |  |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker |  |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) |  |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout |  |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker |  |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING |  |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir \*\*BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES\*\* |  |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name |  |
| 13. Let the phosphorescence bioplastic dry and harden overnight |  |

**Phosphorescence in bioplastic:** **Changing the amount of water (3 of 4)**

SAMPLE NAME: **\_\_\_\_\_\_\_\_\_ \_\_\_\_\_ ml water**

Reaction scheme:

|  |  |
| --- | --- |
| corn starch | 10 grams |
| **water** | **\_\_\_\_\_\_\_\_ ml** |
| vinegar | 5 ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

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| --- | --- |
| **Procedures** | **Observations** |
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) |  |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker |  |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker |  |
| 4. Add \_\_\_\_\_ **ml of water** (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. |  |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined |  |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker |  |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) |  |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout |  |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker |  |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING |  |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir \*\*BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES\*\* |  |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name |  |
| 13. Let the phosphorescence bioplastic dry and harden overnight |  |

**Phosphorescence in bioplastic:** **Changing the amount of water (4 of 4)**

SAMPLE NAME: **\_\_\_\_\_\_\_\_\_ \_\_\_\_\_ ml water**

Reaction scheme:

|  |  |
| --- | --- |
| corn starch | 10 grams |
| **water** | **\_\_\_\_\_\_\_\_ ml** |
| vinegar | 5 ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

|  |  |
| --- | --- |
| **Procedures** | **Observations** |
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) |  |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker |  |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker |  |
| 4. Add \_\_\_\_\_ **ml of water** (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. |  |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined |  |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker |  |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) |  |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout |  |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker |  |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING |  |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir \*\*BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES\*\* |  |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name |  |
| 13. Let the phosphorescence bioplastic dry and harden overnight |  |

**Phosphorescence in bioplastic:** **Changing the amount of vinegar (1 of 4)**

SAMPLE NAME: **\_\_\_\_\_\_\_\_\_ 5 ml vinegar**

Reaction scheme:

|  |  |
| --- | --- |
| corn starch | 10 grams |
| water | 60 ml |
| **vinegar** | **5 ml** |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

|  |  |
| --- | --- |
| **Procedures** | **Observations** |
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) |  |
| 2. Add **5 ml of vinegar** (using a 10-ml graduated cylinder) to the same beaker |  |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker |  |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. |  |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined |  |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker |  |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) |  |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout |  |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker |  |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING |  |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir \*\*BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES\*\* |  |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name |  |
| 13. Let the phosphorescence bioplastic dry and harden overnight |  |

**Phosphorescence in bioplastic:** **Changing the amount of vinegar (2 of 4)**

SAMPLE NAME: **\_\_\_\_\_\_\_\_\_ \_\_\_\_\_ ml vinegar**

Reaction scheme:

|  |  |
| --- | --- |
| corn starch | 10 grams |
| water | 60 ml |
| **vinegar** | **\_\_\_\_\_\_\_\_\_ ml** |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

|  |  |
| --- | --- |
| **Procedures** | **Observations** |
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) |  |
| 2. Add **\_\_\_\_\_\_ ml of vinegar** (using a 10-ml graduated cylinder) to the same beaker |  |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker |  |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. |  |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined |  |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker |  |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) |  |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout |  |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker |  |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING |  |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir \*\*BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES\*\* |  |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name |  |
| 13. Let the phosphorescence bioplastic dry and harden overnight |  |

**Phosphorescence in bioplastic:** **Changing the amount of vinegar (3 of 4)**

SAMPLE NAME: **\_\_\_\_\_\_\_\_\_ \_\_\_\_\_ ml vinegar**

Reaction scheme:

|  |  |
| --- | --- |
| corn starch | 10 grams |
| water | 60 ml |
| **vinegar** | **\_\_\_\_\_\_\_\_\_ ml** |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

|  |  |
| --- | --- |
| **Procedures** | **Observations** |
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) |  |
| 2. Add **\_\_\_\_\_\_ ml of vinegar** (using a 10-ml graduated cylinder) to the same beaker |  |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker |  |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. |  |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined |  |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker |  |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) |  |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout |  |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker |  |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING |  |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir \*\*BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES\*\* |  |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name |  |
| 13. Let the phosphorescence bioplastic dry and harden overnight |  |

**Phosphorescence in bioplastic:** **Changing the amount of vinegar (4 of 4)**

SAMPLE NAME: **\_\_\_\_\_\_\_\_\_ \_\_\_\_\_ ml vinegar**

Reaction scheme:

|  |  |
| --- | --- |
| corn starch | 10 grams |
| water | 60 ml |
| **vinegar** | **\_\_\_\_\_\_\_\_\_ ml** |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

|  |  |
| --- | --- |
| **Procedures** | **Observations** |
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) |  |
| 2. Add **\_\_\_\_\_\_ ml of vinegar** (using a 10-ml graduated cylinder) to the same beaker |  |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker |  |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. |  |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined |  |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker |  |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) |  |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout |  |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker |  |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING |  |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir \*\*BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES\*\* |  |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name |  |
| 13. Let the phosphorescence bioplastic dry and harden overnight |  |

**Phosphorescence in bioplastic:** **Changing the amount of glycerin (1 of 4)**

SAMPLE NAME: **\_\_\_\_\_\_\_\_\_ 5 ml glycerin**

Reaction scheme:

|  |  |
| --- | --- |
| corn starch | 10 grams |
| water | 60 ml |
| vinegar | 5 ml |
| **glycerin** | **5 ml** |
| phosphorescence solid | 0.6 grams |

|  |  |
| --- | --- |
| **Procedures** | **Observations** |
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) |  |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker |  |
| 3. Add **5 ml of glycerin** (using a 10-ml graduated cylinder) to the same beaker |  |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. |  |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined |  |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker |  |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) |  |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout |  |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker |  |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING |  |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir \*\*BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES\*\* |  |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name |  |
| 13. Let the phosphorescence bioplastic dry and harden overnight |  |

**Phosphorescence in bioplastic:** **Changing the amount of glycerin (2 of 4)**

SAMPLE NAME: **\_\_\_\_\_\_\_\_\_ \_\_\_\_\_ ml glycerin**

Reaction scheme:

|  |  |
| --- | --- |
| corn starch | 10 grams |
| water | 60 ml |
| vinegar | 5 ml |
| **glycerin** | **\_\_\_\_\_ ml** |
| phosphorescence solid | 0.6 grams |

|  |  |
| --- | --- |
| **Procedures** | **Observations** |
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) |  |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker |  |
| 3. Add **\_\_\_\_\_ ml of glycerin** (using a 10-ml graduated cylinder) to the same beaker |  |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. |  |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined |  |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker |  |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) |  |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout |  |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker |  |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING |  |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir \*\*BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES\*\* |  |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name |  |
| 13. Let the phosphorescence bioplastic dry and harden overnight |  |

**Phosphorescence in bioplastic:** **Changing the amount of glycerin (3 of 4)**

SAMPLE NAME: **\_\_\_\_\_\_\_\_\_ \_\_\_\_\_ ml glycerin**

Reaction scheme:

|  |  |
| --- | --- |
| corn starch | 10 grams |
| water | 60 ml |
| vinegar | 5 ml |
| **glycerin** | **\_\_\_\_\_ ml** |
| phosphorescence solid | 0.6 grams |

|  |  |
| --- | --- |
| **Procedures** | **Observations** |
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) |  |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker |  |
| 3. Add **\_\_\_\_\_ ml of glycerin** (using a 10-ml graduated cylinder) to the same beaker |  |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. |  |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined |  |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker |  |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) |  |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout |  |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker |  |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING |  |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir \*\*BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES\*\* |  |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name |  |
| 13. Let the phosphorescence bioplastic dry and harden overnight |  |

**Phosphorescence in bioplastic:** **Changing the amount of glycerin (4 of 4)**

SAMPLE NAME: **\_\_\_\_\_\_\_\_\_ \_\_\_\_\_ ml glycerin**

Reaction scheme:

|  |  |
| --- | --- |
| corn starch | 10 grams |
| water | 60 ml |
| vinegar | 5 ml |
| **glycerin** | **\_\_\_\_\_ ml** |
| phosphorescence solid | 0.6 grams |

|  |  |
| --- | --- |
| **Procedures** | **Observations** |
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) |  |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker |  |
| 3. Add **\_\_\_\_\_ ml of glycerin** (using a 10-ml graduated cylinder) to the same beaker |  |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. |  |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined |  |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker |  |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) |  |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout |  |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker |  |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING |  |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir \*\*BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES\*\* |  |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name |  |
| 13. Let the phosphorescence bioplastic dry and harden overnight |  |