

CHAPTER 15	Launch Lab: Comparing the Reactivity of Alkanes and Alkenes	BLM 15.0.1
HANDOUT		

What is the difference between saturated fats and unsaturated fats? How can you identify these compounds by using an organic reaction? When the permanganate ion comes in contact with unsaturated compounds, a reaction occurs and the solution changes colour. When the permanganate ion comes in contact with saturated compounds, no reaction occurs.

Safety Precautions



- $\text{KMnO}_4(\text{aq})$ will stain your skin or clothing. If you accidentally spill $\text{KMnO}_4(\text{aq})$ on your skin, wash immediately with copious amounts of water. Remove the stain with a solution of sodium bisulfite.

Materials

- samples of vegetable oils, such as margarine, corn oil, and coconut oil
- samples of animal fats, such as butter and lard
- 5.0 mmol/L $\text{KMnO}_4(\text{aq})$
- warm-water bath
- hot plate
- medicine droppers (one for each sample)
- test tubes
- test-tube rack
- stoppers

Procedure

1. Read the entire procedure and design a table to record your observations.
2. Melt solids, such as butter, in a warm-water bath (40 °C to 50 °C), and then test them as liquids. Using a different medicine dropper for each substance, place about two full medicine droppers of each test substance into a separate test tube.
3. Use a clean medicine dropper to add one full medicine dropper of potassium permanganate solution to each substance. Seal each tube with a clean rubber stopper and shake the test tube to thoroughly mix the reactants. Record your observations. Dispose of the reactants and products as directed by your teacher.

CHAPTER 15	Launch Lab: Comparing the Reactivity of Alkanes and Alkenes (continued)	BLM 15.0.1
HANDOUT		

Analysis

1. List the physical properties of the samples that caused a change in the colour of the potassium permanganate solution upon mixing.
2. List the physical properties of the samples that did not cause a change in the colour of the potassium permanganate solution upon mixing.
3. What physical property of the samples appears to be related to their ability to cause a change in the colour of the potassium permanganate?
4. Based on this observation, infer a relationship between the chemical structure and a physical property of the samples that you analyzed.