**CONCEPT:** TRIACYLGLYCEROL REACTIONS: HYDROGENATION

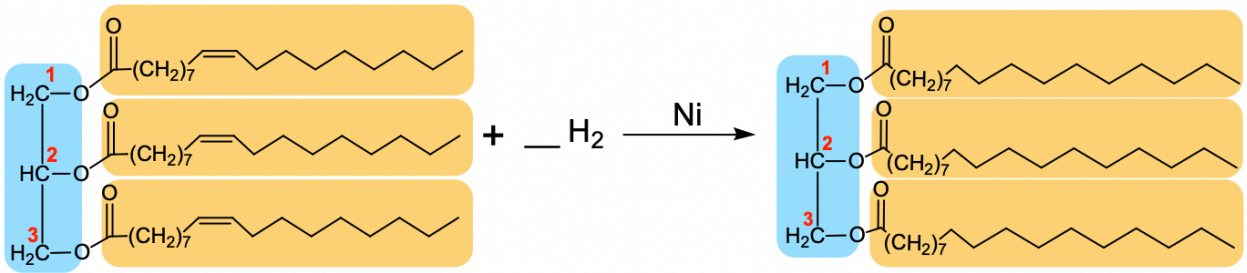
- **Recall:** Under this type of reaction ___ Hs are added to ___ π bond.
  - □ The conversion from double bonds to single bonds ___ unsaturation & ___ melting point.

## Hydrogenation Reactions

**Triolein**

Complete

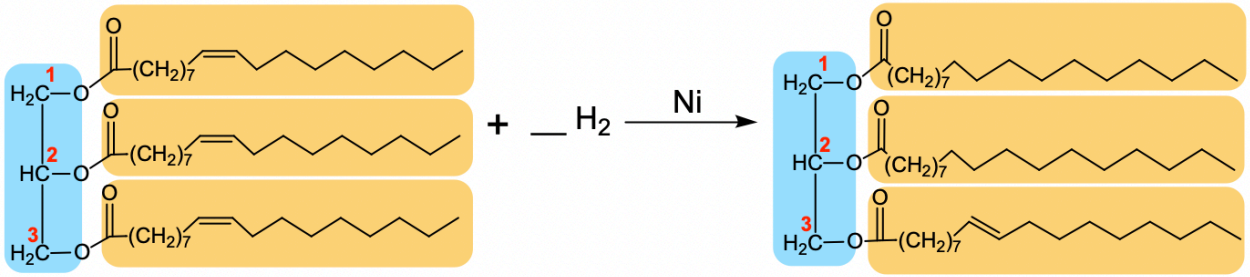
When _____ C=C bonds are reduced to single bonds




**Triolein**

Partial

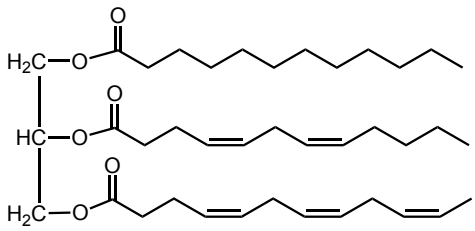
When _____ but not all C=C bonds are reduced to single bonds




* Commerically manufactured

- Partial hydrogenation converts oils to _____ whose ultimate consistency is based on the _____ of pi bonds.
  - □ During hydrogenation, some of the double bonds can isomerize to produce _____ (___-configuration) pi bonds.

**EXAMPLE**: Identify the number moles of hydrogen required for the complete hydrogenation of the following compound.



**CONCEPT:** TRIACYLGLYCEROL REACTIONS: HYDROGENATION

**PRACTICE:** Determine a possible triacylglycerol molecule formed when linoleic acid undergoes partial hydrogenation and consumes 1 mole of hydrogen gas.

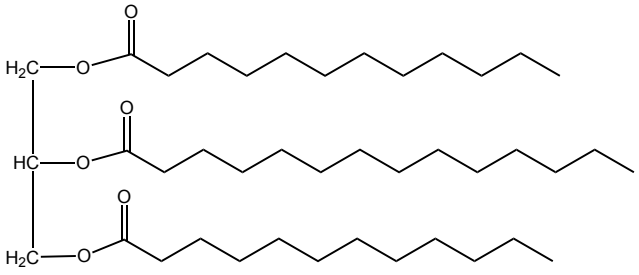
a) Palmeitoleic acid b) Stearic acid c) Linolenic acid d) Oleic acid

**PRACTICE:** A triacylglycerol molecule in the form of linoleic acid consumes 2 moles of hydrogen gas. Which of the following fatty acid represents the product formed?

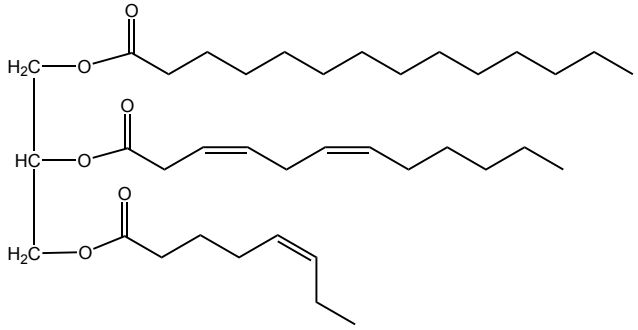
a) Myristic acid b) Stearic acid c) Palmitic acid d) Oleic acid

**PRACTICE:** Assuming a complete reaction with hydrogen gas, which of the following molecules would have the greatest increase in melting point?

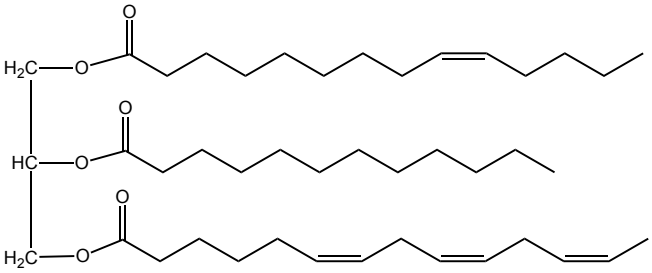
a)



b)



c)



d)