

Higher: Fats, Oils, Soaps, Detergents, Emulsifiers and Emulsions

Fats and Oils

Edible fats and oils are formed by the _____ of glycerol (_____) and three carboxylic acids. They are _____ that can also be referred to as _____.

Glycerol structure

The carboxylic acids are made of long chains of carbon atoms and can be _____ or _____.

Condensation reaction

Fats have higher melting points than oils.

Fats

Oils

The presence of carbon to carbon double bonds can be tested with bromine water.

The larger the volume of bromine water that can be decolourised, the more double bonds present.

Fats and oils are used for:

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A selection of fats and oils were tested with bromine water. The volume of bromine water that could be decolourised was recorded. Put the substances in order of increasing melting point.

Substance	Volume of bromine water (ml)
A	12
B	45
C	7
D	19

Soaps and detergents

Alkaline hydrolysis of fats and oils produces salts called soaps.

Soaps can be used to remove non-polar oil and grease due to their structure.

Cleansing action of soap

When soap is used in hard water (_____) _____ (an insoluble precipitate can form.

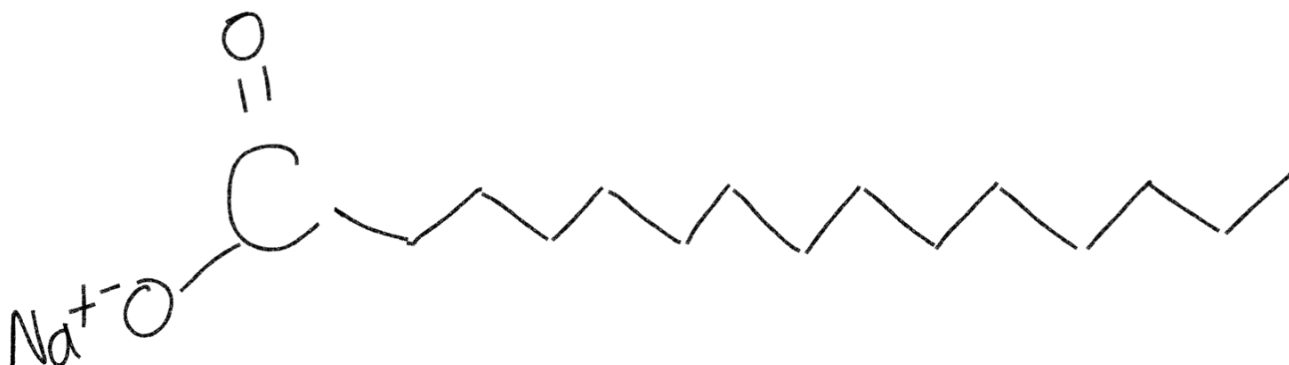
Soapless detergents have a similar structure and action to soap but do not form scum.

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Label this soap molecule using the following terms:

Hydrophilic
Hydrophobic
Hydrocarbon

Ionic
Head
Tail



Emulsifiers and emulsions

Emulsifiers can be used to prevent non-polar and polar liquids from separating into layers. By doing so an emulsion is formed, small droplets of one liquid dispersed in another liquid.

Emulsifiers for use in food are made by reacting edible oil with glycerol.

The molecules that form have only one or two fatty acid groups attached to glycerol.

The hydrophilic hydroxyl groups on the glycerol dissolve in water, whilst the hydrophobic fatty acid chains dissolve in oil.



Compare the similarities and difference of fats/oils, soaps/detergents, and emulsifiers.