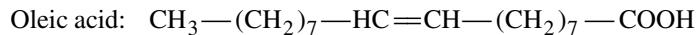


The value of n is typically between 12 and 20. Unsaturated fatty acids contain double —C=C— bonds, such as oleic acid.



A list of common fatty acids is presented in Table 2.6. The hydrocarbon chain of a fatty acid is hydrophobic (water insoluble), but the carboxyl group is hydrophilic (water soluble).

Fats are esters of fatty acids with glycerol. The formation of a fat molecule can be represented by the following reaction:

TABLE 2.6 Examples of Common Fatty Acids

Acid	Structure
Saturated fatty acids	
Acetic acid	CH_3COOH
Propionic acid	$\text{CH}_3\text{CH}_2\text{COOH}$
Butyric acid	$\text{CH}_3(\text{CH}_2)_2\text{COOH}$
Caproic acid	$\text{CH}_3(\text{CH}_2)_4\text{COOH}$
Decanoic acid	$\text{CH}_3(\text{CH}_2)_8\text{COOH}$
Lauric acid	$\text{CH}_3(\text{CH}_2)_{10}\text{COOH}$
Myristic acid	$\text{CH}_3(\text{CH}_2)_{12}\text{COOH}$
Palmitic acid	$\text{CH}_3(\text{CH}_2)_{14}\text{COOH}$
Stearic acid	$\text{CH}_3(\text{CH}_2)_{16}\text{COOH}$
Arachidic acid	$\text{CH}_3(\text{CH}_2)_{18}\text{COOH}$
Behenic acid	$\text{CH}_3(\text{CH}_2)_{20}\text{COOH}$
Lignoceric acid	$\text{CH}_3(\text{CH}_2)_{22}\text{COOH}$
Monoenoic fatty acids	
Oleic acid	$\text{CH}_3(\text{CH}_2)_7\text{CH}^{\text{cis}}=\text{CH}(\text{CH}_2)_7\text{COOH}$
Dienoic fatty acid	
Linoleic acid	$\text{CH}_3(\text{CH}_2)_4(\text{CH}^{\text{cis}}=\text{CHCH}_2)_2(\text{CH}_2)_6\text{COOH}$
Trienoic fatty acids	
α -Linolenic acid	$\text{CH}_3\text{CH}_2(\text{CH}^{\text{cis}}=\text{CHCH}_2)_3(\text{CH}_2)_6\text{COOH}$
γ -Linolenic acid	$\text{CH}_3(\text{CH}_2)_4(\text{CH}^{\text{cis}}=\text{CHCH}_2)_3(\text{CH}_2)_3\text{COOH}$
Tetraenoic fatty acid	
Arachidonic acid	$\text{CH}_3(\text{CH}_2)_4(\text{CH}^{\text{cis}}=\text{CHCH}_2)_4(\text{CH}_2)_2\text{COOH}$
Unusual fatty acids	
Tariric acid	$\text{CH}_3(\text{CH}_2)_{10}\text{C}\equiv\text{C}(\text{CH}_2)_4\text{COOH}$
Lactobacillic acid	$\text{CH}_3(\text{CH}_2)_5\text{CH}(\text{CH}_2)_2\text{CH}(\text{CH}_2)_9\text{COOH}$
Prostaglandin (PGE ₂)	