Key Concepts (More Detailed)

Certain qualities of fats and oils can affect the final properties of soap. These qualities can include things such as chain length, saturated, monounsaturated and polyunsaturated fatty acids. Depending on the chain length the soap can be more or less soluble. The longer the chain is the more insoluble the soap is. Saturation affects the density of the soap, with higher saturation making the soap harder and raising the melting point. Certain types of fatty acids also affect how the soap will turn out. Depending on the amount of double bonds in the fatty acids the soap can be more or less soluble in water. With a polyunsaturated fatty acid the soap will be very soluble, while monounsaturated will make it less so. When creating your soap you must decide how hard you want it too be and choose fats and oils accordingly. If you are looking for a harder soap then you should choose fats containing minimal double bonds. If you are looking for a softer soap then you should use more polyunsaturated fats.

When making the soap you can use something called adjusts to change the properties. This can include change in texture, smell and appearance. Some types of adjuncts include coffee grounds for texture, essential oils for smell and dried herbs for color.

When creating soap an important part of the process is the saponification value. The saponification value is how much sodium hydroxide it takes to saponify one gram of fat. If there is too much lye the soap will be too basic and has the potential of be harsh on the skin. If the amount of sodium hydroxide is to little, it has the potential to leave an excess of unsaponified fatty acids. This will cause the soap to have an oily feel, meaning the it won't do a good job of cleaning. Lye plays an important role in the saponification process by changing molecular structures in the fat molecules. This is done when the lye breaks apart the fatty acids from the glycerol and leaves a water molecule behind for each fatty acid.

The process of saponification allows for a single type of molecule to be formed which gives soap its cleaning qualities. This happens when the sodium hydroxide breaks apart the triglycerides, allowing for the glycerol to be free. The sodium ions then bond with the carboxyl ends to form the soap molecules(COOH). The four types of molecules included in this process are fatty acids, glycerol, sodium hydroxide, and carboxyl. This process creates the soap molecules which can be used to clean because they act as an emulsifier. Meaning one end is polar and one is non-polar allowing for one end to attach to water and the other to attach to fat. After your soap is ready a safety precaution that can be taken is too find the pH. PH measures whether our soap is too basic or neutral. If the soap is too basic then it can be harmful to the skin. Soap becomes too basic if there is too much lye used, which can burn skin.