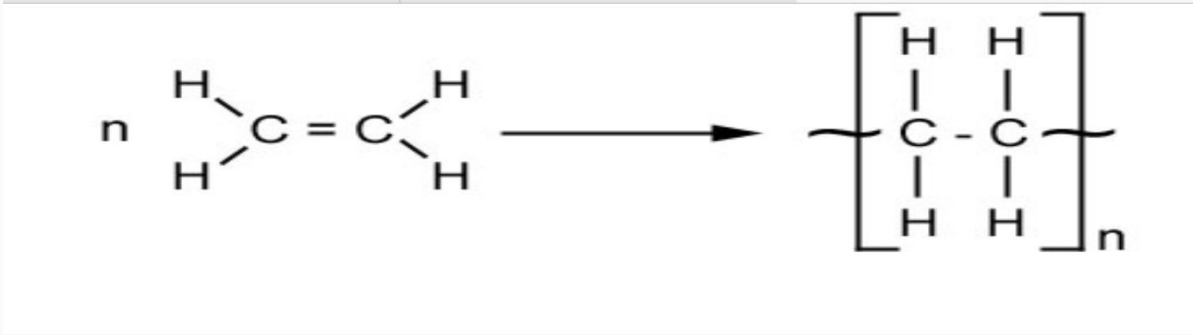
Polyethene

Presented by Cameron and DJ

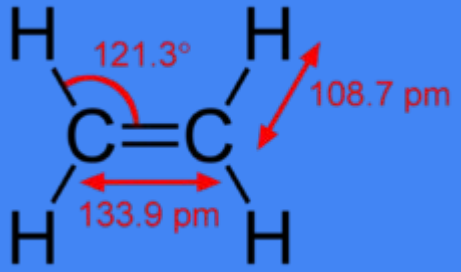
High density Polyethene

High density Polyethene is very strong and stiff. It is also extremely resistant to chemicals. This is a valuable and useful substance as it is very weather

resistant and is easily cleaned. This diagram below illustrates how Polyethene is formed through polymerisation of ethene to Polyethene.



Low density Polyethene



Low- Density polyethylene is a thermoplastic created from the monomer ethylene. Ethylene is a hydrocarbon that has the formula C2H4. Ethylene also known as Ethene is a colourless flammable gas, it is the most simplest alkene. A hydrocarbon connected with a double carbon bonds. This can be represented as displayed. It is made using a very high pressure process via free radical polymerization. Low density polyethene is tough and flexible. Molecules compared to the high density poly ethene are less tightly packed, its density is lower w

Differences

HDPE

High density polyethene has less “branching” meaning its material has more strength than LDPE . It is more harder and tougher than LDPE. it can also withstand higher temperature of around 120 C. When in the process of being made, instead of it cracking into shards it tends to rip and tear. Milk container and other hollow objects that are made by blow molding, have the most input in the HDPE area. Forces of attraction between polymer molecules are strong.

LDPE

It is the more important plastic. LDPE is one of the polymer chains that has side branching, the side branching makes LDPEs polymer chains stop lining up constant;y. This means that the structure of LDPE is not crystalline.

What does this mean? The density of the tensile is lower and that the forces between polymer molecules are weakened. This cause the material to not be as strong and it also gives it a lower melting boiling point.

Chemical and physical properties that make Polyethylene, a valuable material?

LDPE is translucent, very tough, the methods used to make it are simple, the cost is low. LDPE is created by free radical polymerization. Radical polymerization is a method of polymerization where a polymer is created once the success of adding a polymer and free radical buildings blocks. The physical advantage of LDPE is that it can take a heavy impact strength. Polyethylene has exceedingly good chemical resistance meaning that it won't react with mostly everything and it also has great water resistance, it will not degrade in the water.

How does the chemical structure of LD and HD differ?

LDPE's chemical structure is not crystalline, also the polymer molecules are less attracted compared to the HDPE and LDPE has more branching this makes the tensile strength and intermolecular forces less stronger but as HDPE has a less branching making it a lot stronger. LDPE (Low Density Polyethylene) is defined by a density range of 0.910 - 0.940 g/cm^3. The chains in LDPE do not compact into the crystal structure that well. It has branches with long chains gives a beguiling flow of properties.

What is involved in the process of recycling polyethene products ?

Every year no far from 60 million tons of this material is manufactured each year. This plastic is the grim reaper to a lot of animals and to reduce the amount of lives we take it is up to us to recycle and reuse polyethylene. There are ways to recycle this material! HDPE products have the recycling label code “2” These plastics are sorted into different polymer categories. These plastics are then melted into pellets. The pellets can then be made into other things such as furniture, plastic lumber, and toys. Thin plastic such as polyethylene film and bags can also serve another use by melting it down the same way as the harder plastics and made to create a whole new load of plastic bags.

The End