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Review Article

Why Density is Important in Polyethylene and not in PP

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Abstract

The assessment, comprehensively reviewed the challenges of gas flaring in Nigeria, including the exploratic formation and extraction of crude oil. Gas flaring is simply the open-air combustion of fuel gas. Initial start- flaring, Continuous production flaring and Operational/Non-continuous production flaring which are the 3 maj classified categories of flaring were discussed, including composition of flared gases, types of flare gases such ground flares, pit flares and elevated flares. The cumulative effects of gas flaring under the heading Environments, Health, Economy and other effects were thoroughly discussed. Flaring has many disastro consequences such as; decrease in the life expectancy of people living near flare sites due to poisonous emissio which lead to a variety of health challenges and diseases. Flaring also contributes to global warming, which is major concern today as it causes extreme weather conditions, extinction of certain species and climate chang Nigeria stands to gain a great deal from utilizing natural gas properly in terms of revenue and increased j opportunities, consequently it is necessary that the flaring of natural gas should be stopped. Several alternativ have been proposed, including using flared gas to produce electricity and as a petrochemical feedstock, liquefyi of flare gas and reinjecting it into the earth as a secondary oil recovery technique. Nigeria has made sever policies to reduce and subsequently end gas flaring and has set multiple deadlines which ended up bei postponed severally. The new deadline to end gas flaring in Nigeria is now anticipated to be by 2030. Howev due to many setbacks, it is possible that the deadline may yet be shifted again.

Key Words: dentistry; techniques; computer

This is one of the most critical and highly demanding topic. Density is more important for polyethylene because its molecular structure has different branching, which directly determines its properties; higher density (HDPE) means linear chains that pack tightly for strength, while lower density (LDPE) has more branches, resulting in flexibility. For polypropylene (PP), its inherent structure, including its methyl group (CH3) side chain, already provides a wide range of properties, making density a secondary factor primarily impacting crystallinity, which affects transparency, rather than the fundamental strength or flexibility that density defines for polyethylene.

Polyethylene (PE)

• Impact of density:

Density is the primary variable that determines PE's physical properties.

• High-density polyethylene (HDPE):

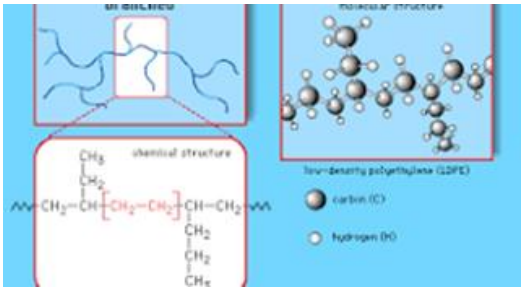
The linear, unbranched chains pack closely together, leading to stronger intermolecular forces, which results in a rigid, strong, and durable plastic.

• Low-density polyethylene (LDPE):

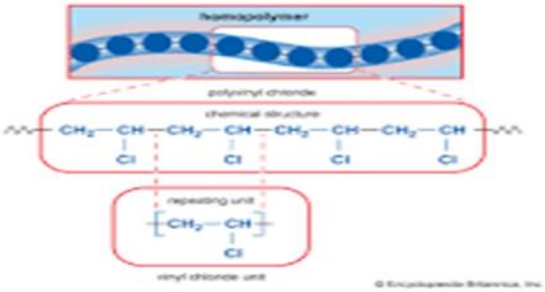
More branches on the polymer chains prevent them from packing tightly. This leads to weaker intermolecular forces and a softer, more flexible, and more transparent material.

• Properties affected:

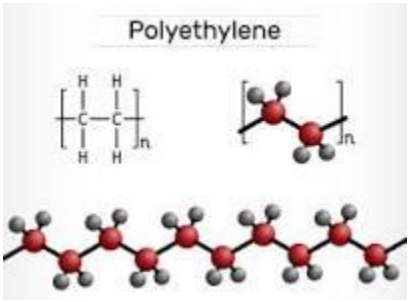
Stiffness, strength, flexibility, durability, and chemical resistance are directly and significantly impacted by density.



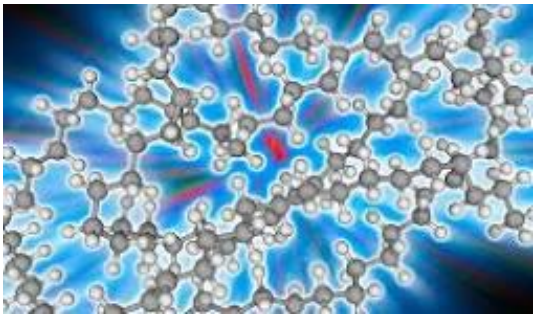
PE – property structure



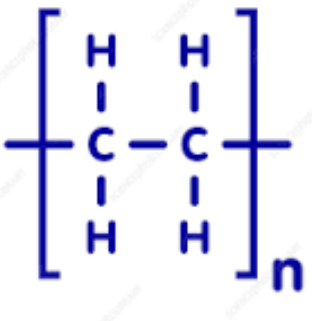
PE- PE



PE-Molecular structure



PE- Organic molecules orientations



Polymer chain of PE

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• Properties affected:

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Polypropylene (PP)

• Impact of density:

The effect of density is less about the fundamental strength and flexibility (which are already well-defined by its structure) and more about the crystallinity.

• Structure:

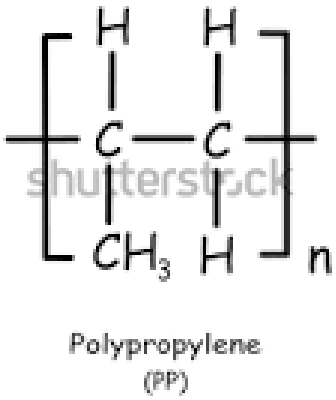
The methyl (CH3) side group on polypropylene's backbone is the key factor influencing its properties like stiffness and heat resistance.

• Crystallinity:

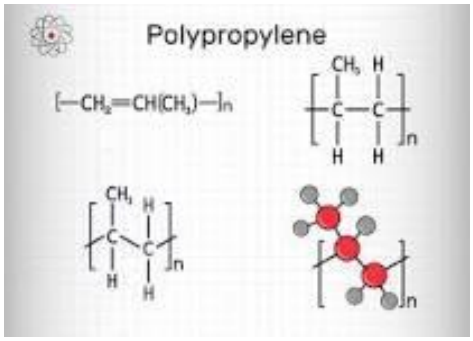
Increasing density can increase the degree of crystallinity, which can improve transparency and reduce haze in the final product.

• ***Properties affected:***

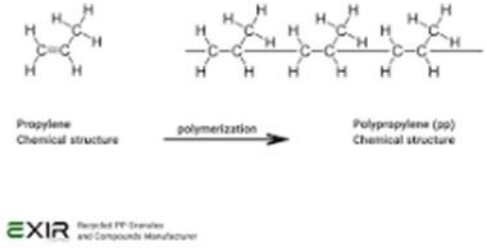
While density affects crystallinity and thus properties like transparency, the primary determinant of its strength, stiffness, and heat resistance is its inherent molecular structure, not its density in the same way it is for PE.



PP –Chemical structure



PP –molecular structure



PP- Chemical structure

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