

Crosslink Polyethylene vs. Linear Polyethylene

A White Paper from Assmann

Assmann Corporation of America utilizes two types of polyethylene resin to construct our chemical storage tanks: crosslinked polyethylene (XLHDPE) and linear polyethylene (LMDPE). Crosslinked polyethylene, by far, is the more reliable of the two resins because of higher impact resistance, greater environmental stress cracking resistance, ability to hold higher maintenance temperatures and a molecular structure less likely to experience catastrophic failure.

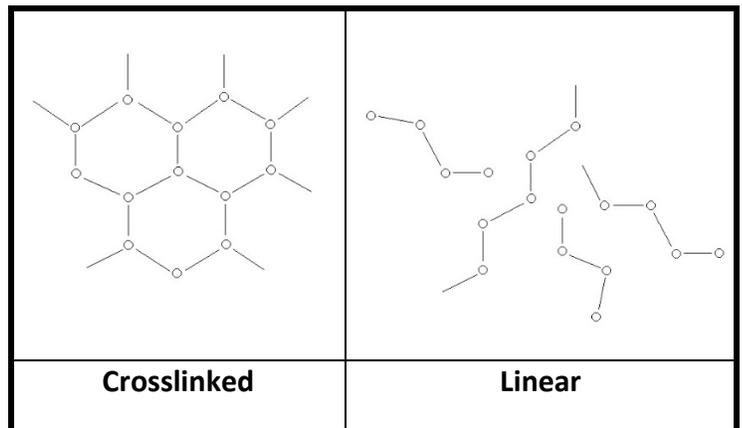
Assmann Corporation utilizes both of these two resins in our [process](#). Crosslink polyethylene accounts for the majority of our total resin usage. Linear polyethylene is generally used for FDA applications, secondary containment, smaller units such as feed-stations and water services. Linear polyethylene also carries NSF approval for potable water applications.



Assmann Corporation was the first manufacturer to have NSF certification for our Crosslink polyethylene in chemical storage applications. Other storage tank manufacturers require the use of expensive liners or simply do not have the certification.

When deciding to purchase a chemical storage tank, purchasers should request from their supplier a resin data sheet. Resin data sheets contain valuable information making it easy for you to compare materials. When reviewing data sheets, you will find that both crosslinked and linear polyethylene resins show an Environmental Stress Cracking Resistance (ESCR) value greater than 1000 hours. These results are based on using a 100% solution of Igepal. The more severe test uses a 10% solution of Igepal. In this case the linear polyethylene values are around 150 hours, whereas the crosslinked polyethylene values are still over 1000 hours. These results prove that crosslinked polyethylene does have a significant advantage over linear polyethylene in services like sodium hypochlorite sodium hydroxide, and other known oxidizers or stress cracking agents.

Another advantage that crosslinked tanks have over linear tanks, in any service, is their overall toughness. Crosslinked polyethylene has an entirely different molecular structure than linear resin. The molecules in a crosslinked tank link to form a more complete structure. Note the difference between crosslinked resins and linear pictured below.



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