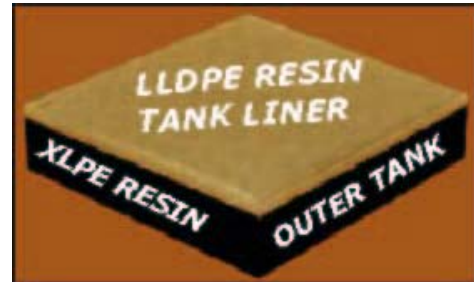


WHY ARE CROSSLINKED PE TANKS WITH LINEAR PE LINERS A BAD IDEA?

Approximately 30 years ago, a technique was developed in the rotational molding process that enabled a Low Density Linear Polyethylene (LLDPE) Liner (layer) to be formed within a Crosslinked Polyethylene (XLPE) Tank.



Initially the additional layer of LLDPE material was added to reduce cost using a cheaper resin to build wall thickness. In the late 1980's, early 1990's, it was also done in an attempt to create an FDA line of tanks which failed to comply with FDA requirements. Then the process was used to actually improve the chemical resistance of the XLPE tank for certain oxidizing chemical applications. There were limited tank material construction options at the time the laminated tank was developed. The LLDPE resins did not yet have the strength characteristics to handle the rigors of bulk liquid storage without additional support, which is why the two resins were utilized together in an attempt to solve a chemical storage dilemma.

Unfortunately, chemical manufacturers, distributors, and end users have discovered a multitude of quality and service problems inherent in the laminated tank design since the technique was introduced almost three decades ago.



1. **Delamination** – Linear polyethylene is a thermoform plastic, which means it can be melted and cured multiple times. Crosslinked polyethylene is a thermoset plastic, which means the cure is permanent, and cannot be reset. The two plastics do not permanently bond. In application, the sidewall expansion and contraction caused by a tank being filled and emptied creates further long-term stress on the two materials' bond. As a result, end users have experienced sidewall delamination failures.

2. **Fitting and Outlet Chemical Exposure** – Since it is difficult to mold a uniform wall of linear polyethylene within the dual laminating tank processing technique, fitting locations often have to be ground down and smoothed over to achieve a uniform sealing surface, which can inevitably result in the removal of the linear layer and the required chemical resistance protection that goes with it.



The linear liner protection can also be compromised when holes are drilled into the tank wall removing the chemical resistance barrier and exposing the outer XLPE shell to chemical attack.



3. No FDA or NSF Approval – The technique utilized to process laminated polyethylene tanks **has not** been approved by the Food and Drug Administration (FDA), or National Sanitary Foundation (NSF) for food or water process chemical contact. Reason being, the chemical gases created by the XLPE resin during the molding process are meshed with the food grade LLDPE resin, which permeates through the interior tank wall leaving the finished tank unsuitable for these application approvals.

4. No Repair - Maintenance Capabilities – Since XLPE is a thermoset plastic, it cannot be repaired (welded) or recycled, so maintenance, replacement, and disposal costs can be exorbitant.

Fortunately, the resin and process technology in High Density Linear Polyethylene (**HDLPE**) **has improved dramatically** in the last decade, offering greater tank strength and superior chemical resistance.

In fact, today's HDLPE is actually stronger and performs better than XLPE in most applications. As a result, tank specifiers and purchasers can now procure a tank design that maximizes chemical resistance without sacrificing tank durability.

Tensile Strength

Exxon (leading HDLPE resin manufacturer) 2700 psi

Phillips (leading HDXLPE resin manufacturer) 2600 psi

Density * the higher the density the better the chemical resistance

Exxon (leading HDLPE resin manufacturer) .940-.947 g/cc

Phillips (leading HDXLPE resin manufacturer) .938-.944 g/cc

KEFCO manufacturers and markets both HDLPE and XLPE (NO LINER!) tanks for a variety of applications. As a leading polyethylene tank manufacturer, we strongly believe in matching the right resin and tank design with specific applications to optimize long-term tank performance.

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