

What is KEE?

KEE is an abbreviation for Ketone Ethylene Ester, a **high-molecular-weight polymer** with elastomeric properties and favorable melting properties for thermoplastic processing. Although KEE is most commonly used in roofing, it is also used in geomembranes for secondary containment for petrochemical storage and other industrial chemical applications. It is manufactured solely by DuPont™, under the brand name Elvaloy®.

There is also an **ASTM International standard**, ASTM D 6754-10, which regulates the standards for roofing membranes that use KEE. This standard is commonly referred to as the “KEE Standard” and requires that a minimum of 50% by weight of the polymer content of the roofing membrane be KEE.

Therefore all roofing membranes that contain KEE may not comply with the “KEE Standard” but still provide many of the same benefits.

Why is KEE used in roofing?

This molecule can replace plasticizers in roofing membranes as a solution for flexibility that will not migrate out of the membrane. When mixed with PVC, KEE provides many desirable characteristics in roofing membranes, including:

- Easy heat welding due to melting properties
- Resistance to chemical attack
- Weather resistance
- Long-term flexibility
- Durability
- Resistance to microbial growth
- Energy efficiency

What is the difference between ASTM D 4434-12 and ASTM D 6754-10?

ASTM D 4434-12*

This standard was the first of its kind for single ply roofing membranes and provides a nationally-recognized definition for PVC membranes. It sets benchmarks for PVC content, thickness and other physical properties applicable to roofing.

ASTM D 6754-10

A newer standard developed to regulate the polymer content in roofing membranes. This standard requires a minimum content of 50% KEE, and also has more strict requirements for minimum thickness, water absorption, abrasion and fungus resistance.

*Elvaloy-containing or KEE-containing roof membranes that do not meet ASTM D 6754-10 fall under ASTM D 4434-12.

Where do the Duro-Last® EV products fit into this?

Both the 50-Mil and 60-Mil Duro-Last EV membranes are KEE-containing and comply with ASTM D 4434-12. The benefits of KEE in roofing membranes only go so far – meaning it is more cost-effective to use levels lower than those required by ASTM D 6754-10. As the KEE content of a membrane gets too high, welding issues can arise. It is possible to have too much of a good thing!

What makes Duro-Last EV products better than the competition?

First of all, using the optimal amount of KEE allows Duro-Last EV membranes to yield the performance benefits the polymer offers while also being cost-effective. In addition to the benefits of KEE mentioned previously, both the 50-Mil and 60-Mil Duro-Last EV membranes offer the following benefits:

- Thickest top weathering film in the industry
- High scrim density for performance and durability
 - Anti-wick yarns
 - Weft-insertion scrim
- Outstanding wind uplift
- Great weldability
- Superior film chemistry

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