



GAF Single Ply Membranes – TPO, PVC, and PVC-KEE

Chemical Resistance

An “Engineered” Approach

For most roofing projects, chemical resistance of the membrane is not a consideration. However, in some cases the roof may be exposed to chemicals, oils, greases, and the like. In these situations, the right membrane must be chosen. If chemical resistance is required, it must be balanced against other key factors that must be satisfied in order to meet all the requirements of the specific project. Other key factors may include UV and heat resistance, ease of installation, thermal seamability, warranty requirements etc.

TPO... the “all around” membrane

TPO roofing membranes have a very good balance of properties. Heat and UV resistance is excellent, ease of welding and seam strengths are very good, and overall value is very high. Extended-length warranties of as long as 35 years can be obtained.. However, exposure of TPO to acids may cause it to weather faster than normal. Also, it can absorb greases and oils, becoming stained in the process.



If TPO is being used for a job that might see some light chemical exposure, it is often best to apply a second “sacrificial” layer around sources of chemicals. These could include grease traps, vents, and stacks.

PVC... the flexible membrane

PVC roofing membrane is more flexible than TPO and is sometimes preferred due to its ease of handling. It is more acid resistant than TPO and the PVC-KEE version is the better choice for roofs that may be exposed to grease and oils.

PVC-KEE... for improved chemical resistance

When considering thermoplastic single-ply membranes, PVC-KEE is widely regarded as having the best chemical resistance. It is resistant to a broad range of chemicals and solutions, making it a better choice in applications that will have chemical exposure. However, as noted below, the degree of exposure, the area of exposure, and the frequency of exposure will increase the harmful effect on the membrane.

Project-Specific Chemical Resistance

The degree of chemical attack on any material will be influenced by a number of factors and their interactions.

- Combinations of some chemicals maybe more harmful to the membrane than the individual chemicals.

- Increasing the concentration of chemicals increases the effect on the membrane.

- Higher temperatures may increase deterioration of the effect effects of deterioration on the membrane.

- The degree of exposure, area of exposure and frequency of exposure will increase the harmful effect on the membrane.

The chemical verification and design responsibility remains with the architect, specifier, engineer, or roofing contractor of record to determine that the project specific conditions are compatible with GAF single-ply roofing membranes.

Chemical Resistance Guidelines

In general, roofs should be protected from exposure to chemicals that can damage the roofing system. However, GAF recognizes that leaks from grease traps, occasional releases of chemical mists, and other chemical attacks on the roofing system may occur. Strong acids of any type, oxidizers, and most strong bases are known to cause issues with most roofing membranes regardless of type.

The degree of chemical attack on any material is influenced by a number of variable factors, including concentration of the chemical, temperature, aeration, duration of exposure, stability of the fluid, and possible chemical reaction with other compounds in the area.

These Chemical Resistance Guidelines are for information purposes **only**, and are not a substitute for independent testing and verification by the building owner or its consultants to determine with certainty if the membrane is suitable for your particular needs. GAF makes **no** representation or warranty (express or implied) as to the chemical-resistance of its single ply membranes. GAF's limited warranties and guarantees do **not** cover damages resulting from chemical attack on the GAF membrane including exposure to grease, oil or other chemicals.

The following Table provides guidelines on the chemical resistance of thermoplastic single-ply membranes according to the following codes:

A = Negligible Effect

The membrane should be suitable for all applications where these materials could be present.

B = Limited Absorption or Effect

The membrane should be suitable for most applications. However, staining may occur and/or there may be reduced resistance to heat and UV exposure.

C = Extensive Absorption and/or Rapid Degradation Possible

Membrane may be suitable for applications where only intermittent contact is involved and contact with the membrane is for short periods of time.

NR = Not Recommended

The membrane may dissolve or disintegrates, and weather resistance may be severely reduced.



Chemical Resistance Guidance Table

Chemical	TPO	PVC	PVC-KEE
De-Icing Salts/Fluids	A	A	A
Dilute Acids	NR	C	B
Strong Acids	NR	NR	NR
Grease	B	C	A
Oils	C	C	B
Vegetable Fats	B	C	B
Animal Fats	B	C	B
Diesel & Jet Fuels	C	C	B
Solvents	C	NR	C

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Our Technical Helpline (800-766-3411) can provide general technical assistance. However, for chemicals of concern, the verification of compatibility and design responsibility remains with the architect, specifier, engineer, or roofing contractor of record to determine that the project-specific conditions are compatible with GAF single-ply roofing membranes.