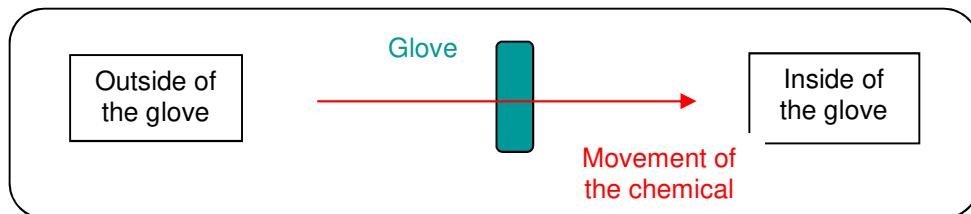


How can I choose a chemical protective glove based on permeation times and degradation levels?

Two different parameters can be taken into account while choosing a chemical protective glove:

1) Permeation

Permeation corresponds to the process by which a chemical moves through a protective glove material on a molecular level.



Level of permeation is assessed by measuring the permeation breakthrough time (BTT), which corresponds to the time necessary for a chemical to be detected on the inside of the glove under standard test conditions. These permeation BTT's correspond to an objective way to evaluate the protection level for a glove versus a specific chemical: indeed, a permeation time gives an idea of the time during which the chemical won't be in contact with the hand of the end-user.

Permeation BTTs can therefore give an idea of how long a glove can be used safely. However, they are not absolute constants of nature. They can be affected by ambient temperature, pressure when the protective material is squeezed between hands and whatever is being handled, amount of flexing and stretching, concentration of chemical in a mixture, and other influences also. Permeation BTTs in the literature are most useful for comparing performance of different gloves versus chemicals. There can be no guarantee that breakthrough time during actual use will be the same as breakthrough time measured under standard laboratory conditions.

2) Degradation

Degradation causes changes to the properties of a material due to contact with a chemical. Typical consequences of degradation can include swelling, shrinking, hardening or increased brittleness of the glove.

Assessment of the degradation doesn't correspond to an official requirement according to the current ASTM standards. However, different degradation levels have been defined and evaluated by Ansell: E (excellent) when no degradation was occurring, G (good), F (fair), P (poor) and NR (not recommended). These grades allow the end-user to evaluate the level of alteration of the glove, information particularly useful to assess the practicality of a glove.

Relationship between permeation and degradation:

No direct link can be made between the severity of the permeation and degradation processes. Permeation time is likely to be short if severe degradation is occurring, but this effect is not systematic.

Degradation	Permeation time	Meaning
Not occurring	High	<p><u>Ideal situation</u> The glove can be recommended.</p> <p>The end-user will be protected against the chemical for a long time and the glove won't be degraded due to contact with this compound.</p>

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Not occurring	Low	<p><u>Bad situation</u> The glove cannot be recommended.</p> <p>The properties of the glove won't change since degradation is not occurring, but the chemical will pass through the glove really quickly, which corresponds to a risk for the health of the end-user.</p>
Occurring	Low	<p><u>Bad situation</u> The glove cannot be recommended.</p> <p>The properties of the glove change since degradation is occurring, and the chemical will pass through the glove really quickly, which corresponds to a risk for the health of the end-user.</p>
Occurring	High	<p><u>Intermediate situation</u> The glove can be recommended but the alterations of the glove should be taken into account.</p> <p>The properties of the glove change since degradation is occurring, but the end-user remains protected since the permeation time is high. Therefore, the alterations of the glove are more from a practical point of view and less related to protection.</p>

		<p>We would consider here that the glove can only be used for short contact or splash protection. The gloves should be carefully inspected before re-use, as they may have been permanently damaged by previous contact with a chemical.</p>
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Recommendations made in this note are based on extrapolations from laboratory test results and information regarding the composition of chemicals and may not adequately represent specific conditions of end use. Synergistic effects of mixing chemicals have not been accounted for. For these reasons, and because Ansell has no detailed knowledge of or control over the conditions of end use, any recommendation must be advisory only and Ansell fully disclaims any liability including warranties related to any statement contained herein.