

Why are no breakthrough times mentioned for the Viton®/butyl glove? What does the DD degradation rating mean?

The Chemical Guardian chart will sometimes show an empty field for Ansell ChemTek Viton®/butyl gloves. In information sources where we also mention degradation, the rating will show the remark “DD”.

Viton®/butyl gloves are made in two layers: Viton® on the outside, and butyl on the inside.

- The Viton® rubber in these gloves provides outstanding protection against many aromatic solvents and halogenated solvents, but it is a poor performer versus medium-polar solvents such as ketones and acetates. These types of chemicals not only permeate through the Viton rubber; they also cause it to swell.
- Our butyl rubber compound resists medium-polar solvents very effectively. When those solvents permeate through Viton rubber and contact the butyl rubber layer, that layer usually does not swell.

However, when the Viton® rubber swells, the adhesion between the two rubber layers is not strong enough to keep them together. The glove degrades by delamination (hence the remark ‘DD’ in the Chemical Guardian report).

Most types of rubber gloves can recover completely after degradation by volatile solvents. When the solvents evaporate, the swollen and softened rubber shrinks back down to its original as-manufactured size and regains its physical properties. If it was not torn, punctured, abraded, or otherwise damaged while it was degraded, the glove will be ready to protect against another hazard just as effectively as a new glove.

However, ChemTek™ Viton®/butyl rubber gloves are an exception. The Viton® rubber that has been affected by a volatile solvent will recover its size and properties when that volatile solvent evaporates, but it will not re-laminate to the butyl layer underneath. The gloves will be permanently damaged.

Permeation breakthrough ratings for these gloves can be misleading. That’s why we choose to not provide breakthrough times for those chemicals versus ChemTek™ Viton®/butyl rubber gloves in Chemical Guardian assessments.

Glove/chemical combinations could sometimes have relatively long breakthrough times. The inner butyl rubber layer can sometimes very effectively resist a solvent which is degrading the Viton® rubber. As a result, the gloves can protect a worker against the chemical, once. After that, the gloves are permanently damaged. They can be more easily torn or punctured, and the person wearing the gloves will have less dexterity because the glove layers will slip past each other.

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.