What gloves can I use to protect myself against pyrophoric chemicals?

Pyrophoric chemicals correspond to compounds that can spontaneously burst into flames at a temperature of 55°C (=130°F) or below, due to contact with air or with air humidity. In these conditions, pyrophoric chemicals will either produce a spark, a flame or provoke a temperature increase, therefore potentially causing a phenomenon of combustion that could have serious consequences for the health of the end-user (such as severe burns of the skin).

Examples of pyrophoric chemicals:

- Triethylaluminium (TEA), CAS 97-93-8
- Triethylborane (TEB), CAS 97-94-9
- Phosphine (gas), CAS 7803-51-2
- Tert-Butyllithium, CAS 594-19-4

Spontaneous ignition corresponds to the main risk involved with pyrophoric chemicals. Therefore, estimations of the permeation times are not a relevant way to assess the protection level that is needed for those compounds. Indeed, a pyrophoric chemical could be solid, therefore having permeation times of more than 8 hours (since a solid will not pass through a glove but stick to its surface), but none of our chemical protective gloves will protect the end-users against the flames.

Indeed, gloves that have both chemical and heat protective properties can only protect the end-users against a temperature of 200°C (=392°F) maximum, and only for an intermittent or short contact. However, flames can reach a temperature as high as several thousand degrees Celsius. All our chemical protective gloves will therefore also melt or burn when in contact with a fire. Furthermore, if a person uses gloves which contain nylon or polyester fibers, PVC coatings, or other thermoplastic materials, one of the risks when a fire occurs would be that these materials will melt into their flesh, thereby causing even more damage to their body.

Conclusion

Seeing the risks involved with these chemicals, we choose not to recommend any chemical protective glove when dealing with pyrophoric compounds. Specific flame retardant equipment should be used.

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.