

CSU14

Chloroform-Safe Gloves

The use of phenol and chloroform as a means to purify nucleic acids works quite well for most applications. Both of these chemicals, however, are toxic and are hazardous if not handled properly. Phenol is corrosive, readily absorbable through the skin, and will cause deep and severe burns to the skin and eyes upon contact. Chloroform is a skin irritant and is toxic to the liver and kidneys from brief exposure to high concentrations or from prolonged and repeated exposure to low concentrations. Always wear a laboratory coat, chemically resistant gloves, and safety goggles or a face shield when handling these chemicals. Although disposable nitrile and neoprene gloves provide adequate protection from phenol, they are not suitable for working with chlorinated solvents and degrade within a few minutes upon contact with chloroform.

In 2005, A UCSF researcher was hospitalized after spilling a phenol/chloroform solution on himself. His lack of appropriate PPE (he was wearing latex gloves) exacerbated his injury. Cal-OSHA later fined the principal investigator for not providing adequate PPE. After the incident occurred, on the advice of glove manufacturers, the Office of Environmental Health and Safety recommended UCSF researchers wear either Ansell Healthcare's ChemTek™ or Barrier® gloves, or North Safety's Silversheild ® / 4H ® gloves when working with chloroform. Unfortunately, none of these gloves provided sufficient dexterity for conducting routine laboratory tasks. Consequently, OEH&S asked Ansell Healthcare to design a chemically resistant glove suited for laboratory work. The new glove from Ansell Healthcare is a thinner version of their original 14 mil thick ChemTek™. At 8 mil thick, the new and improved ChemTek™ glove is roughly twice as thick as a disposable nitrile glove. Unlike many gloves resistant to chloroform, the Ansell Healthcare 8 mil ChemTek™ glove (shown in the picture below) is designed for comfort with a natural, curved ergonomic shape. According to UCSF researchers who have tested the glove, the 8 mil ChemTek™ provides adequate dexterity to conduct most laboratory tasks.



The ChemTek™ provides superior resistance to chlorinated solvents including chloroform, methylene chloride, and carbon tetrachloride. In addition, it provides excellent protection against commonly used aromatic hydrocarbons including xylene and toluene—neither latex nor nitrile gloves provide sufficient protection. The ChemTek™ is now available from Fisher Scientific in four different sizes. Ordering information is given below:

ORDERING INFORMATION FOR THE ANSELL 8 MIL CHEMTEK™ VITON BUTYL GLOVE		
Size	Fisher Catalog Number	Price per Pair
Small (Size 6.5)	19 161 926	\$49.00
Medium (Size 7)	19 161 927	\$49.00
Large (Size 8)	19 161 928	\$49.00
X-Large (Size 9)	19 161 929	\$49.00

The ChemTek™ gloves are significantly more expensive than disposable latex and nitrile gloves. However, the ChemTek's™ may be reused after incidental contact. Always inspect reused gloves prior to use and discard grossly contaminated gloves. OEH&S recommends wearing a thin latex or nitrile glove underneath the Chemtek™ glove to provide an extra level of protection. For tasks that require less dexterity, there are cheaper alternatives such as North Safety's Silversheild® / 4H® gloves, and Ansell Healthcare's Barrier® gloves. Both of these gloves are available from Fisher Scientific.