

SECTION I

Introduction to the Quick Selection Process

The intent of the *Quick Selection Guide to Chemical Protective Clothing* is to assist workers, supervisors, safety and health professionals, spill responders, industrial hygienists, and others in the initial selection of protective clothing materials against specific chemical challenges on the job. This is accomplished by use of the color-coded tables, which summarize the chemical breakthrough performance of 27 common barrier materials against approximately 1000 chemicals organized in 98 chemical classes based on functional groups and 10 categories of multicomponent/commercial chemicals.

How to Use This Guide

The three-step process in this guide completes the selection of barriers offering the best chemical resistance (see Figure 1).

First, the chemical name or synonym is found in the alphabetically sorted chemical index. The second step is to use the *chemical class* number, which appears to the left of the chemical name to search the *selection recommendations* tables. The *master chemical resistance* table is in numerical order by the chemical class. The final step is to find the chemical within the class listing and note the color-coded recommendations by barrier material. For example, to find the recommendations for protection from acetaldehyde, the user must first find the chemical class number in the Chemical Index section. We find the chemical acetaldehyde listed first in the chemical index in Section III. This listing shows a class number of 121. This is the chemical class for aldehydes (aliphatic and alicyclic) under the ASTM F-1186, *Standard Classification System for Chemicals According to Functional Groups*. This listing also

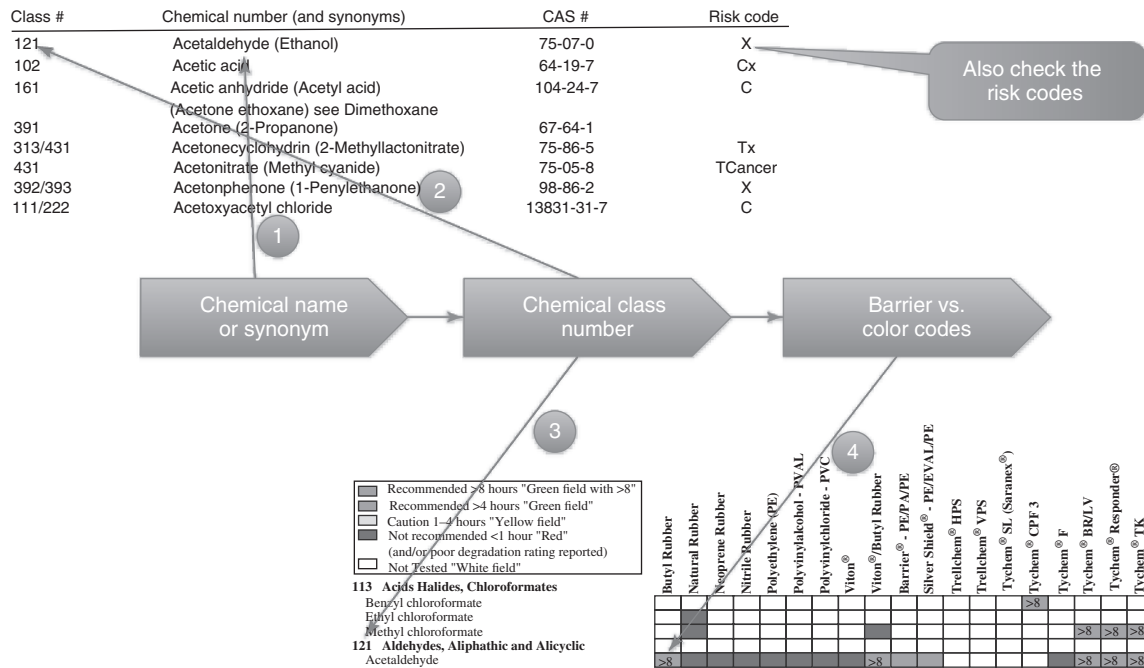


Figure 1. What barrier material offers the best chemical resistance?

shows the chemical abstract service (CAS) number assigned to acetaldehyde as 75-07-0. The main purpose for listing the unique CAS number is to be sure that this chemical is the one that we are interested in and not another chemical by a similar name. The next column lists the “Risk Code” for hazard ratings. For acetaldehyde, it is listed as an “X”. This means that the chemical has received a designation of “harmful” to skin. The next step is to go to the selection recommendations tables in Section IV and find chemical class number 121 in the master chemical resistance table. Acetaldehyde is listed first within this group. Reading the color codes from left to right, we find, for example, butyl rubber as the recommended barrier (color coded green) with “>8” representing greater than 8-hours resistance to acetaldehyde.

This three-step process is your fast track to the barrier offering the best chemical resistance against a chemical of interest. The

full process from assessment of hazards to disposal of the protective clothing is described in Section II. In Section II you will also find the concept of “Penetration, Degradation and Permeation” described.

You have to be aware that skin is a significant route of chemical entry into the body, which may promote cancer or genetic damage. Chemical exposure also relates to skin irritation, burns, and sensitization. Hazards from chemical exposure are described in Section III.

Hazards are not limited to different types of chemical exposure. In the selection of the most appropriate protective clothing, biological and thermal exposure may be assessed as well.

