QUICK SELECTION GUIDE TO CHEMICAL PROTECTIVE CLOTHING
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Sixth Edition

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Important instructions and limitations

This guidebook contains information on hazardous chemicals and recommendations for the selection of chemical protective clothing materials based on published and unpublished scientific test data. Most of the chemical resistance data are generated in accordance to the standardized test methods. NO attempt has been made to ensure either the accuracy or precision of these compiled data. The guide also does not take into consideration the intended use or physical demands (resistance to tear, puncture resistance, etc., or heat and flames) of the chemical protective clothing. These factors are critical in the selection process. A person competent in the selection of chemical protective clothing such as a Certified Industrial Hygienist (CIH) or a Certified Safety Professional (CSP) with training in this area MUST review ALL selections based on this guide.

The Guide only addresses chemical protective clothing against chemical hazards and exposures. Clothing without barrier materials such as laboratory coats is not included in this guide.
NFPA Standards (http://www.nfpa.org) 252
EN Standards (http://www.cen.eu) 253
ISO Standards (http://www.iso.org) 255

SECTION VII  Manufacturers of Chemical Protective Clothing 257
Preface

The sixth edition of the *Quick Selection Guide to Chemical Protective Clothing* has been significantly revised, and updated, to include many new chemicals along with selection recommendations as compared with the previous edition. Also included in the sixth edition are recommendations for many chemical mixtures and commercially available chemicals. These new additions have been organized in 10 of the categories, the 600 series.

The chemical index now includes approximately 1000 chemicals/chemical brands or mixtures of chemicals, additional synonyms, CAS numbers, and risk codes to alert the user, which may be of most concern for user protection.

The Trade Name Table containing 9 generic materials listings and 32 proprietary composition materials versus a test battery of 21 chemicals. The Trade Name Table includes several multilayers of generic materials not included in the Master Chemical Resistant Table.

The color-coded recommendations in the Master Chemical Resistant Table now contain 27 representative barrier materials. We believe these barrier listings include a wide range of gloves and suits on the market.

New features have been added to meet the users’ needs and expectations. The number of tested chemicals in the sixth edition is more than twice as much as in the first edition. We hope that this revised edition will receive the same enthusiastic response as the prior editions. The purpose is to arm supervisors, industrial hygiene and safety professionals, hazardous materials spill responders, and others with sufficient knowledge and insight in selecting and using the right CPC (chemical protective clothing). Selecting the most appropriate CPC can be an effective and efficient action preventing illnesses and injuries from hazardous chemical exposure where other control methods are not feasible.

Write to us if you have any questions or comments on the 6th edition of this Guide.

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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.