

POSTER
with ten tips included

SAFE USE OF GLOVES for the handling of solvents



**BEST PRACTICE
GUIDELINES**

5

in collaboration with



ABOUT ESIG

The European Solvents Industry Group (ESIG) represents Europe's major producers of oxygenated and hydrocarbon solvents, big multinationals as well as small and medium-sized enterprises. By building alliances, sharing information and sponsoring dialogue with industry partners and downstream users, ESIG actively promotes a sustainable, safe and responsible use of solvents.

ESIG is a joint activity of OSPA (the Oxygenated Solvents Producers Association) and HSPA (the Hydrocarbon Solvents Producers Association) – two sector groups of the European Chemical Industry Council (Cefic).

ESIG'S MISSION

The mission of ESIG is to promote compliance with legislation and the sustainable, safe and responsible use of solvents along the value-added chain by developing and sharing information and best practices.

TOOLS AND MATERIALS ON SOLVENTS

In line with its mission, ESIG is constantly developing new tools and materials. These guidelines on the use of gloves are the fifth in a series of best practice guidelines:

N° 1: Measuring solvent vapour concentrations in the work environment

N° 2: Guide to Managing Solvent Exposure

N° 3: Practical guidelines for measuring solvent vapour concentration using chemical indicator tubes

N° 4: Flammability - A safety guide for users

The Best Practice Guidelines (BPG) are downloadable from <http://www.esig.org/en/library/publications/best-practice-guides>.

Other materials developed by ESIG include brochures, posters, DVDs and the ESIG newsletter "Solutions". All materials can be easily accessed and downloaded from www.esig.org or ordered free of charge at the ESIG secretariat esig@cefic.be.

ESIG.ORG - YOUR OPEN DOOR TO THE WORLD OF SOLVENTS

<http://www.esig.org> offers information on solvents for both its members as well as solvent users in general. The website includes features such as uses and benefits of solvents in our daily life, regulatory information, REACH, Responsible Care tools and other useful information.

SAFE USE OF GLOVES

for the handling of solvents

TIPS FOR USING

Please find at the end of this brochure a removable poster with these 10 tips for the use of gloves when working with solvents.

The skin is the first line of defence for the body. Particularly on the hands, the skin is subjected daily to a wide range of hazards.

Apart from irritations and allergies, dermatitis or skin cancers can be developed over a longer period of time. And some chemicals also enter the blood stream through the skin, so leading to other health problems (e.g. liver or kidney failure, or cancers). The effect of chemicals on or through the skin is mostly cumulative and irreversible.

- 01** Check the gloves: make sure you are using the right gloves for the job in the right size and that they are not damaged.



- 02** Wash and dry your hands before you put on your gloves. Don't put gloves on wet hands.



- 03** Avoid contact with the chemicals as much as possible and make sure to avoid liquids from entering the cuff.



- 04** Don't exceed breakthrough time for the chemical you are working with.



- 05** Don't continue to use or re-use gloves showing signs of degradation.



- 06** Removing gloves: wash the gloves first and avoid contact with the skin. Remove gloves without touching the outer surface.



- 07** Dispose of the gloves in the appropriate receptacle.



- 08** Wash and dry your hands after you removed your gloves.



- 09** It may be useful to apply hand cream before and/or after use of the gloves.



- 10** Seek medical attention immediately if you have any irritation or allergic reaction.



INFO ON PICTOGRAMS AND STANDARDS

Pictograms	Explanation												
	<p>On the glove and/or packaging next to the CE mark, you will find manufacturer and size, in addition to various pictograms indicating the protection offered by the glove.</p> <p>“nnnn” is the reference number of the Notified Body that is responsible for the quality control testing of the gloves or for monitoring their production.</p> <p>The pictograms and the performance levels are explained in the user instructions supplied with the gloves.</p>												
	<p>EN 374 Protective gloves against chemicals and micro-organisms.</p> <p>This pictogram is used for liquid-proof gloves that have a breakthrough time of more than 30 min. for at least 3 chemicals from this list (the respective letters will be found with the pictogram):</p> <table border="0"> <tr> <td>A Methanol</td> <td>G Diethylamine</td> </tr> <tr> <td>B Acetone</td> <td>H Tetrahydrofurane</td> </tr> <tr> <td>C Acetonitrile</td> <td>I Ethyl acetate</td> </tr> <tr> <td>D Dichloromethane</td> <td>J n-Heptane</td> </tr> <tr> <td>E Carbon disulphide</td> <td>K Sodium hydroxide 40%</td> </tr> <tr> <td>F Toluene</td> <td>L Sulphuric acid 96%</td> </tr> </table>	A Methanol	G Diethylamine	B Acetone	H Tetrahydrofurane	C Acetonitrile	I Ethyl acetate	D Dichloromethane	J n-Heptane	E Carbon disulphide	K Sodium hydroxide 40%	F Toluene	L Sulphuric acid 96%
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	<p>EN 374 Protective gloves against chemicals and micro-organisms.</p> <p>This pictogram is used for liquid-proof gloves that do not meet the above requirement. See user instructions for detailed information.</p>												
	<p>EN 388 Protective gloves against mechanical risks.</p> <p>This pictogram is completed with markings that give performance levels for different tests. See user instructions for detailed information.</p>												
	<p>EN 407 Protective gloves against thermal risks (heat and/or fire).</p> <p>This pictogram is completed with markings that give performance levels for different tests. See user instructions for detailed information.</p>												
	<p>EN 511 Protective gloves against cold.</p> <p>This pictogram is completed with markings that give performance levels for different tests. See user instructions for detailed information.</p>												

SELECTION OF THE APPROPRIATE GLOVES

- Risk assessment is the basis for the selection. Know what products you are working with and in which conditions (concentration, temperature, mixtures, ...)! Check labels and MSDS for information on the chemicals and the recommended type of protective glove.
- Also take into account other types of risks (mechanical, heat, cold, ...) and aspects such as grip, comfort or dexterity.
- Studies show that at least 50% of the gloves used at work (an average for all industries) are not appropriate for the risks or working conditions encountered – and the wrong glove is sometimes more dangerous than no glove at all!
- A chemical resistant glove does not protect you against all possible chemicals, or all possible use conditions. Do check before using the gloves.
- The following table gives an overview on the pros and cons of gloves. For specific advice on gloves, please contact your glove supplier/manufacturer.
- Some general ideas about the resistance of commonly used materials for chemical protective gloves:

	+	-
PE/PE* laminate	<ul style="list-style-type: none"> - overall excellent chemical resistance 	<ul style="list-style-type: none"> - poor mechanical resistance - poor dexterity - limited grip
PVA	<ul style="list-style-type: none"> - high resistance to aliphatics, aromatics, chlorinated solvents, esters and most ketones - resists snags, punctures, abrasions and cuts 	<ul style="list-style-type: none"> - water soluble : will degrade if exposed to water-based solutions
Butyl	<ul style="list-style-type: none"> - provides resistance against aldehydes, ketones, esters and concentrated mineral acids - excellent dexterity and flexibility 	<ul style="list-style-type: none"> - relatively poor resistance to mineral solutions - fairly expensive
Viton®**	<ul style="list-style-type: none"> - provides resistance against aliphatics, halogenated and aromatic hydrocarbons and concentrated mineral acids 	<ul style="list-style-type: none"> - very expensive
Nitrile	<ul style="list-style-type: none"> - excellent puncture, abrasion and snag resistance - protects from bases, oils, many solvents, greases and animal fats - excellent wet and dry grip 	<ul style="list-style-type: none"> - avoid for ketones and aromatic or chlorinated solvents (xylene, toluene, methylenechloride, trichloroethylene, ...) - limited grip on wet or greasy objects
Neoprene or chloroprene	<ul style="list-style-type: none"> - resists many oils, acids, caustics and solvents (phenol, ethyl glycol, aniline,...) - excellent mobility and flexibility also at low temperatures 	<ul style="list-style-type: none"> - less resistant to snags, punctures, abrasion and cuts - not recommended for organic solvents
PVC or vinyl	<ul style="list-style-type: none"> - good resistance to many acids, caustics, bases and alcohols - excellent abrasion resistance 	<ul style="list-style-type: none"> - not recommended for ketones and many solvents - less resistant to punctures and tears - important influence of cold on mechanical resistance
Natural rubber	<ul style="list-style-type: none"> - resistance to many acids - highly flexible 	<ul style="list-style-type: none"> - may cause allergic reactions - not to be used with lubricants, oils or organic chemicals (e.g. mineral-based solvents)

* for very specific applications, laminated materials (PE) can be used, such as Barrier from Ansell, SilverShield from North, 4H from Safety4.

** Viton is a registered trademark of DuPont.

- Some examples of solvents with the most suitable chemical resistance glove material (excluding single use) for protection:

Chemical Identification	PE	PVA	Butyl	Viton	Nitrile	Neoprene	PVC	Natural Rubber Latex
Alcohols	R	N	R	R	M	M	N	N
Ethanol								
n-Butanol								
Isopropanol								
Ethers	R	R	N	M	M	N	N	N
Diethyl ether								
Esters	R	R	M	R	M	M	N	N
Ethyl acetate								
Isopropyl acetate								
Butyl acetate								
Ketones	R	M	R	N	N	N	N	N
Acetone								
Methyl ethyl ketone								
Methyl isobutyl ketone								
Glycol Ethers	R	M	R	M	M	M	N	N
1-Methoxy-2-Propanol								
Butyl glycol								
Glycol Ether Esters	R	M	R	M	N	M	N	N
Butyl glycol acetate								
1-Methoxy-1-Propylacetate								
Aromatics	R	R	N	R	N	N	N	N
Xylene								
Toluene								
Aliphatics	R	R	N	R	R	N	N	N
Light fractions (eg. Hexane)								
Dearomatised hydrocarbons								
White spirit								
Paraffinic	R	R	N	R	R	N	N	N
n-Paraffins								
Isoparaffins								
< 10	10	30	60	120	240	> 480	Breakthrough time in minutes	
Not recommended	Splash protection		Medium		Good protection			

R = recommended / M = mixed results / N = not recommended

Remarks:

- The resistance of the materials will be dependent on the thickness of the gloves, temperature and many other environmental factors.
- The recommendations given are based on laboratory testing with pure chemicals. Check with the glove manufacturer for specific applications.
- Glove manufacturers have databases with test results of their gloves against many chemicals. This information is available from your supplier – make sure that you check your specific product and application.

These Best Practice Guidelines came with a poster on the safe use of gloves. If the poster is missing, a hard copy, together with the best practice guidelines, can be ordered free of charge by sending an e-mail to esig@cefic.be. The Best Practice Guidelines can also be downloaded from the ESIG website at www.esig.org. The guidelines and the poster are also available in Spanish, French, German and Italian.

POSTER:

THE SAFE USE OF GLOVES for the handling of solvents

This poster presents 10 important tips for using gloves when working with solvents. It can be displayed in the workplace to raise awareness among employees and so enhance their safety.



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This information is to the best of the European Solvents Industry Group (ESIG)'s knowledge and belief accurate and reliable as at the date indicated. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. It is the user's responsibility to satisfy themselves as to the suitability and completeness of such information for their own particular use(s).



For further information please visit our website at
www.esig.org or contact:
ESIG, Avenue E. Van Nieuwenhuysse 4,
B-1160 Brussels.
Tel: 32 (0) 2 676 72 69 • Fax: 32 (0) 2 676 72 16
esig@cefic.be

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