

Patch testing with rubber series in Europe: a critical review and recommendation

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Methods:

(i) a survey targeting all members of the COST action 'StanDerm' consortium

(ii) analysis of rubber contact data in the database of the European Surveillance System on Contact Allergies (ESSCA) published as:

Patch test results with rubber series in the European Surveillance System on Contact Allergies (ESSCA), 2013/14.

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(iii) literature review.

Results. Information from 13 countries was available, from one or several departments of dermatology, and occasionally occupational health. Apart from some substances tested only in single departments, a broad overlap regarding important allergens was evident, but considerable variation existed between departments.

Table 2. Suggested European rubber series; all allergens are available as commercial patch test preparations

	% (all in pet.)
Tetramethylthiuram disulfide	1.0
Tetramethylthiuram monosulfide	1.0
Tetraethylthiuram disulfide (Disulfiram)	1.0
Dipentamethylenethiuram disulfide	1.0
Zinc dibutyldithiocarbamate	1.0
Zinc diethyldithiocarbamate	1.0
1,3-Diphenylguanidine	1.0
2-Mercaptobenzothiazole	2.0 (as part of the baseline series)
<i>N</i> -cyclohexyl-2-benzothiazyl sulfenamide	1.0
Dibenzothiazyl disulfide	1.0
Morpholinylmercaptobenzothiazole	1.0
Dibutylthiourea	1.0
Diphenylthiourea	1.0
Diethylthiourea	1.0
<i>N</i> -isopropyl- <i>N</i> -phenyl-4-phenylenediamine	0.1 (as part of the baseline series)
<i>N</i> -cyclohexyl- <i>N</i> -phenyl-4-phenylenediamine	1.0
<i>N,N'</i> -diphenyl- <i>p</i> -phenylenediamine	1.0
<i>N,N</i> -di-2-naphthyl-4-phenylenediamine	1.0
Cyclohexyl thiophthalimide	0.5
Own gloves	'as is' (both sides)

Table 3. Allergens suggested as temporary additions to a European rubber series for monitoring purposes

	% (all in pet.)
<i>N</i> -phenyl-2-naphthylamine	1.0
4,4'-Diaminodiphenylmethane	0.5
Methenamine	1.0 or 2.0 (optimum concentration yet to be clarified)
Cetylpyridium chloride	0.1 (optimum concentration yet to be clarified)
Ethylenediamine dihydrochloride	1.0
4- <i>tert</i> -Butylcatechol	0.25

Country-specific legislation may apply; for example, the Swedish Work Environment Agency's provision on Chemical Hazards in the Working Environment (AFS 2014:43) does not permit *N*-phenyl-2-naphthylamine to be used in concentrations of 1% and above without authorization.