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3M Personal Safety  
Monitor Badges & Analysis Service



# Personal Protection starts with Detection



The Power to Protect Your World<sup>SM</sup>





# 3M Monitor Badges

The 3M range of monitor badges, based on the principle of passive diffusion, offer a simple but highly effective method of testing personal exposure levels to gas and vapours.

**3500** - monitor for organic vapours

**3520** - two-stage monitor for specific applications

**3551** - monitor for ethylene oxide

## Composition

- The monitor badges are very light: the weight varies from 12g to 20g, depending on the model.
- The monitor badge consists of a plastic housing containing an adsorbent, secured by a plastic ring.
- The monitor badge is equipped with a permeable membrane on the front and a fastener on the top.

## Usage

- To carry out an individual sampling operation while working, the monitor should be attached to the user's clothing, in the vicinity of the nose and mouth.
- The contaminant defuses through the permeable membrane and is adsorbed by an active adsorbent.
- The concentration level in the sampling area can be calculated on the basis of the quantity adsorbed on the monitor badge, in relation to the exposure time.

The monitor badges have a storage life of 18 months, providing they are kept in a dry, cool place, with no organic vapours or ethylene oxide in the atmosphere.

## Technical Specifications

### The 3M 3500 monitor for organic vapours

The 3M 3500 is designed for monitoring a broad range of organic vapours. See the Substance list overleaf for details.

- Working temperature: -30°C up to +55°C
- Ambient humidity: relative humidity from 0 to 95%
- Air Speed: 7.62m/min minimum (for atmosphere sampling)
- No specific interferences

### The 3M 3520 monitor for organic vapours (with "back-up" zone)

The 3520 has the same specifications as the 3500 but the effective capacity is four times greater than that of the 3500 monitor.

This monitor is particularly suitable for:

- When compound concentration is known to be high
- Vinyl chloride, acrylonitrile and some alcohols
- Conditions of high relative humidity

### The 3M 3551 monitor for ethylene oxide

- Working temperature: -30°C to +55°C
- Ambient humidity: relative humidity from 0 to 95%
- Maximum range of operation: from 0.24 to 600 ppm-hours
- Air speed: 4.58 m/min minimum (for atmosphere sampling)
- No specific interference

## Instructions for use

- The monitor badge comes in a sealed box. This box should not be opened until you are ready to use the monitor badge.
- The time when exposure commences should be recorded on the back of the monitor badge.
- The monitor badge is fastened to the user's collar, with the white membrane facing towards the front.
- On completion of the sampling operation, the end-of-exposure time is recorded on the back of the monitor badge.
- The locking ring and the membrane are removed using a coin or screwdriver and the transparent lid, with the two caps closed, is placed over the monitor badge.
- Put the unit back into the container and note down the relevant data on the label: temperature, relative humidity, wearer's name, monitor No., etc.
- For further information, see the "3M Monitor Badge Sampling Guide".

## 3M Analysis Service

- Buy 3M monitors with a prepaid analysis service from 3M Direct; [www.3M.co.uk/direct](http://www.3M.co.uk/direct)
- Analysis conducted at 3M's in-house UKAS Accredited laboratory
- Analysis is conducted by gas chromatography to a method based on MDHS 88<sup>1</sup>
- 3M Analysis Service includes comprehensive user instructions, results certificate and an explanation of results report
- Visit [www.3M.co.uk/safetysservices](http://www.3M.co.uk/safetysservices) for further information

## Field Blanks

A blank sample is a monitor badge of the same type as those that are being used to sample with, but which has not been exposed to the contaminated environment. Their purpose is to detect contamination that may have either pre-existed in the sample media, or was inadvertently introduced during shipping or storage. Blanks are analysed at the same time, and with the same methodology, as the regular samples.

Blanks must be included with every set of samples taken; their submission is a quality control requirement. Without blanks, sample results may be unreliable. There should be at least one blank per monitor badge type for each day of sampling. When determining how many monitor badges you need for your sampling regime ensure the required number of blanks are included within your calculations. Please refer to the "3M Monitor Badge Sampling Guide" for more information.

# Substance List

**Key:** Substances colour coded the same can be sampled on the same badge at the same time

\* 3M 3520 Recommended ^ Please contact the 3M lab at [detection@mmm.com](mailto:detection@mmm.com) ≠ 3M 3551 must be used

If the substance(s) you wish to analyse are not present within the list below, please contact us at [detection@mmm.com](mailto:detection@mmm.com) to investigate alternative methods.

CAS #	Name
67-64-1	Acetone*
75-05-8	Acetonitrile*
107-13-1	Acrylonitrile
107-18-6	Allyl Alcohol
107-05-1	Allyl Chloride
628-63-7	n-Amyl Acetate
71-41-0	n-Amyl Alcohol (1-Pentanol)
6032-29-7	s-Amyl Alcohol
71-73-2	Benzene
100-44-7	Benzyl Chloride
75-25-2	Bromoform
106-94-5	1-Bromopropane
106-99-0	1,3-Butadiene*
123-86-4	n-Butyl Acetate
105-46-4	s-Butyl Acetate
540-88-5	t-Butyl Acetate
141-32-2	Butyl Acrylate
71-36-3	n-Butyl Alcohol
78-92-2	s-Butyl Alcohol
75-65-0	t-Butyl Alcohol
111-76-2	Butyl Cellosolve
112-07-2	Butyl Cellosolve Acetate
2426-08-6	Butyl Glycidyl Ether
98-51-1	p-tert-Butyltoluene
76-22-2	Camphor
75-15-0	Carbon Disulfide*
558-13-4	Carbon Tetrabromide
56-23-5	Carbon Tetrachloride
110-80-5	Cellosolve
111-15-9	Cellosolve Acetate
108-90-7	Chlorobenzene
74-97-5	Chlorobromomethane
67-66-3	Chloroform
126-99-8	Chloroprene
2039-87-4	o-Chlorostyrene
2837-89-0	2-Chloro-1,1,1,2-tetrafluoroethane (HCFC 124)
95-49-8	o-Chlorotoluene
98-82-8	Cumene
110-82-7	Cyclohexane
108-93-0	Cyclohexanol
108-94-1	Cyclohexanone
110-83-8	Cyclohexene
542-92-7	Cyclopentadiene
287-92-3	Cyclopentane*
124-18-5	n-Decane
123-42-2	Diacetone Alcohol
95-50-1	o-Dichlorobenzene
106-46-7	p-Dichlorobenzene
75-34-3	1,1-Dichloroethane
540-59-0	1,2-Dichloroethylene

CAS #	Name
111-44-4	Dichloroethyl Ether
594-72-9	1,1-Dichloro-1-nitroethane
306-83-2	1,1-Dichloro-2,2,2-trifluoroethane (HCFC-123)
77-73-6	Dicyclopentadiene
96-22-0	Diethyl Ketone
108-83-8	Diisobutyl Ketone
127-19-5	Dimethylacetamide
68-12-2	Dimethyl Formamide
123-91-1	p-Dioxane
34590-94-8	Dipropylene Glycol Methyl Ether
88917-22-0	Dipropylene Glycol Methyl Ether Acetate
123-19-3	Dipropyl Ketone (4-Heptanone)
1321-74-0	Divinyl Benzene
112-40-3	n-Dodecane
13838-16-9	Enflurane
106-89-8	Epichlorohydrin
163702-06-5/ 163702-05-4	1-Ethoxynonafluorobutane (HFE-7200)
141-78-6	Ethyl Acetate
140-88-5	Ethyl Acrylate
64-17-5	Ethyl Alcohol*
100-41-4	Ethyl Benzene
74-96-4	Ethyl Bromide
106-35-4	Ethyl Butyl Ketone
107-07-3	Ethylene Chlorohydrin
106-93-4	Ethylene Dibromide
107-06-2	Ethylene Dichloride
75-21-8	Ethylene Oxide≠
60-29-7	Ethyl Ether*
109-94-4	Ethyl Formate
98-01-1	Furfural
98-00-0	Furfuryl Alcohol
-	Gasoline^
556-52-5	Glycidol
151-67-7	Halothane
142-82-5	n-Heptane
87-68-3	Hexachlorobutadiene
77-47-4	Hexachlorocyclopentadiene
67-72-1	Hexachloroethane
110-54-3	n-Hexane
-	Hexane Isomers^
123-92-2	Isoamyl Acetate
123-51-3	Isoamyl Alcohol
110-19-0	Isobutyl Acetate
78-83-1	Isobutyl Alcohol
26675-46-7	Isoflurane (Forane)
26952-21-6	Isooctyl Alcohol
64742-48-9	Isopar G^
78-59-1	Isophorone
109-59-1	Isopropoxyethanol
108-21-4	Isopropyl Acetate

CAS #	Name
67-63-0	Isopropyl Alcohol*
108-20-3	Isopropyl Ether*
4016-14-2	Isopropyl Glycidyl Ether
108-67-8	Mesitylene
141-79-7	Mesityl Oxide
163702-08-7/ 163702-07-6	1-Methoxynonafluorobutane (HFE-7100)
79-20-9	Methyl Acetate*
96-33-3	Methyl Acrylate
109-87-5	Methylal*
110-43-0	Methyl Amyl Ketone
74-83-9	Methyl Bromide*
1634-04-4	Methyl t-Butyl Ether (MTBE)
591-78-6	Methyl Butyl Ketone
109-86-4	Methyl Cellosolve
110-49-6	Methyl Cellosolve Acetate
108-87-2	Methyl Cyclohexane
25639-42-3	Methyl Cyclohexanol
75-09-2	Methylene Chloride*
78-93-3	Methyl Ethyl Ketone
107-31-3	Methyl Formate*
541-85-5	5-Methyl-3-heptanone
74-88-4	Methyl Iodide*
110-12-3	Methyl Isoamyl Ketone
108-11-2	Methyl Isobutyl Carbinol
108-10-1	Methyl Isobutyl Ketone
563-80-4	Methyl Isopropyl Ketone
80-62-6	Methyl Methacrylate
107-87-9	Methyl Propyl Ketone
872-50-4	1-Methyl-2-pyrrolidinone^
98-83-9	α-Methyl Styrene
8030-30-6	Naphtha (VM&P)^
111-84-2	n-Nonane

CAS #	Name
111-65-9	n-Octane
109-66-0	n-Pentane*
123-54-6	2,4-Pentanedione
127-18-4	Perchloroethylene
101-84-8	Phenyl Ether
122-60-1	Phenyl Glycidyl Ether
109-60-4	n-Propyl Acetate
71-23-8	n-Propyl Alcohol
78-87-5	Propylene Dichloride
107-98-2	Propylene Glycol Monomethyl Ether (PGME)
108-65-6	Propylene Glycol Monomethyl Ether Acetate (PGMEA)
75-56-9	Propylene Oxide*
627-13-4	n-Propyl Nitrate
8052-41-3	Stoddard Solvent^
100-42-5	Styrene
76-11-9	1,1,1,2-Tetrachloro-2,2-difluoroethane*
76-12-0	1,1,2,2-Tetrachloro-1,2-difluoroethane*
79-34-5	1,1,2,2-Tetrachloroethane
811-97-2	1,1,1,2-Tetrafluoroethane (HFC 134a)
109-99-9	Tetrahydrofuran
108-88-3	Toluene
71-55-6	1,1,1-Trichloroethane (Methyl Chloroform)
79-00-5	1,1,2-Trichloroethane
79-01-6	Trichloroethylene
96-18-4	1,2,3-Trichloropropane
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane*
108-05-4	Vinyl Acetate
593-60-2	Vinyl Bromide
75-01-4	Vinyl Chloride*
100-40-3	4-Vinyl-1-cyclohexene
75-35-4	Vinylidene Chloride
25013-15-4	Vinyl Toluene
1330-20-7	Xylene



For more information on all our products, call 3M Personal Safety Division  
on **0870 60 800 60 (UK)** and **1800 320 500 (Ireland)**  
or visit [www.3M.co.uk/safety](http://www.3M.co.uk/safety)



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