

3M

Organic Gases & Vapours A1 Service Life Indicator Filter 6051i-ANZ Organic Gases & Vapours A2 Service Life Indicator Filter 6055i-ANZ

This product when used with a 3M™ Full or Half Facepiece 6000 Series, 7000 Series, or FF-400 Series helps protect against certain contaminants. Users must be trained and have read all *User Instructions*. Misuse may cause injury, severe or life threatening illness. No natural rubber latex components.

34-8716-1234-6

Please read these instructions in conjunction with the appropriate 3M™ Full or Half Facepiece *User Instructions* and also, where applicable, with the 3M™ Particulate Filters 5000 Series *User Instructions* where you will find information on:

- Accessories
- Spare parts
- Approved combinations of 3M™ Full or Half Facepieces and 3M™ Filters

For permitted filter combinations with the 6051i-ANZ/6055i-ANZ see Fig. 1.

SYSTEM DESCRIPTION

This product when used with a 3M™ Full or Half Facepiece 6000 Series, 7000 Series or FF-400 Series helps protect against certain gas and vapour hazards (See *Technical Specification*). In addition, the 3M™ Particulate Filters 5000 Series may be used in conjunction with the 3M™ Gas and Vapour Filters 6000 Series. Organic vapour filter service life depends on many factors including the contaminant(s), their concentration in air, the temperature and humidity and breathing rate of the user. The 3M™ Organic Gases & Vapour Filters 6051i-ANZ/6055i-ANZ contains a visual End of Service Life Indicator (ESLI) for certain organic vapours. If the ESLI has been properly selected, you may continue to rely on the ESLI. As the filters are used, an indicator bar may develop, indicating the remaining filter service life. The ESLI is located inside the filter next to the activated carbon. As organic vapours move through the filter, they are also adsorbed into the ESLI. The filter wall is clear so you can see if the indicator bar is developing as the filter is used (Fig. 3).

APPROVALS

These filters have been produced to comply with the requirements of the Australian/New Zealand Standard AS/NZS 1716:2012 under an agreed production certification scheme operated during manufacture in accordance with the SAI Global Standards Mark programme.



WARNINGS AND LIMITATIONS Particular attention should be given to warning statements where indicated.

WARNING

Proper selection, training, use and appropriate maintenance are essential in order for the product to help protect the wearer. Failure to follow all instructions on the use of these respiratory protection products and/or failure to properly wear the complete product during all periods of exposure may adversely affect the wearer's health, lead to severe or life threatening illness or permanent disability.

- Always be sure that the complete product is:
- Suitable for the application;
 - Fitted correctly;
 - Worn during all periods of exposure;
 - Replaced when necessary.

For suitability and proper use follow local regulations, refer to all information supplied or contact a safety professional/3M representative or 3M TechAssist Helpline on 1800 024 464 (Australia) and 0800 364 357 (New Zealand).

Use this respirator system strictly in accordance with all instructions:

- Contained in this insert,
- Accompanying other components of the system.
- Do not submerge the filters in liquid.
- Do not use in atmospheres containing less than 19.5% oxygen. (3M definition. Individual countries may apply their own limits on oxygen deficiency. Seek advice if in doubt).
- Do not use these products in oxygen or oxygen-enriched atmospheres.
- Do not use for respiratory protection against atmospheric contaminants/concentrations which are unknown or immediately dangerous to life or health (IDLH) or against contaminants/concentrations which generate high heats of reaction with chemical filters.
- Leave the contaminated area immediately if:
 - a) Any part of the system becomes damaged.
 - b) Airflow to the facepiece decreases or stops.
 - c) Breathing becomes difficult or increased breathing resistance occurs.
 - d) Dizziness or other distress occurs.
 - e) You smell or taste contaminants or irritation occurs.
 - f) If any part of the indicator bar reaches the end-of-service line (denoted by rubbish bin icon on filter label).
- Never alter, modify or repair this device.
- The end of service life indicator (ESLI) is not appropriate for all organic vapours.
- These products do not contain components made from natural rubber latex.
- The employer must determine whether or not the ESLI is appropriate for the workplace.
- Do not use for compounds with a boiling point -65°C. An AX filter, eg 3M™ Combination Filter, 6098 should be used in such instances.
- If you have red-green colour blindness or colour deficiency, rely on a co-worker who can see the progression of the ESLI indicator bar.
- Regardless of ESLI status, user must exit exposure area and change both filters if contaminant odour, taste or irritation is detected.

If organic vapour concentrations are too low, they will not be detected by the ESLI. For Minimum Indication Levels (MIL) per compound please see addendum. A list of common organic vapours and their minimum indication levels are shown. If you can't find a specific organic vapour, please contact 3M TechAssist Helpline on 1800 024 464 (Australia) and 0800 364 357 (New Zealand). It is recommended that you search this table by CAS number.

NOTE: Save all *User Instructions* for continuing reference. Contact 3M for additional information.

It is critical to be able to see the ESLI and distinguish the indicator bar. If you can't see the indicator bar because of poor lighting, narrow light spectrum, glare, tinted eyewear, red-green colour blindness, colour deficiency, etc., then either go to a different viewing area or rely on a colleague who can see the progression of the indicator bar. If this cannot be achieved, do not rely on the ESLI. Instead, replace cartridges in accordance with an established change schedule.

PREPARATION FOR USE

CAUTION

Care should be exercised when using previously unpacked filters as they may have reduced service life or may have been used. Check that the filter is appropriate for the purpose – check colour code, letter code and class. Before initial use, always check that the product is within the stated shelf life (use by date).

ASSEMBLY INSTRUCTIONS

1. Filter/facepiece assembly instructions
 - a) Align 6000 series filter notch with facepiece mark and push together (Fig. 2).
 - b) Turn filter 1/4 turn clockwise to stop (Fig. 2).
2. Discard and replace both filters at the same time. Ensure that both filters are of the same type and class.
 - a) To remove filter, turn 1/4 turn anticlockwise.
3. Replace the filter if taste, smell or irritation from gases or vapours is noted or if any part of the indicator bar reaches the end-of-service line (denoted by rubbish bin icon on filter label). The service life of chemical filters will depend upon the activity of the wearer (breathing rate), the specific type, volatility and concentration of the contaminants; and environmental conditions such as humidity and temperature.

How to check that the 6051i-ANZ/6055i-ANZ is appropriate for the purpose

To use the ESLI properly, it is critical that the user or safety manager:

- 1) Determines whether or not the ESLI is appropriate for the organic vapours in their environment;
- 2) Is able to read and interpret the ESLI;
- 3) Checks the ESLI regularly; and;
- 4) Replaces the filter as necessary.

If these steps are not followed, do not rely solely on the ESLI to determine a filter change schedule. Instead, the ESLI may be used to augment your current filter change schedule, i.e. change filter according to established filter change schedule, or according to ESLI; whichever occurs first. Please contact 3M for advice on how to establish a filter change schedule. If the ESLI is not being relied upon, the 6051i-ANZ/6055i-ANZ filters can only be used as respiratory protection against atmospheric contaminants/concentrations which have good warning properties.

DETECTABLE COMPOUNDS

The ESLI is only appropriate for certain organic vapours and exposure concentrations. The vapour concentration moving through the filter that causes a noticeable change in the indicator is called the minimum indication level (MIL). The MIL is different for each organic vapour.

Prior to use, airborne contaminants in the work environment must be identified and quantified. The applicability of the ESLI must be determined for all potential use scenarios, including both low and high exposure levels. The ESLI is only appropriate if both of the following are true:

- 1) MIL \leq workplace exposure standard (WES) for all intended applications (indicator bar will develop before vapour concentration moving through filter reaches exposure limit), and
- 2) Worker exposure levels \geq MIL (exposure concentration is high enough to cause noticeable change in indicator).

Example:
MIL = 1 ppm, WES = 25 ppm, worker exposure = 5 ppm.
MIL (1 ppm) is \leq WES (25 ppm), AND
Worker exposure (5 ppm) is \geq MIL (1 ppm),
ESLI is recommended.

WESs are available on the SafeWork Australia website at <http://hsis.safeworkaustralia.gov.au/> and for New Zealand at <http://www.dol.govt.nz/workplace/knowledgebase/item/1444>.

They can also be found on the Material safety data sheet (MSDS) of contaminants. Certain WESs are also listed in the 3M Respirator Selection Guide which may be found at www.3m.com/au/ppesafety (Australia) and www.3m.com/nz/ppesafety (New Zealand).

Do not rely on the ESLI if you do not know the MILs for the specific organic vapours in your workplace.

MIXTURES

In order for the ESLI to be appropriate for a mixture of organic vapours, the ESLI must be appropriate for the individual organic vapour with shortest service life. To calculate service life and to determine if the ESLI is appropriate for organic vapour mixtures in your workplace, please see the 3M™ Select and Service Life Software at www.3m.com/au/ppesafety (Australia) and www.3m.com/nz/ppesafety (New Zealand), or contact 3M TechAssist Helpline on 1800 024 464 (Australia) and 0800 364 357 (New Zealand).

READING THE ESLI

The ESLI is covered by a repositionable tab to protect it from overspray and debris. Prior to using the filter, pull back the tab to view the ESLI. Ensure that ESLI is intact and uniform in appearance. If the ESLI becomes obscured, gently wipe cartridge area above ESLI with dry cloth or mild soap and water solution to remove overspray or other residue. Do not clean the ESLI window with solvents as this may damage cartridge body and make it difficult to see the ESLI. The tab may be repositioned over the ESLI to protect it until the next viewing. Do not rely on ESLI if it becomes obscured or hard to read.

The indicator bar may be green on a red background or red on a green background depending on the viewing angle. Rotate the filter slightly while looking at the indicator. The intensity of the indicator bar may vary depending on the viewing angle, light level, the organic vapour and exposure levels. If any part of the indicator bar reaches the end-of-service line (denoted by the rubbish bin icon on filter label), you must leave the contaminated area immediately and replace both filters.

At very high vapour concentrations, portions of the indicator bar may shift back towards the original colour. Rotate the filter to a different viewing angle to clearly see progression of the indicator bar. The filter must be replaced when any part of indicator bar reaches the end-of-service line.

WARNING

It is critical to be able to see the ESLI and distinguish the indicator bar. If this cannot be achieved, do not rely on the ESLI. Instead, replace filters in accordance with an established change schedule.

Concern	Solution
Cannot see portion of filter where ESLI is located	Use a mirror to observe ESLI Rely on a co-worker who can see ESLI Go to a clean area, remove the respirator and view the ESLI
Cannot see indicator bar	Reevaluate selection process (exposure may be less than MIL) If in a hot environment, move to a cooler environment to see if appearance changes (rare for most workplaces) Go to an area with a broader light spectrum (e.g. standard fluorescent or incandescent lighting or outdoors)
Poor lighting	Go to an area with adequate lighting to view ESLI. Do not use a light pointed directly at ESLI as this may affect the ESLI appearance.
Red-green colour deficiency or colour blindness	Rely on a co-worker who can see ESLI
Tinted eyewear and difficult to see progression of indicator bar	Go to an area where it is safe to remove eyewear to view ESLI Rely on a co-worker who can see ESLI
Glare	Go to an area where there is less glare to view ESLI

HOW OFTEN TO CHECK

The indicator must be checked often enough to ensure the filter is not used past its effective service life. If an approximate service life is not known, the user must first use the 3M™ Service Life Software to estimate service life. If estimated service life is impractically short, then supplied air respirators are recommended.

FILTER REPLACEMENT

Filters must be replaced:

- When any part of indicator bar reaches the end-of-service line, or
- When sensors become covered or difficult to see, or
- If filter is physically damaged, or
- When odour, taste or irritation from contaminants is detected inside the respirator, or
- If filters have been used for a month and indicator bar is still not visible (exposure concentrations are probably less than MIL), or
- According to an established change schedule if ESLI is not appropriate for the specific workplace contaminants and exposure levels.

OTHER CONSIDERATIONS

Volatile organic vapours collected on a filter during use may migrate (spread out) through the filter during storage. For example, a filter is used for a work shift and the sensor bar progresses part way, the filter is then stored overnight, and the next day the indicator bar has retreated or disappeared. In this case, the ESLI is accurately showing that the vapour concentration has dropped below the MIL within some portions of the filter.

Organic vapours in a mixture will adsorb into the ESLI together to increase the likelihood of a visible change of the indicator bar.

CAUTION

If organic vapour exposure concentrations are all well below their respective MILs, the progression of organic vapours through the filter may not be detected by the ESLI. A filter change schedule must be established by an alternate method such as 3M™ Service Life Software. Users must ensure that the exposure concentrations will remain above the MIL.

CAUTION

If no part of the indicator bar has appeared after an extensive period, e.g., within a month, the ESLI should not be used as a primary change-out schedule.

The performance of the ESLI is generally not affected by relative humidity or temperature ranges found in most workplaces. Instead, the ESLI shows how filter service life is affected by environmental conditions and the user's breathing rate.

CLEANING INSTRUCTIONS

Clean with 3M™ Wipes 504.

STORAGE AND TRANSPORTATION

These products should be stored in the packaging provided in dry, clean conditions away from direct sunlight, sources of high temperature, petrol and solvent vapours. Store in accordance with manufacturer's instructions, see packaging. Average conditions may exceed 30°C/80% RH for limited periods. They can reach an average of 40°C/85% RH provided that this is for no more than 1 month. Before initial use, always check that the product is within the stated 3 year shelf life (use by date).

End of Shelf Life

Temperature Range

Maximum Relative Humidity

Dispose in accordance with local regulations.

CAUTION

Failure to properly dispose of used filters contaminated by hazardous materials can result in personal exposures as well as environmental harm. The original packaging is suitable for transporting the product.

TECHNICAL SPECIFICATION

AS/NZS 1716:2012 3M™ Gas & Vapour Filters generally protect against either single or multiple contaminated type(s) and against particulates when combined with a particulate filter.

Gas/Vapour Filter Classes

Gas Filter Class	Maximum use concentration with 3M™ Half Facepiece	Maximum use concentration with 3M™ Full Facepiece
1	10 x WES or 1000 ppm (0.1% vol) whichever is lower	50 x WES or 1000ppm (0.1% vol) whichever is lower
2	10 x WES or 1000 ppm (0.1% vol) whichever is lower	100 x WES or 5000ppm (0.5% vol) whichever is lower

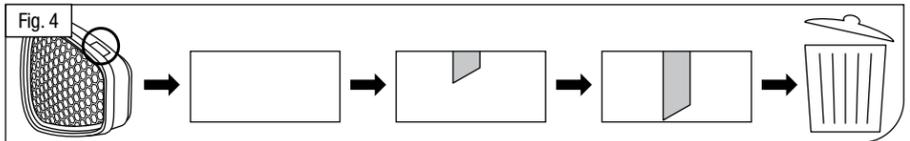
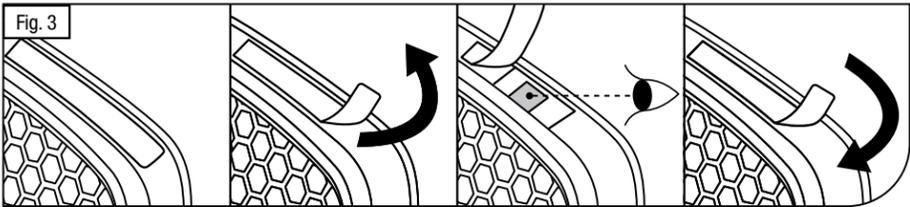
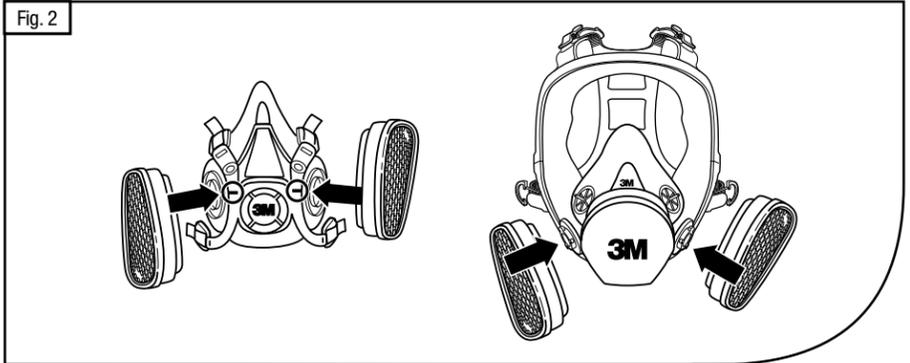
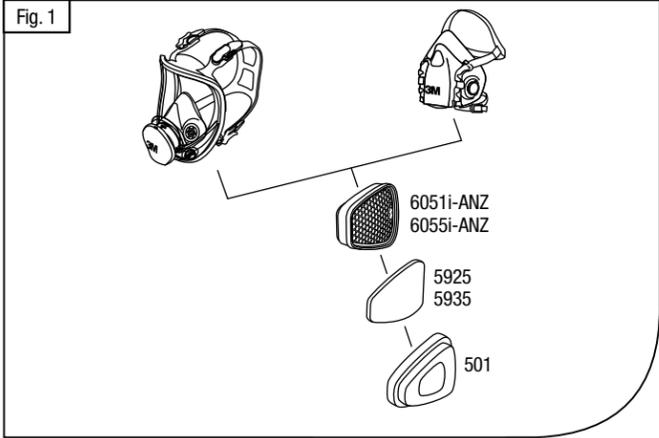
WES = Workplace Exposure Standard

Filter Type	Classification	Type of Contaminant
3M 6051i-ANZ	A1	Organic vapours with boiling point $>-65^{\circ}\text{C}$. ESLI for certain organic vapour at certain exposure levels only.
3M 6055i-ANZ	A2	Organic vapours with boiling point $>-65^{\circ}\text{C}$. ESLI for certain organic vapour at certain exposure levels only.

Compound	CAS #	Minimum Indication Level MIL (parts per million - ppm)
Ethylbenzene	100-41-4	2
Styrene	100-42-5	1
Propyl bromide	106-94-5	147
1,2-Dichloroethane	107-06-2	145
Pentan-2-one	107-87-9	23
1-Methoxypropan-2-ol	107-98-2	24
4-Methylpentan-2-one	108-10-1	5
Isopropyl acetate	108-21-4	30
1-Methoxypropyl acetate	108-65-6	3
2,6-Dimethylheptan-4-one	108-83-8	10
Toluene	108-88-3	8
4-Picoline	108-89-4	2
Chlorobenzene	108-90-7	4
Cyclohexanone	108-94-1	11
3-Picoline	108-99-6	2
n-Propyl acetate	109-60-4	25
2-Methoxyethanol	109-86-4	59
Tetrahydrofuran	109-99-9	280
Isobutyl acetate	110-19-0	5
Heptan-2-one	110-43-0	3

Compound	CAS #	Minimum Indication Level MIL (parts per million - ppm)
n-Hexane	110-54-3	93
2-Ethoxyethanol	110-80-5	20
2-Ethoxyethyl acetate	111-15-9	2
n-Octane	111-65-9	2
2-Butoxyethanol	111-76-2	1
Nonane	111-84-2	1
3-Methyl-1-butanol	123-51-3	5
n-Butyl acetate	123-86-4	2
1,4-Dioxane	123-91-1	60
Isopentyl acetate	123-92-2	2
Tetrachloroethylene	127-18-4	20
Xylenes	1330-20-7	2
Limonene (d-)	138-86-3	2
Ethyl acetate	141-78-6	161
Heptane	142-82-5	12
Trimethylbenzene (mixture)	25551-13-7	2
Methyl Isopropyl Ketone	563-80-4	46
Propionic Acid n-butyl ester	590-01-2	3
Hexan-2-one	591-78-6	3
1-Hexene	592-41-6	92

Compound	CAS #	Minimum Indication Level MIL (parts per million - ppm)
Pentyl Acetate	628-63-7	3
Propan-2-ol	67-63-0	650
Propan-1-ol	71-23-8	300
Butan-1-ol	71-36-3	34
Benzene	71-43-2	65
2-methylpropan-1-ol	78-83-1	64
Butan-2-ol	78-92-2	80
Butan-2-one/Methyl ethyl ketone	78-93-3	175
Trichloroethylene	79-01-6	66
Stoddard solvent	8052-41-3	1
Methyl methacrylate	80-62-6	15
Pentan-3-one	96-22-0	26
Methyl acrylate	96-33-3	104
Chlorobenzotrifluoride (4-)	98-56-6	5
Isopropyl benzene (cumene)	98-82-8	3



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