

# User Instruction

- Before use of this respirator, read carefully and understand the User Instructions of Model R-5 and the chemical cartridge to obtain designed protection.
- Keep this instruction and user instruction of chemical cartridge as useful reference.

## Chemical cartridge respirator (Chemical cartridge, Half facepiece)

# Model R-5

Silicone Facepiece

Model Revision R-5-06  
Japan National Assay registration  
No. TN258.

\*Before use, make sure that approval label is attached on the respirator.

### For safe and proper usage

- Use of chemical cartridge respirator is subject to limitations. If you do not follow this, your life and health may be at risk.
- The following special messages may appear throughout this instruction to warn of potential hazard or to attract attention to information for usage.

**⚠ DANGER** indicates an imminently hazardous situation. Misuse will result in serious injury, sickness or death.

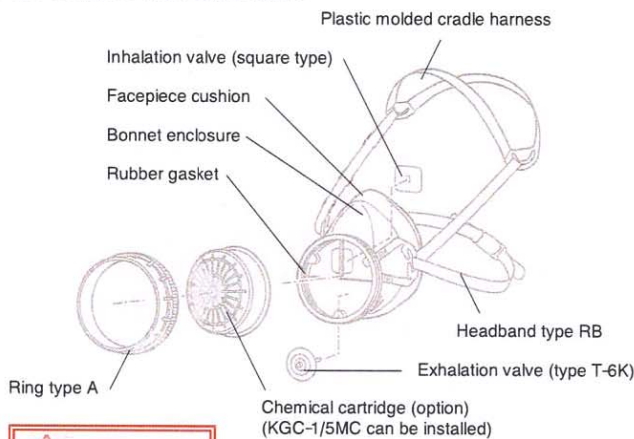
**⚠ WARNING** indicates a potentially hazardous situation. Misuse can result in serious injury, sickness or death.

**⚠ CAUTION** indicates a potentially hazardous situation. Misuse can result in injury or damage accident.

### Scope of applications

Model R-5 is a chemical cartridge respirator, designed to protect the wearer from breathing toxic gas, vapor, dust, etc. Never use it in atmospheres described as "⚠ DANGER" in the column below. Type and performance of chemical cartridge vary depending on the gas and dust existing in the working environment. Upon usage, read user instruction of the chemical cartridge carefully and use the cartridge that is suitable for the environment.

### Part names and structure



### ⚠ DANGER

- Only exclusive "Ring Type A" can be used with this respirator. Rings for previous Model R-5-II and R-5 cannot be used.

### Selection of chemical cartridges Use the following cartridges (option).

The following cartridges can be used with Model R-5. For protection against toxic gases that cannot be removed by these cartridges, use appropriate respiratory protective equipment such as supplied air respirators. If the appropriate cartridges are unknown for a particular toxic gas, call manufacturer of the chemical substances or Koken.

Type of gas	Names of cartridge	National Assay No.	Particulate filter (category)
Halogen gas	KGC-1L for halogen gas	No. TN52	-
	KGC-1L for halogen gas with mighty micron filter	No. TN53	Yes (S1) *1
Acid gas	KGC-1L for acid gas	JIS T 8152 compatible	-
	KGC-1L for acid gas with mighty micron filter		Yes *3
Organic vapor	KGC-1M for organic vapor	No. TN35	-
	KGC-1L for organic vapor	No. TN36	-
	KGC-1S for organic vapor	No. TN38	-
	KGC-1L for organic vapor with mighty micron filter	No. TN37	Yes (S1) *1
	KGC-1S for organic vapor with mighty micron filter	No. TN39	-
	KGC-1S for organic vapor with uni micron filter	No. TN182	Yes (S2) *2
Ammonia	KGC-5MC	No. TN183	Yes (S1) *1
	KGC-1L for ammonia	No. N90	-
Sulfur dioxide	KGC-1L for ammonia with mighty micron filter	No. N91	Yes (S1) *1
	KGC-1L for sulfur dioxide	No. TN54	-
Hydrogen sulfide	KGC-1L for sulfur dioxide with mighty micron filter	No. TN55	Yes (S1) *1
	KGC-1L for hydrogen sulfide	JIS T 8152 compatible	-
	KGC-1L for hydrogen sulfide with mighty micron filter		Yes *3

\*1 By installing on cartridge, the mighty micron filter can be used to remove dust that exists with toxic gas or vapor. However, do NOT use these cartridges in the environment where dioxins, radioactive dusts, asbestos, metal fume and/or oil mist exist.

\*2 The uni micron filter can be used to remove dust that exists with organic gas or vapor. However, do NOT use cartridges in the environment where dioxins, radioactive dusts, asbestos, and/or oil mist exist.

\*3 The same test criteria as the national assay standard category S1 are used.

### ⚠ DANGER

Do NOT use this respirator when:

- The concentration level of oxygen is unknown or less than 18%. Use of the respirator may result in death due to lack of oxygen. Use pressure-demand SCBA or pressure-demand airline mask with changeover alarm for emergency air supply in the oxygen-deficient environment.
- The type or concentration level of the toxic gas is unknown. Chemical cartridge respirator cannot be used when the type of gas is unknown, as appropriate cartridge cannot be selected. And the use of chemical cartridge respirator is limited within the regulation predefined.
- There is no chemical cartridge that can remove the toxic gas in the environment. Chemical cartridge can remove only the gas that the cartridge is designed to remove. Make sure that the cartridge is appropriate for the working environment prior to each use.
- The mixture of gases with different characteristics exist. Use pressure-demand SCBA or pressure-demand airline mask (for environment with the concentration level of oxygen is more than 14%).

### ⚠ DANGER

Make sure to use the respirator when all of the following conditions are satisfied (scope of applications).

- The concentration level of oxygen in the environment is more than 18%.
  - The working environment is under normal temperature, normal humidity and normal atmospheric pressure.
  - Type of toxic gas in the environment is known and there exist cartridges listed on the "Selection of chemical cartridges."
  - Performance of chemical cartridge respirator varies depending on the cartridge in use. Make sure to read the user instruction of the cartridge prior to use.
  - When direct-connection type, compact chemical cartridges are used, the concentration level in the working environment is below 0.1%.
  - When half-facepiece chemical cartridge respirator is used, the average concentration level of the toxic gas is below 10 times of the exposure limit. (It is below 30 times of the exposure limit if the duration of work per day is less than 30 minutes). (Standard of Japan Respirator Manufacturers Association).
- \*Permissible concentration levels recommended by the Japan Society for Occupational Health are applied to the exposure limit. For toxic gases without the predefined permissible concentration levels, TLV-TWA levels recommended by ACGIH are applied.

### ⚠ WARNING

- Make sure that facepiece is well fit on the face. Check the fitness according to the "Performing fit test." (Page 3).
- Do NOT use the respirator if there is beard, sideburns, and/or fore lock that come between face and facepiece, or mustache or chin beard that interfere the operation of the exhalation valve, or toxic gas or particulates could leak as airtight would not be maintained.
- Do NOT use the respirator if the wearer has a disorder in respiratory or circulatory system, or is claimed inappropriate by a doctor.
- Use full-facepiece respirator in the environment with eye-stimulating gas.
- To provide protection against dust that exists with gas, use chemical cartridge with a particulate filter categorized under appropriate classification.

## Service life of chemical cartridges (Make sure to read the user instruction of chemical cartridge).

Chemical cartridge loses decontamination capability when it reaches to breakthrough. It is important to understand the service life of the cartridge. Replace cartridge with a new one when it loses decontamination or particulate-filtering capability, whichever comes first.

### ● Estimation of service life by breakthrough curve

Service life of cartridge varies depending on the gas concentration in the environment. Breakthrough curve, shown on the user instruction of cartridge, represents the relationship between the gas concentration level in the environment and estimated service life. When the used time reaches to the estimated service life, replace the cartridge with a new one. If the cartridge is repeatedly used, and used for a short period of time in each occasion and the gas concentration level in the environment remains constant, record the used time in the "Record of used time" column on the user instruction of the cartridge and replace the cartridge with a new one when the accumulation of the used time reaches to the estimated service life.

### ● Estimation of service life by smell.

Immediately replace the cartridge with a new one if the wearer feels gas smell. Sense of smell varies between individuals, and the olfactory perception can get slowly paralyzed with the gas smell. Do NOT use only gas smell as a tool to judge for replacement.

### ● Estimation of service life by inhalation resistance.

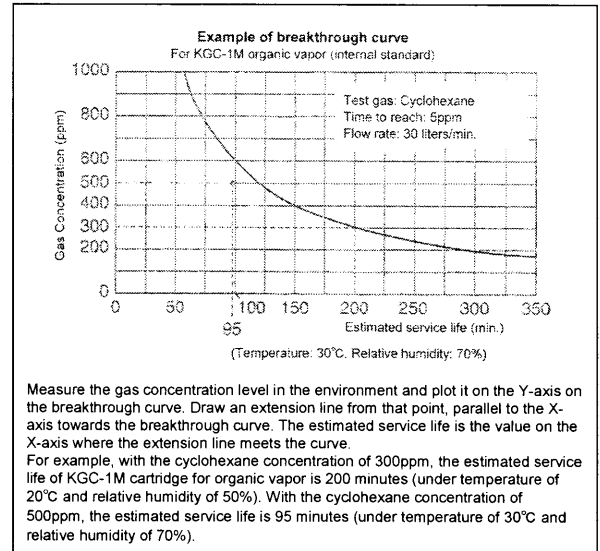
Replace the cartridge with a new one when the inhalation resistance increases (when the wearer feels difficulty in breathing), regardless of decontamination capability remaining.

### ● Estimation of service life by particulate-removing performance.

(applicable when a cartridge with a particulate-removing feature is used).

Replace the cartridge with a new one when:

- ⊙ the particulate filtering efficiency gets decreased; and/or,
- ⊙ the filtering material gets damaged or distorted.



## WARNING

- For replacement schedule and applications of the cartridge, read user instructions attached to the cartridge.
- Estimation of service life using the breakthrough curve is just for reference purpose only. Replace cartridge with a new one well in advance for safety. Service life also varies depending on the amount of air breathed, humidity and temperature.
- Breakthrough curve attached to the cartridge has been made based on the test gases that are specified by Japanese national assay standard and JIS. Even with the same cartridge, estimated service life can vary, depending on the type of gas.
- Use the cartridge under normal temperature, normal relative humidity and normal atmospheric pressure. Call Koken or local distributor for information on the service life under special conditions and/or special toxic gas environment. (Decontamination performance of organic vapor cartridge decreases under high temperature and/or high humidity environment).
- Even if it is within estimated service life, and if the wearer notices gas smell, gas stimulation and/or gas taste, immediately escape to safe area with clean air, and replace the cartridge with a new one.
- If the wearer feels physical abnormality while using the chemical cartridge respirator, immediately escape to safe area with clean air and see doctor.
- When using a cartridge (including the case where the cartridge is re-used if it is re-usable), make sure that there are no distortion, damage, etc. on the cartridge.
- Residual service life of organic vapor cartridge, if used for more than half of its estimated service life and stored for 5 days or more, may become remarkably short. Replace the cartridge well in advance under this condition.
- It is dangerous to judge only by smell. Smell can be used as a tool to judge for replacement if it can be sensed below the permissible exposure limit of the gas. Sense of smell can vary between individuals, and it can get paralyzed if the organic gas leaks gradually.

**How to use** Inspect the chemical cartridge respirator before each use following the <Inspection procedure> (Page 4).  
Install the cartridge and don the respirator in a clean place without toxic substance.

## 1. Installation of the cartridge

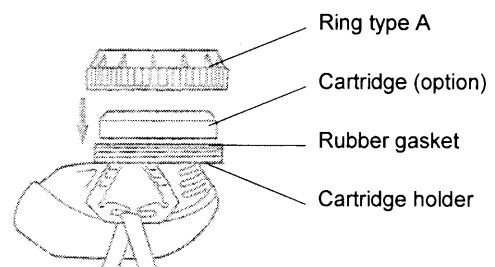
## DANGER

- **Shelf life of cartridge is 2 years from the date of manufacturing.**  
Do NOT use the cartridge stored for more than 2 years from the date of manufacturing.
- **Do NOT use the metal cartridge, as it has been discontinued for more than 2 years.**
- **Make sure to use an exclusive "Ring type A" for installation of the cartridge. Ring for previous Model R-5-II and Model R-5 cannot be used.**  
If a ring other than Type A is used, airtight seal may not be obtained and particulate/gas could leak into the facepiece.

## CAUTION

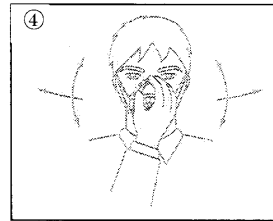
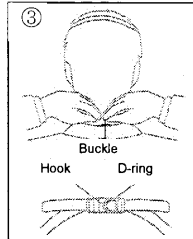
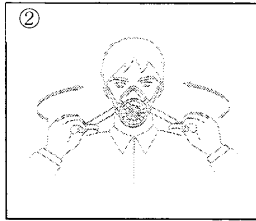
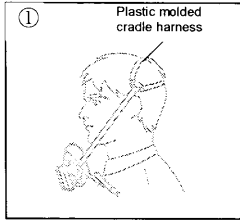
- **Do NOT open the bag just before the use if the cartridge is new.**  
If opened, decontamination performance may decrease as the cartridge absorbs humidity.

- ① Open the plastic bag and take out the cartridge and user instruction.  
(Read the user instruction carefully and understand the contents).
- ② Remove the ring by turning it counterclockwise.
- ③ Place the cartridge on top of the rubber gasket, as shown on the illustration.
- ④ Place the ring over the cartridge, align it with the cartridge holder groove and firmly tighten by turning it clockwise.
- ⑤ If the thread is caught in the groove of the cartridge holder or the cartridge is not stable, remove the cartridge and re-install it.



## 2. Fitting instructions

- ① Place the plastic molded cradle harness on your crown of head.
- ② Hold both ends of the headband and pull them evenly so that the respirator approaches to your face to cover your mouth and nose.
- ③ Fasten the buckle located behind of your neck by fitting the hook in the D-ring.
- ④ Adjust the respirator position on face for stable position by aligning it left and right, up and down.
- ⑤ Perform fit test after donning is completed.



- ⑥ To remove the respirator, remove the buckle.

### ⚠ DANGER

- Do NOT don the respirator over towel worn on face. Toxic gas or particulates could leak into the facepiece.

### ⚠ WARNING

- If the length of the headband cannot be adjusted, make the adjustment following <Adjustment of headband length>.
- Make sure that the headband is well elastic and not over-extended.
- When donning, make sure that the length of the headband on the right and left is even. If the length of the headband on one side is longer than the other, the one on the longer side may get caught into machine.
- The wearer with allergic tendency and/or fragile skin may suffer from rough skin surface, eczema, etc. by using a respirator. And the similar symptom may occur due to sweat, particulates and/or dirt attached on the surface of the facepiece. In such cases, stop using the respirator and see doctor.
- Do NOT apply excessive vibration and/or impact on the chemical cartridge. The performance of the chemical cartridge could decrease, or the chemical cartridge could get damaged.

### ⚠ CAUTION

- If the headband is over-tightened, feeling of fitness may worsen, and the wearer may experience a feeling of discomfort after working for a long time.

#### < Adjustment of headband length >

Remove the respirator and perform the followings.

\*Make sure that the headband is evenly tightened.

- ① To tighten, pull the headband on the hook side and D-ring side.
- ② To loosen, release the tension of the headband by lifting both tabs of the hook and D-ring.

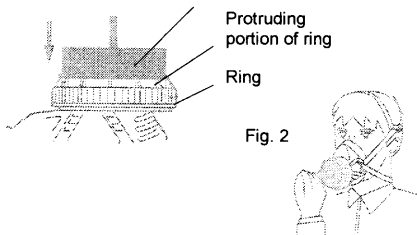


#### Performing fit test Perform fit test in a clean place without toxic substance.

- ① Install fit tester type R (option) over the cartridge and ring. Make sure that the fit tester touches to the upper protruding portion of the ring.
- ② Don the respirator, close the end of the pipe with fingers and inhale. (Fig. 2).
- ③ If the respirator is donned appropriately, it will be pressed against the wearer's face.
- ④ Good airtight is not obtained if the wearer feels the leakage of air between facepiece and face. Re-inspect the respirator (inspection of various parts (mainly exhalation valve), adjustment of headband, adjustment of the position of the respirator, etc.) and perform ①-③ again.
- ⑤ If good fit is obtained, make sure to remove the fit testers before entering into the workplace.

Fig. 1

Fit tester type R



### ⚠ CAUTION

- Only exclusive "fit tester type R" can be used for this respirator. Fit tester shown on the user instruction of the cartridge cannot be used.
- Make sure that the fit tester does not cover the protruding portion of the ring. Or slight gap is made and airtight test would not be performed properly.

### ⚠ DANGER

- Make sure to perform fit test prior to each use. If not donned properly, toxic substance may leak from the gap between face and facepiece.
- When removing the fit tester, make sure that the filter retainer is not removed.

## Replacement of inhalation valve / exhalation valve

Replace the inhalation/exhalation valve in a clean place without toxic substance.

### Replacement schedule

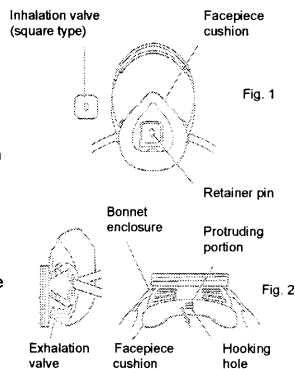
- ◎ Replace when crack, distortion, damage, dirt, and/or sticky surface is observed.

#### Replacement of inhalation valve

- ① Remove worn inhalation valve from retainer pin of the valve seat located inside of the respirator.
- ② Place a new valve in its position. Widen hole of the valve by fingers so that the retainer pin easily go through the hole.

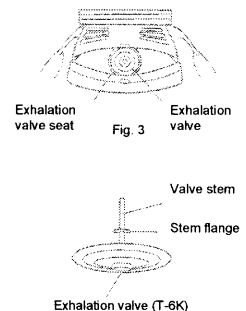
#### Replacement of exhalation valve

- ◎ Exhalation valve is located inside the lower portion of the facepiece. (Fig. 1).
- ① Unhook the hooking hole, located at the bottom of the facepiece cushion, from the protruding portion of the bonnet enclosure. (Fig. 2).



- ② Fold the facepiece cushion to the inside. (Fig. 3).
- ③ Take out the exhalation valve by finger. (Fig. 3).
- ④ To install a new exhalation valve, insert the valve stem into the center hole of the exhalation valve seat. When the top of the stem comes out from the inner side of the valve seat, grasp the projected point of the valve stem and pull it until stem flange appears outside of the center hole of the exhalation valve seat.
- ⑤ Cover the facepiece cushion over the bonnet enclosure, and hook the hooking hole at the protruding portion of the bonnet enclosure. (Make sure that the facepiece cushion thoroughly covers over the bonnet enclosure).

Caution: Make sure not to damage the exhalation valve seat.





## Replacement of headband

Replace the headband in a clean place without toxic substance.

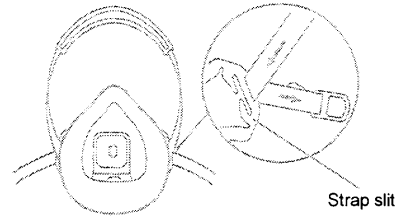
### Replacement schedule

Replace the headband with a new one when:

- Ⓐ Remarkable dirt, distortion, damage such as crack, and/or sticky surface due to rubber deterioration is observed;
- Ⓑ Buckle and/or plastic molded cradle harness is damaged; and/or
- Ⓒ The headband is not fully-elastic.

### Replacement procedure

- ① Remove the headband straps through the strap slit of the left/right headband holders.
- ② To install a new headband, insert the straps of the new headband through the slits of the headband holder from the facepiece side toward the cartridge holder (when seen from the rear side of the respirator).



Caution: Be sure with strap direction.  
Do NOT twist straps.

### Inspection procedure

Check points		Criteria	Troubleshooting
Facepiece cushion		No cracks, no distortions, no holes, no sticky (deteriorated) rubber and/or no remarkable dirt are found.	Replace the respirator with a new one. Clean the respirator if dirt is observed.
Bonnet enclosure		No cracks, no distortions, no holes, and/or no remarkable dirt are found. Check if the chemical cartridge can be securely installed.	
Exhalation valve seat		No cracks, no distortions, no scars, and/or no remarkable dirt are found.	Replace the part with a new one. Clean the part if dirt is observed.
Inhalation valve		No cracks, no distortions, no holes, no sticky (deteriorated) rubber and/or no remarkable dirt are found.	
Ring		No cracks, no distortions, no scars, and/or no remarkable dirt are found.	Replace the exhalation valve with a new one. Clean the attached foreign objects such as dust.
Exhalation valve		No cracks, no distortions, no scars, and/or no sticky surface due to rubber deterioration are found. No foreign objects such as dust are found.	
Headband	Straps	Fully-elastic. It keeps necessary strength to hold respirator.	Replace the headband with a new one.
	Plastic molded cradle harness, Buckles	No cracks, no distortions, and/or no chips are found. The buckle can be disconnected at ease and can be securely fastened.	
Overall condition after all parts are assembled.		There are no missing parts. There is no gap at the connecting portions.	Install the missing parts, or replace the part with a new one..
Chemical cartridges (option)	Type	Cartridge must be the one appropriate for the type of toxic gas and its concentration level in the environment.	Use appropriate cartridge.
	Appearance	No distortions, no holes, no remarkable dirt, and/or no absorption of water are found.	Replace the cartridge with a new one.
	Remaining service life	If re-used, sufficient service life is remaining. (Check the record of the used time). Check if the cartridge is shut off from the external atmosphere and maintained according to the appropriate procedure.	
	Smell	No gas smell and/or no unusual odor are recognized.	
	Filtering material (only applicable with cartridges with particulate filtering feature)	No damages, no distortions, no difficulty in breathing, no remarkable decrease in filtering efficiency are found.	Replace the cartridge with a new one. If the filtering material can be replaced, replace the filtering material with a new one.

For cleaning, refer to "Cleaning after use".

### Specifications

	Internal standard	Average
Inhalation resistance	25Pa or less	12Pa
Exhalation resistance	45Pa or less	31Pa
Increased value of carbon dioxide concentration / Dead space	0.5% or less/ 200cm <sup>3</sup> or less	0.36%/ 144cm <sup>3</sup>
Weight	117 +/- 20g	118g

The values above represent the performance level without cartridge, optional parts, etc.

#### Replacement parts

- Call Koken or local distributor for the following replacement parts.
- Inhalation valve ..... Inhalation valve square-type.
  - Exhalation valve ..... Exhalation valve type T-6K.
  - Headband ..... Headband type RB.
  - Ring ..... Ring type A.

#### Optional parts (sold separately)

- Fit tester to check the fitness between the respirator and face ..... Fit tester type R  
Chipper for spray painting
- For KGC-1L, S ..... Paint spray chipper type R
  - For KGC-1M ..... Paint spray chipper for KGC-1M.
- Particulate filter to be installed on the cartridge
- For KGC-1L, S ..... Mighty micron pre-filter for KGC-1L, 1S.
  - For KGC-1S ..... Uni micron pre-filter for KGC-1S
- \*To install the filter onto the cartridge, filter retainer is required.
- For KGC-1L, S ..... Filter retainer type 1.

### Maintenance and storage

Make sure to perform maintenance after each use and keep the respirator clean.

#### 1. Cleaning after use.

Perform cleaning in a clean place without toxic substance.

##### ● Respirator

#### ⚠ CAUTION

- Make sure to perform cleaning after removing the cartridge from the respirator.

- Gently wipe dust and sweat with a dry or slightly wet cloth. Be sure not to damage the respirator.
- Clean remarkable dirt with mild detergent diluted with warm water. Be careful not to scratch the respirator, especially the exhalation valve seat and exhalation valves. Remove detergent by rinsing completely.
- Wipe out residual water after cleaning and dry it out of direct sunlight.
- Disinfect facial contact area and inside of the facepiece by wiping it with the alcohol-soaked cloth. Then wipe the alcohol out completely.

#### ⚠ CAUTION

- Always keep the face-contacting area of the facepiece cushion clean. Presence of dirt on the facepiece cushion could cause skin roughness or skin irritation.
- If alcohol is used for disinfection, dry it completely, or rinse it with water and completely wipe the water out.

##### ● Cartridge (option)

Wipe the surface of the cartridge with a dry cloth.

#### ⚠ WARNING

- Do NOT conduct the followings, as they could cause the distortion and/or damage of cartridge, decrease in performance, etc.
  - Cleaning the cartridge with a wet cloth, or washing it in water.
  - Applying an unnecessary force onto the cartridge, such as tapping it hard to remove particulates captured on the filtering material.
  - Blowing the attached particulates with compressed air generated with compressor, etc., if a cartridge with a pre-installed particulate filter is used.

#### 2. Storage

##### ● Place for storage

After cleaning, store the respirator in a dry place without heavy temperature fluctuations and/or high humidity. Do NOT pile up the cleaned respirators, as the facepiece, headband, etc. could be damaged and/or distorted. Avoid a direct sunlight for storage. Prepare an exclusive storage place so that the storage condition can be checked at ease.

#### ⚠ DANGER

- **Shelf life of chemical cartridge is two years from the date of manufacturing.**  
Do NOT use the cartridge stored for more than 2 years from the date of manufacturing.
- **Dispose of the used chemical cartridge (including the filtering material (filter) used with the cartridge) as industrial waste. Pack them in securely sealed plastic bag so that toxic substance absorbed would not diffuse.**



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