**SULFUR DIOXIDE CARTRIDGE  KGC-1L(S)**

**For Industrial Use ONLY**
This product is designed for industrial use only. Make sure that this product be used by persons who:

- Have sufficient knowledge on occupational health and safety and respiratory protective equipment; or,
- Work under the close supervision of personnel with sufficient knowledge.

- **Shelf life is 2 years from the date of manufacture** if this chemical cartridge is stored unopened. The date of manufacture is printed on the side of the chemical cartridge.

  - Store this chemical cartridge unopened in dark, cool place. Avoid direct sunlight, toxic gas and high humidity.
  - NEVER use this chemical cartridge if it is torn, holed or opened.
  - NEVER use this chemical cartridge if its shelf life is expired even in un-open condition.
  - NEVER disassemble this chemical cartridge.
  - Make sure that there are no distortions and/or no damages such as scars on this chemical cartridge.

- **Scope of applications**

  Working environment where sulfur dioxide gas (vapor) exists. Call Koken for further information on sulfur dioxide gas that can be removed by the chemical cartridge, as some gases cannot be removed.

  - If used together with a dedicated optional filtering material (Mighty Micron Pre-Filter Type 1 for AHS, Class S1, or Uni Micron Pre-Filter Type 1, Class S2), this chemical cartridge can be used in working environment where sulfur dioxide gas and dust particles co-exist. (Please refer to the user instruction for installation on the label of the packaging film). *Note, however, that this optional filtering material cannot be used together with chemical cartridge respirators Models R-6 and 1761G.*
  - NEVER use a pre-filter other than the dedicated particulate pre-filter. Never disassemble this chemical cartridge.

- **DANGER**

  - This chemical cartridge should NOT be used in working environment where:
    1. The concentration level of oxygen is under 18%;
    2. Toxic gas that cannot be removed by the sulfur dioxide cartridge exists; and/or,
    3. The concentration level of toxic gas is over 0.1%, or the average concentration level of toxic gas is over 50 times of its exposure limit (or 150 times if working hours per day is under 30 minutes) when a full-facepiece respirator is used, or the average concentration level of toxic gas is over 10 times of its exposure limit (30 times if working hours per day is under 30 minutes) when a half-facepiece respirator is used. (According to the standards set by Japan Respirator Manufacturers Association).
  - Even with the use of the dedicated particulate pre-filter, this chemical cartridge cannot be used in the following conditions:
    - Regular work or emergency work performed in areas where there is a possibility of contamination due to spillage of radioactive substances, etc.;
    - Working applications where there is a possibility of exposure to dioxin;
    - Removal work of asbestos;
    - Working applications performed in areas where metal fume (including welding fume) diffuse*;
    - Working applications performed in areas where particulates with standard control concentration level of less than 0.1mg/m³ diffuse*;
    - Any working applications similar to the above*;
    - Working applications where oil mist etc. exists; or,
  
  *Note: If used together with Uni Micron Pre-Filter Type 1 (Class S2), this chemical cartridge can be used.
  - This chemical cartridge cannot be used in working environment which is substantially away from normal temperature, normal humidity or normal atmospheric pressure, as its expected performance may decrease significantly.

- **Fit test** (Make sure to read user instruction of chemical cartridge respirator, too).

  1. Completely cover the inhalation air inlet with a corresponding fit tester (option). Don the respirator and close the end of the pipe by pinching it with thumb and forefinger, then inhale. If the facepiece is slightly drawn toward the face, a good fit is obtained.
  2. If inward leakage is felt inside the facepiece, a good air-tightness is not obtained. Check installation condition of the chemical cartridge and adjust headband and respirator. Perform a fit test again. If a good fit is obtained, remove the fit tester and start working.
  - Make sure to perform a fit test prior to each use.
  - If a pre-filter is used, fit test should be performed with the pre-filter installed on the chemical cartridge. (Make sure that the pre-filter retainer is firmly in place when removing the fit tester from the chemical cartridge).

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Specifications

<table>
<thead>
<tr>
<th></th>
<th>KGC-1L(S) only</th>
<th>KGC-1L(S) with Mighty Micron Pre-Filter Type 1 for AHS (Class S1)</th>
<th>KGC-1L(S) with Uni Micron Pre-Filter Type 1 (Class S2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service life *</td>
<td>70 min. or more</td>
<td>70 min. or more</td>
<td>70 min. or more</td>
</tr>
<tr>
<td>Air flow resistance</td>
<td>115 Pa or less</td>
<td>235 Pa or less</td>
<td>290 Pa or less</td>
</tr>
<tr>
<td>Filtering efficiency (NaCl)</td>
<td>-</td>
<td>80.0% or more</td>
<td>95.0% or more</td>
</tr>
<tr>
<td>Increased value of inhalation resistance</td>
<td>525 Pa (avg.)</td>
<td>1213 Pa (avg.)</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>85.5g or less</td>
<td>97.0g or less</td>
<td>100g or less</td>
</tr>
</tbody>
</table>

* Test conditions: Sulfur dioxide: 300ppm, Temperature: 20°C, Relative humidity: 50%

Replacement schedule of chemical cartridge (Replace well before the expiration).

1) Total time spent has reached the service life time obtained from the breakthrough time curve.

Example

<table>
<thead>
<tr>
<th>Service life time</th>
<th>Conditions of working environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 min.</td>
<td>Concentration of sulfur dioxide: 300ppm, Temperature: 20°C, Relative humidity: 50%</td>
</tr>
</tbody>
</table>

2) The wearer feels gas smell, etc.
3) Damage is found on the chemical cartridge.

Use of dedicated pre-filter and its replacement schedule

Make sure to install a dedicated pre-filter if this chemical cartridge is used in a particulate contaminated environment. Do NOT re-use the pre-filter by flipping it over when airflow resistance has increased due to clogging. Deformed or damaged pre-filters should NOT be used. Replace with a new one.

Disposal

Do NOT disassemble the chemical cartridge when disposing. Put it in a tightly-sealed plastic bag so that hazardous substances would not diffuse into the atmosphere. Request an industrial waste disposal operator to handle its disposal properly, indicating that “waste plastic” and “burnt residue” are included and hazardous substances are attached. Dispose of the used filtering material in a tightly-sealed plastic bag so that accumulated particles on the filter would not diffuse into the atmosphere.

Record of total time spent

Replace the used chemical cartridge for a new one well in advance before the total time spent reaches the estimated service life time.

![Breakthrough time curve](image)

**WARNING**

- Assigned test gas specified on Japanese National Standard was used to prepare the breakthrough time curve printed on this user instruction. Estimated service life time differs depending on the type of gas.
- Estimated service life time calculated by the breakthrough time curve is designed for reference purpose only. Replace the chemical cartridge with a new one well in advance before the expiration of the service life time as service life time differs depending on various factors such as air volume breathed, humidity and temperature.
- Even within the estimated service life time, immediately escape to a safe place with a plenty of clean air and replace the chemical cartridge with a new one if gas smell, stimulation or taste is noticed.
- In case of re-using a chemical cartridge, tightly seal it in a bag and store in dark, cool place without hazardous substances. Prior to re-use the chemical cartridge, make sure that sufficient service life time remains and there are no damages such as deformation or scratch on the surface.
- The sense of smell may become paralyzed over time. Therefore, do NOT judge only by smell when to replace a chemical cartridge.

Keep this user instruction on hand and check the contents as necessary. Call Koken when you have any questions or lost this user instruction.

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