



**Operating Instructions
Phosgene Badge
(Part Number: 382036)**

Introduction

Phosgene is a colorless, highly toxic gas with an odor resembling moldy hay. It is an insidious poison. There is no immediate irritation even when fatal concentrations are inhaled. It may cause severe pulmonary edema (abnormal fluid buildup in the lungs) or pneumonia. Inhalation of high concentrations causes choking, coughing and painful breathing. OSHA PEL (permissible exposure limit) for phosgene is 0.1 ppm (averaged over an 8-hour work shift). NIOSH IDLH (immediately dangerous to life or health) exposure limit for phosgene is 2 ppm.

Phosgene is used in the manufacturing of numerous organic chemicals. It is also used in the production of glass, resins, dyes and plastics.

Principle of Operation

The SafeAir phosgene badge is a monitoring system designed to indicate the presence of phosgene at concentrations below the permissible exposure limit. The SafeAir phosgene badge detects the presence of phosgene by forming a color change in the shape of an exclamation mark inside the triangle. This indication is produced by a color-forming reaction, which occurs when phosgene reacts with a flat indicator layer.

Physical Specifications:

Dimensions	74 mm x 41 mm x 1 mm
Weight	1.5 g
Refrigerated shelf life	1 year
Color change	yellow to red

Sampling Parameters:

Exposure dose:	
Badge	0.5 ppm·min (8.3 ppb·hr)
Badge with color comparator ext. range	0.5 - 450 ppm·min
Minimum detectable limit (8 hours)	0.001 ppm
Maximum recommended sampling time	3 days
Minimum recommended sampling time*	1 minute
Relative humidity range	10% - 100%
Face velocity range	5 - 168 cm/sec
Temperature range	12°C - 37°C (55°F - 99°F)
Light effect – UV (direct sunlight)**	no effect
Light effect – visible	no effect
Known Interferences	acyl halides, benzoyl chloride, cyanuric chloride, carbonyl bromide and chloroformates

* Badge responds instantly to phosgene. However, the shortest experimentally quantifiable exposure sampling time is 1 minute.

** Extensive exposure to direct sunlight will lead to darkening of the background. This may cause difficulty reading exposures less than 5 ppm·min.

Operating Instructions

1. Allow the badge to warm to room temperature prior to removing the badge from its protective pouch.
2. Remove activation label before monitoring.
3. For personnel monitoring, attach the badge near the user's breathing zone (i.e. the collar) with the front side exposed to the surrounding atmosphere.
4. For area monitoring, attach the badge to a stand and mount in a centralized area with the front side exposed to the surrounding atmosphere.
5. The exclamation mark appears within the triangle when phosgene is present. Please note that the exclamation mark will appear underneath the printed exposure dose (sensitivity).
6. A SafeAir phosgene color comparator (PN: 383016) is available for use with this badge. To obtain the average concentration, divide the exposure dose (ppm·min) by the exposure time in minutes (min).

WARRANTY EXCLUSIONS AND LIMITATION OF LIABILITY

IF THE USER DOES NOT ACCEPT THE FOLLOWING TERMS, THE USER SHOULD NOT USE THE SAFEAIR BADGES AND COLOR COMPARATORS.

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Warning: Keep out of reach of children, if ingested seek medical attention immediately.



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