

## CLEARSENSE™ - H<sub>2</sub>S Direct-Read Dosimeter For passive monitoring of hydrogen sulfide (H<sub>2</sub>S)

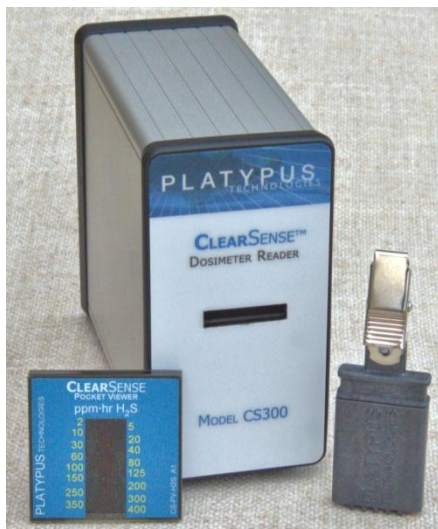
Product No.: CS-H2S-B5 & CS-PV-H2S & CS-DR-300

**Important:** Read instructions before use of **CLEARSENSE™** products

### User Manual

#### Table of Contents

I.	INTRODUCTION .....	2
II.	<b>CLEARSENSE™</b> PRODUCTS.....	2
III.	SPECIFICATIONS.....	2
IV.	INSTRUCTIONS.....	3
V.	ORDERING INFORMATION.....	6
VI.	TERMS & CONDITIONS.....	6



**Platypus Technologies, LLC**

5520 Nobel Drive, Suite 100, Madison, WI 53711  
Toll Free: 866.296.4455 Phone: 608.237.1270 Fax: 608.237.1271

[www.platypustech.com](http://www.platypustech.com)

**CLEARSENSE™** is a trademark of Platypus Technologies, LLC.

# CLEARSENSE™ - H<sub>2</sub>S Direct-Read Dosimeter

## I. INTRODUCTION

The **CLEARSENSE™** H<sub>2</sub>S Direct-Read Dosimeter is a passive badge for monitoring personal exposure to hydrogen sulfide (H<sub>2</sub>S) and is designed to provide users with accurate, on-site results. This Dosimeter eliminates the lag time between sampling and data retrieval, associated with the current method that uses sorbent tubes and sampling pumps. The Dosimeter is clipped on clothing in the breathing zone during a work shift. At the end of the shift, the exposure level can be determined by using **CLEARSENSE™** Pocket Viewer or **CLEARSENSE™** Dosimeter Reader. The Dosimeter can be used to detect H<sub>2</sub>S at ACGIH recommended TLVs [1 ppm TWA (8 hr) and 5 ppm STEL (15 min)].

## II. CLEARSENSE™ PRODUCTS

Product	Catalog No.
<b>CLEARSENSE™</b> H <sub>2</sub> S Dosimeter, 5/pkg	CS-H2S-B5
<b>CLEARSENSE™</b> H <sub>2</sub> S Pocket Viewer	CS-PV-H2S
<b>CLEARSENSE™</b> Dosimeter Reader CS300	CS-DR-300

## III. SPECIFICATIONS

Limit of Detection	0.2 ppm TWA, 5 ppm STEL
Overall Accuracy <sup>§</sup>	± 20% (mean CV = 6.8%)
Temp. Range	23°F to 104°F (-5°C to 40°C)
Humidity Range	15% to 80% RH
Storage Life	4 months, refrigerated
No Interference	SO <sub>2</sub> , CS <sub>2</sub> , NO <sub>2</sub> , CO, H <sub>2</sub> , hexanes, toluene
Positive Interference	Mercaptans (Ethyl & Methyl)
Sensor Type	Liquid Crystal
Badge Dimensions	3.3" × 1.1" × 0.3" (83 × 28 × 7.5 mm) 0.5 oz. (14 g)
Pocket Viewer Dimensions	1.75" × 1.75" × 0.25" (44 × 44 × 6.4 mm) 0.36 oz. (10 g)
Dosimeter Reader	5" × 4.3" × 2.25" (127 × 110 × 57 mm) 14.1 oz. (400 g) USB Connection to PC <b>CLEARSENSE™</b> Software for WinXP, Vista, 7, 8

<sup>§</sup>Overall accuracy = [mean bias ± 2 × mean CV] × 100 %, calculated using the NIOSH method. Five ClearSense™ dosimeters each were exposed to nine different doses from 1.6 – 400 ppm-hr at 22°C 60% RH to determine the overall accuracy.



### III. INSTRUCTIONS

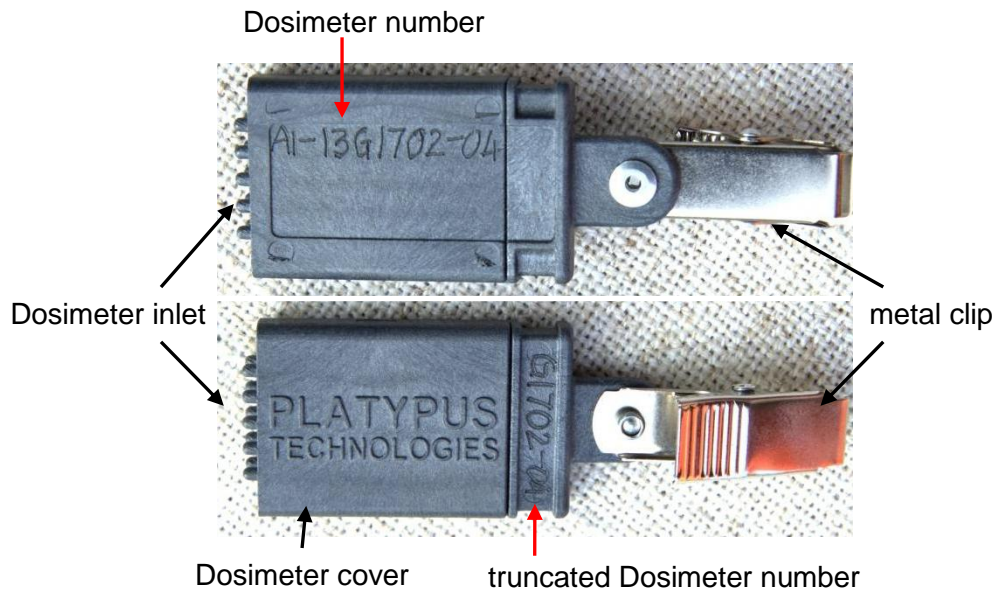
#### A. Storage:

1. Upon receipt, store **CLEARSENSE™** H<sub>2</sub>S Dosimeter (CS-H2S-B5) in its sealed pouch in a refrigerator at 4°C until ready to use.
2. **CLEARSENSE™** H<sub>2</sub>S Pocket Viewer (CS-PV-H2S) and **CLEARSENSE™** Dosimeter Reader CS300 (CS-DR-300) can be stored in a dust free environment at room temperature.

#### B. Exposure:

**Caution:** Do not touch the Dosimeter inlet during handling, use, or readout.

1. Remove the Dosimeter from refrigerator and set in the ambient environment for 15 minutes before exposure. Do not open the sealed pouch yet.
2. After 15 minutes, tear the pouch open and remove the dosimeter to begin exposure. If unable to read the results immediately after the exposure is complete, keep the pouch to store the Dosimeter in later.



3. Note the *start time* of the exposure.
4. Keep a record of the Dosimeter number and relevant information (user name, date, exposure location, temperature etc.). The Dosimeter number is conveniently located on the Dosimeter cover and a truncated version of the Dosimeter number is also located just below the metal clip.
5. Clip the Dosimeter to the user's clothing, in the breathing zone such as on or near the shirt collar. Do not block the dosimeter inlet. Do not remove the Dosimeter cover, it must remain on during the exposure.
6. Once the desired exposure is completed (up to 12 hrs) remove the Dosimeter from the clothing and note the *end time* of the exposure.
7. Calculate the *exposure time* i.e. the number of hours the dosimeter was exposed from *start time* to *end time*.
8. Use the **CLEARSENSE™** H<sub>2</sub>S Pocket Viewer or **CLEARSENSE™** Dosimeter Reader to determine the exposure level. For maximum accuracy, Dosimeters are best read



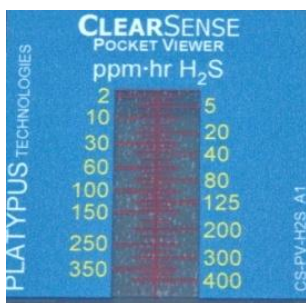
immediately after use. If you must store the Dosimeter for a day before reading the results place it back in its original pouch, open-end first, fold the pouch end a few times, clip the pouch closed, and store in the refrigerator. When ready to read the Dosimeter open the pouch and take the measurement.

### C. Readout:

The level of exposure to H<sub>2</sub>S can be conveniently determined by using **CLEARSENSE™** Pocket Viewer or **CLEARSENSE™** Dosimeter Reader CS300.

#### a. Readout Using **CLEARSENSE™** Pocket Viewer:

1. Before using the **CLEARSENSE™** Pocket Viewer ensure the first two characters on the dosimeter number match up with the two characters located just after the product number on the **CLEARSENSE™** pocket viewer.



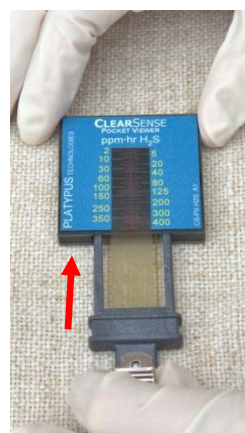
match these two characters



2. To start the readout, hold the metal clip and gently pull off the cover to reveal the Dosimeter. Handle the Dosimeter by the plastic housing and metal clip, do not touch the glass.



3. Slide the Dosimeter into the Pocket Viewer, with inlet end first, until the Dosimeter clicks into place.



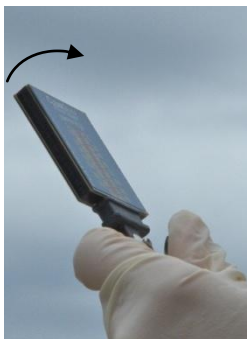
4. With the Dosimeter inside the Pocket Viewer, hold the Pocket Viewer up against an ambient light source (e.g. window, fluorescent lights).



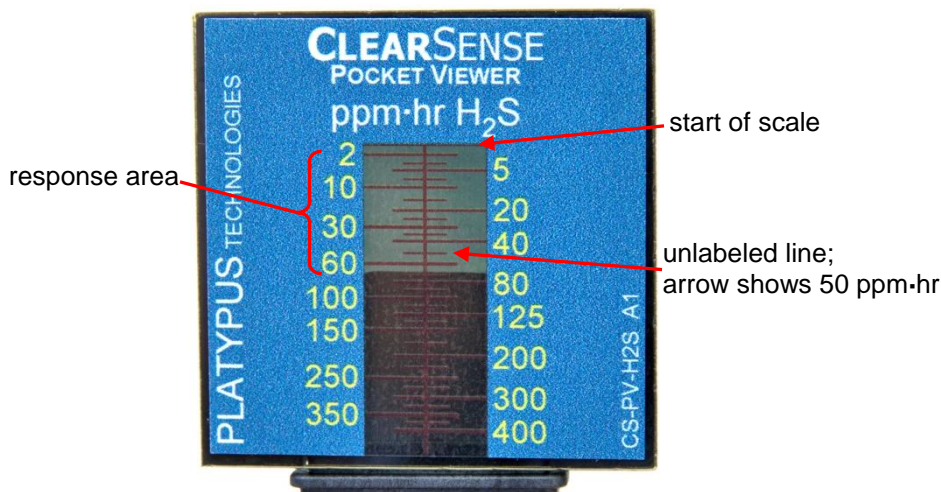


- To align the Pocket Viewer for reading, begin with the Pocket Viewer tilted away and slowly tilt the top of the viewer closer until the start of the bright response area aligns with the start of the scale.

Tilt the pocket viewer closer until the start of the bright area aligns with the start of the scale.



- The Dosimeter response appears as a bright area. Read where the bright response area ends on the scale to determine the measured H<sub>2</sub>S dose in ppm·hr. If there is no bright area, the exposure level is below the limit of detection of the Dosimeter (1.6 ppm·hr). The scale is not linear. Each unlabeled line in between labeled lines is the value halfway between the two neighboring labeled values.



- Record the measured dose. Divide the *dose* in ppm·hr by the *exposure time* in hours to obtain the TWA concentration of H<sub>2</sub>S in ppm. If the Dosimeter is used for STEL measurement, divide the dose by 0.25 hr to get the STEL value.

#### b. Readout Using CLEARSENSE™ Dosimeter Reader CS300:

The ClearSense Dosimeter Reader CS300 is small digital device that operates via USB with a PC and precisely reads the Dosimeter responses. Accompanying ClearSense software provides an efficient means of logging results and associated exposure information. For more information on this product, contact Platypus Technologies or a Platypus representative.



## V. ORDERING INFORMATION

For a complete list of products, visit Platypus Technologies at [www.platypustech.com/order\\_main.html](http://www.platypustech.com/order_main.html). Prices subject to change without notice. For technical assistance, contact Technical Support at (866) 296-4455 or [techsupport@platypustech.com](mailto:techsupport@platypustech.com).

## VI. TERMS & CONDITIONS

These products may not be resold, modified for resale, used to manufacture commercial products, or used to develop commercial products without the express written approval of PLATYPUS.

THESE PRODUCTS ARE INTENDED FOR DETERMINING THE LEVEL OF PERSONAL EXPOSURE TO TOXIC GASES AFTER THE EXPOSURE HAS ALREADY OCCURRED. THESE PRODUCTS DO NOT PROVIDE ANY WARNING TO THE USER IF THE LEVEL OF TOXIC GASES IS HIGH. IT IS, THEREFORE, THE USER'S RESPONSIBILITY TO ENSURE THAT THE ENVIRONMENT IS SAFE DURING THE EXPOSURE ASSESSMENT USING THESE PRODUCTS.

PLATYPUS warrants that its products shall conform substantially to the description of such goods as provided in product catalogs and literature accompanying the goods until their respective expiration dates or, if no expiration date is provided, for 4 months from the date of receipt of such goods. PLATYPUS will replace, free of charge, any product that does not conform to the specifications. This warranty limits PLATYPUS's liability only to the replacement of the nonconforming product.

THIS WARRANTY IS EXCLUSIVE AND PLATYPUS MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. The stated express warranties, and the remedy provided for breach thereof, are in lieu of all other liability or obligations of PLATYPUS for any damages whatsoever arising out of or in connection with the delivery, use, misuse, performance, or the inability to use any of its products. IN NO EVENT SHALL PLATYPUS BE LIABLE UNDER ANY LEGAL THEORY (INCLUDING BUT NOT LIMITED TO CONTRACT, NEGLIGENCE, STRICT LIABILITY IN TORT, OR WARRANTY OF ANY KIND) FOR ANY INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES (INCLUDING BUT NOT LIMITED TO LOST PROFITS) EVEN IF PLATYPUS HAD NOTICE OF THE POSSIBILITY OF SUCH DAMAGES. Without limiting the effect of the preceding sentence, PLATYPUS's maximum liability, if any, shall not exceed the purchase price paid by PURCHASER for the product.

U.S. Pat. No. 628419, No. 6858423, No. 7135143, No. 8246911, and other pending patent applications.

