

# National Bureau of Standards

## Certificate of Analysis

### Standard Reference Material 2661b

#### Benzene on Charcoal

This Standard Reference Material (SRM) is intended primarily for use as an analytical standard for the determination of benzene vapor concentrations in the workplace atmosphere. The SRM consists of nine color-coded charcoal tubes, three each containing the indicated quantity of adsorbed benzene.

Level	Tube Color-code <sup>a</sup>	Amount of benzene per tube, $\mu\text{g}$
I	red-red	$16 \pm 1$
II	red-blue	$29 \pm 2$
III	red-green	$54 \pm 2$

<sup>a</sup>The tubes are identified by a two-dot color-code as follows: with charcoal section to right, the left dot indicates the solvent; the right indicates the amount.

The certified values, in micrograms ( $\mu\text{g}$ ), are the averages obtained from measurements made on twelve tubes at each concentration level. The uncertainties represent the 95 percent tolerance limits, including measurement error and variability among samples [1]. These measurements were made using a modification of NIOSH Method No. P & CAM 127 [2]. The principal modification is that the entire charcoal contents, both front and backup sections, of each tube were eluted with one milliliter of carbon disulfide and analyzed as a single sample [3].

The tubes were prepared by drawing through them a measured volume of air containing a known concentration of benzene, using the technique described in reference [3]. The amounts of benzene calculated from these data agree with the certificate values, within the uncertainties cited above.

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Office of Standard Reference Materials

(over)

**Precaution:**

Because of the possibility of migration of the solvent, during storage, from the adsorbing section to the backup section, the charcoal from both sections should be combined and analyzed as a single sample. One milliliter of carbon disulfide has been found to be a convenient volume of desorber for the analysis of the tubes.

The charcoal tubes were prepared and analyzed by B. C. Cadoff. The overall direction and coordination of the technical measurements leading to certification were under the chairmanship of J. K. Taylor.

The technical and support aspects involving certification and issuance of this Standard Reference Material were coordinated through the Office of Standard Reference Materials by R. Alvarez.

**References:**

- [1] Cali, J. P. et al., "The Role of Standard Reference Materials in Measurement Systems," NBS Monograph 148, 51 pages (Jan. 1975, p. 14.
- [2] "NIOSH Manual of Analytical Methods," U.S. Department of Health, Education, and Welfare, National Institute for Occupational Safety and Health.
- [3] Cadoff, B. C., Hughes, E. E., Alvarez, R., and Taylor, J. K., "Preparation of Charcoal Sampling Tubes Containing Known Quantities of Adsorbed Solvents." NBSIR 74-530, July 1974.

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