

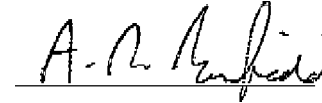
CERTIFICATE OF TEST

ISSUED BY SIRA TEST & CERTIFICATION LTD

DATE OF ISSUE: 23 December 2003

CERTIFICATE NUMBER: 17406

APPROVED SIGNATORY



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| | |
|------------------------|---------------------------|
| ST & C reference | 304/0182 |
| Received | 19 December 2003 |
| Measurements performed | 22 December 2003 |
| Instrument | Carbon monoxide detectors |

Six carbon monoxide detectors were supplied. The samples were tested in batches of two. Each individual detector was used in one test only. The detector cards were mounted vertically on the inside walls of a 1.2 L perspex chamber, fitted with gas inlet and outlet tubes to allow the passage of test gases. The samples were tested for response to carbon monoxide in air at 18° C and 48% rh, applying test gas mixtures of 150, 350 and 450 ppm. The gas mixtures were prepared by mixing n3.5 grade carbon monoxide with clean laboratory air, humidified by passing over deionised water, using Wosthoff gas mixing pumps in series and parallel to achieve the required dilution and flow rate. The temperature and humidity within the test chamber was monitored with a Rotronic Serie I 200 hygrometer throughout the tests.

The detectors are housed in 55 mm square 'badges', designed to be attached to a wall near domestic gas appliances by means of double sided adhesive tape. The detectors have an orange/brown coloured spot and comparator ring.

| Test gas | CO detectors |
|-------------------------|---|
| 150 ppm carbon monoxide | Darkening by 2 min, dark grey by 5 min, black by 10 min |
| 350 ppm carbon monoxide | Darkening within 30 s, dark grey by 2 min, black by 3.5 min |
| 450 ppm carbon monoxide | Darkening within 30 s, dark grey by 2 min, black by 3 min |

All detectors returned to their initial appearance within one hour of exposure to clean air.

The manufacturer states "when air freshens, spot will return to original colour unless over-exposed and is ready for use again".

The gas mixtures are prepared using gas mixing pumps whose performance characteristics are verified (according to a programme agreed by UKAS) using reference gas mixtures from the National Physical Laboratory.

The uncertainty of the concentrations of the carbon monoxide test gas mixtures is estimated to be $\pm 1.25\%$ relative, +1 ppm.

End of certificate.

The uncertainties are for a confidence probability of not less than 95%