

## Combined sampler for NO<sub>2</sub> and SO<sub>2</sub>

### Diffusive sampler

The passive sampler is composed of a polypropylene housing with an opening of 20 mm diameter. To reduce wind disturbance a glass fibre membrane is attached, supported by a wire net.

The sampler collects NO<sub>2</sub> and SO<sub>2</sub> by molecular diffusion along an inert tube to an absorbent, in this case mixture of potassium carbonate, glycerol and triethanolamine.

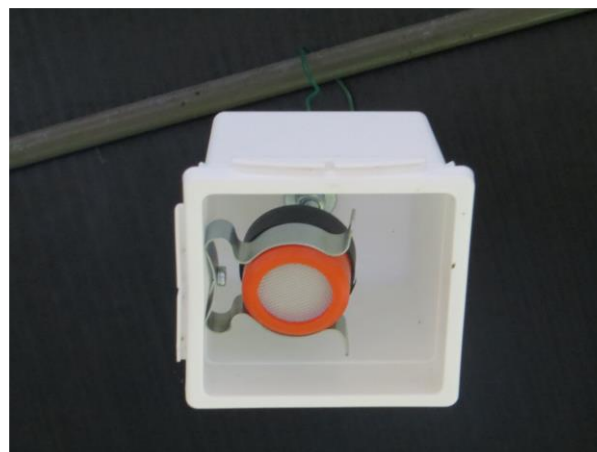
In use, the samplers are mounted with the aid of a clip; the plastic cap is removed at the onset of sampling, thus allowing NO<sub>2</sub> to be transported by molecular diffusion up the tube to the TEA, where it is retained. The cap is replaced at the end of sampling and the collected NO<sub>2</sub> is determined by ion chromatography.



Sampling periods for this sampler can be either short (usually range from 8 hours to 48 hours) or long term (1 to 4 weeks).

### Installation of site

To protect the sampler from weather influences, as well as minimising wind disturbance, a specially developed protection device is recommended. In the absence of other requirements samplers should be exposed at heights of 2 - 3 m above the ground in positions of unrestricted air movement. Preferred sites are free standing columns, lamp posts etc. The samplers should not be easily reached by unauthorized persons and be located in situations where loss through theft or vandalism are unlikely.



The sampler collects NO<sub>2</sub> by molecular diffusion along an inert tube to an absorbent, in this case triethanolamine.

### Air quality standards

Air quality standards vary from country to country:

EU	SO <sub>2</sub>	125 µg/m <sup>3</sup>	(24 hours)
EU	NO <sub>2</sub>	200 µg/m <sup>3</sup>	(1 hour)

Some countries such as China, India use a 150 µg/m<sup>3</sup> 24 hours value for NO<sub>2</sub>.

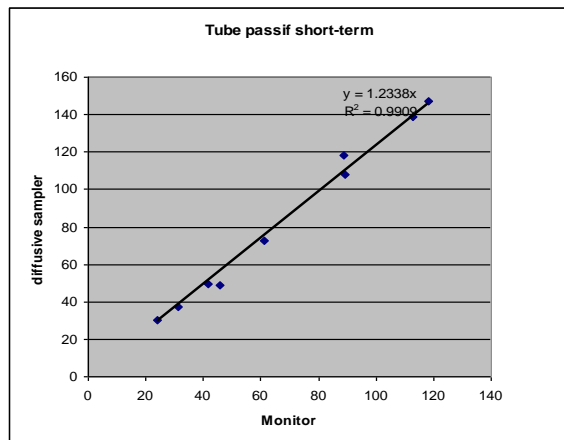
The diffusive sampler is suitable for checking compliance with short-term limits for 24 hours. The uncertainty of measurement was estimated less than 25% according to the test results.

### Applications

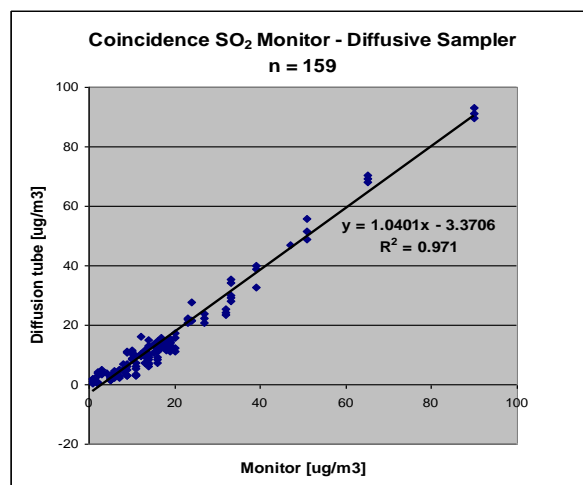
- Indicative measurement of daily means for monitoring air quality standards
- Assessment of personal exposure for epidemiological studies



## Specifications



Field comparison with CLD monitor in France [1].



Field comparison with CLD monitor in France [2].

Sampling rate	NO <sub>2</sub> : 15.5 ml per minute at 20°C SO <sub>2</sub> : 11.9 ml per minute at 20°C									
Working range	0.75 – 240 µg/m <sup>3</sup>									
Exposure time	short term: 8 to 48 hours long term: 1 to 4 weeks									
Detection limit	56 µg/m <sup>3</sup> for a 24-hours exposure 2.0 µg/m <sup>3</sup> for a 4-week exposure									
External influences:	<table border="0"> <tr> <td>wind speed</td> <td>influence of wind speed &lt; 10% up to</td> <td>10 m/sec</td> </tr> <tr> <td>temperature</td> <td>no influence between</td> <td>10 to 30°C</td> </tr> <tr> <td>humidity</td> <td>no influence between</td> <td>20 to 80%</td> </tr> </table>	wind speed	influence of wind speed < 10% up to	10 m/sec	temperature	no influence between	10 to 30°C	humidity	no influence between	20 to 80%
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humidity	no influence between	20 to 80%								
Storage	before use: 12 months after use: 6 months									
Interferences	oxydants									
Extended uncertainty*	NO <sub>2</sub> : 21.0 % at concentration levels of 40 µg/m <sup>3</sup> SO <sub>2</sub> : 20.3 % at concentration levels of 125 µg/m <sup>3</sup>									

\*according to GUM; subject to change without notice

revised 20.02.2023

## References

[1] Caractérisation de l'exposition personnelle d'un échantillon de Franciliens, Février 2008.  
AIRPARIF Surveillance de la Qualité de l'Air en Ile-de-France – Pôle Etudes. ISBN 978-2-11-097823-3

[2] AirNormand : Michel Bobbia, Rapport d'études E02\_04.  
Quelques remarques sur la Norme NF ISO13752 ; 2002  
<http://www.airnormand.asso.fr> études divers

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SP19\_NO2-SO2\_2023