

Certified Reference Standards for Thermal Desorption

Environmental air monitoring?

Industrial / occupational hygiene?

Direct thermal desorption of materials?

Calibration / quality assurance (QA) standards meeting the requirements of your thermal desorption application are now available from Markes International (Mi™).

- **Certified traceable to primary standards**
- **Wide choice of volatile organic compounds from 10ng to 100µg - good for both trace level environmental tests and for QA/QC of concentrated materials.**
- **Little incremental expense versus commercial prepacked / conditioned tubes**
- **Minimum 6 month shelf life**

Routine certified standards from Markes International are prepared by the direct introduction of known volumes of standard atmospheres into individually labelled 3½-inch (89mm) by ¼-inch (6.4mm) O.D. stainless steel sorbent tubes. Analyte masses are accurate to ±3% at levels above 100ng and at ±5% for masses from 10 - 100ng.

Benzene, toluene and o-xylene (BTX) standards on Tenax-TA® are available at both 25ng and 1µg levels. A TO-17 Standard™ on Tenax-TA® - comprising 25ng each of CH₂Cl₂, 1,1,1-trichloroethane, 1,2,4-trimethylbenzene, methyl-t-butyl ether (MtBE), butanol, ethyl acetate and methylethyl ketone (MEK) - is also available. The wide polarity and volatility range of analytes included in this standard make it ideal for QA of general purpose ambient air monitoring methods such as US EPA TO-17.

Custom certified standards can be prepared to your specification containing up to six volatile organic compounds.



Certified Reference Standards

Certification

Routine Mi standards are prepared at leading European national standards institutes by direct introduction of standard atmospheres.

Internationally approved methodology (ISO 6145 parts 4 & 8) is used to generate the standard atmospheres required and each is continuously monitored by independent on-line mass spectrometry. Custom standards are prepared to your specification by direct introduction of the components in the vapour phase. All masses are traceable to primary standards¹.

Each individual package of 10 standards includes an additional blank tube as a shipping blank, used to confirm the integrity of the standards package. The package documentation includes a certification document, chromatogram of the shipping blank, chromatogram of the components loaded onto the tubes and user instructions.

MARKES international		Unit D3 Llantrisant Business Park, Pontyclun, RCT, CF72 8YW, UK	Phone: +44 (0) 1443 230935 Fax: +44 (0) 1443 231531 Email: enquiries@markes.com
CERTIFICATE			
Applicant: Air Monitoring International, Unit 5, Fallow Industrial Estate, Upper Sully, Glamorgan, BK17 7PG			
CDS Tubes and Sorbent: 11 Thermal Desorption Tubes packed with Tenax TA, Tube Numbers: 02018, 02019, 02020, 02021, 02022, 02023, 02024, 02025, 02026, 02027, 02028, 02029, 02030			
Preparation Method: Calibration of the tubes and standardisation of the primary standard generator 85-90% ethanol, using diffusion cells and dry nitrogen as prepared in ISO Standard 6145 (1995) part 8. Tubes conditioned at 20°C for 24 hours. Tube M1 020212 serves as the Shipping Blank.			
Preparation Result:			
Compound	Certified value (ngs per tube, ng)	Uncertainty (%)	
Benzene	25.4	± 0.5	
Toluene	25.3	± 0.7	
o-Xylene	25.2	± 0.4	
Traceability: The procedure used to charge the tubes includes the use of standards for which the traceability to primary standards and/or preparation of pure substances has been demonstrated.			
Certificate Validity: August 2001			
Notes: Ref: CA1258. The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, which provides a confidence level of approximately 95%. The standard uncertainty has been determined in accordance with EAL-02.			
Signed: [Signature]			
Name: D Evans, Markes International Ltd			
Date: 15 th February 2001			

CRS Certificate

Artefact Free

CRS tubes are packed with 200mg TenaxTA™ (35-60mesh) (unless otherwise requested as custom standards) and rigorously conditioned.

Prepared standards are capped using ¼-inch brass Swagelok-type caps and combined PTFE ferrules. Standards prepared and sealed in this manner have been validated for long term storage at temperatures from 0 to 40°C².

All Mi standards on TenaxTA are guaranteed free of interfering artefacts and have shelf lives of 6 or 12 months.

Packages of 10 or 50 standards include a shipping blank for quality assurance and a corresponding analytical profile of that blank tube.

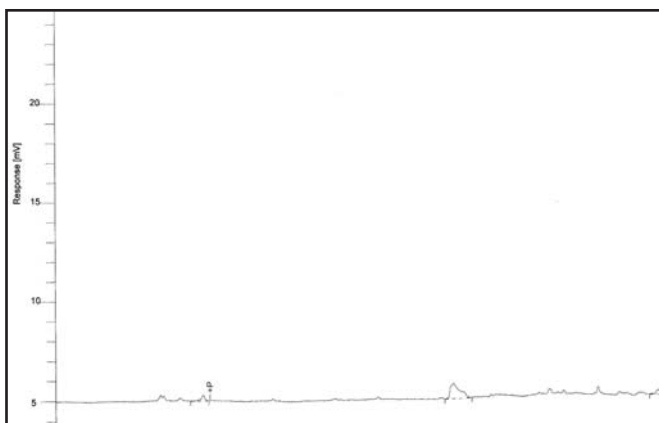


Fig. 3. Example profile of a blank Tenax tube after 6 months storage.

Compliance with international protocols

CRS tubes are designed for analytical quality assurance as described in numerous national and international methods and protocols.

Standard	Title
ASTM D-6196-97	Standard practice for - Selection of sorbents and pumped sampling / TD analysis procedures for VOCs in air.
ISO 16017	Air Quality: pumped/diffusive sampling and analysis of VOCs by sorbent tube / TD-GC
US EPA Mtd TO-17	Determination of VOCs in ambient air using active sampling onto sorbent tubes
EN 689	Guidelines for the assessment of exposure by inhalation to chemical agents...
MDHS 71	Analytical quality in workplace air monitoring

Cost Effective

Mi standards are a cost-effective answer to growing demands for improved analytical quality assurance. Priced at little more than commercial prepacked / preconditioned tubes, the cost-per-analysis of standards is typically lower than that of field samples.

After analysis, batches of desorbed CRS tubes may be returned to Markes International for recycling and loading with fresh certified standards.

References:

- 1: Vandendriessche S. et al, Analyst, 116, 437, (1991).
- 2: Peters R.J.B. et al, TNO Report R92/253, (1992).

Trademarks:

Mi™ and TO-17 Standard™ are trademarks of Markes International Ltd.

TenaxTA™ is a registered trademark of Buchem BV, the Netherlands.