Australian Standard™

AS 3580.9.8

# Methods for sampling and analysis of ambient air

# Method 9.8: Determination of suspended particulate matter—$PM_{10}$ continuous direct mass method using a tapered element oscillating microbalance analyser

## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EV-007, Methods for Examination of Air as an Australian Standard.

The objective of this Standard is to provide regulatory and testing bodies with a standard method for continuously monitoring suspended particulate matter changes of particles less than 10 micrometres in ambient air, providing near real time measurement of mean particle concentration.

## FOREWORD

This Standard sets out the operational requirements for the continuous determination of suspended particulate matter in ambient air using a tapered element oscillating microbalance (TEOM) analyser. To minimize the contribution of liquid water to measured particle mass, the TEOM analyser conditions the incoming sample aerosol to 50°C prior to and during its measurement. This procedure provides constant sampling conditions.

At sampling locations with a high proportion of volatile and semi-volatile particulate species, the correlation between measurements using the time-integrated TEOM analyser and a co-located manual gravimetric filter method (e.g. AS 3580.9.6, *Methods for sampling and analysis of ambient air,* Method 9.6: *Determination of suspended particulate matter — $PM_{10}$ high volume sampler with size-selective inlet — Gravimetric method*) may vary.

Variations between instruments, depend on the volatility of the particulate species collected, and variations in the ambient temperature and prevailing humidity during sample collection. In the case of AS 3580.9.6, this also applies after collection of the sample. Variations are expected to be greater in cooler climates that experience elevated concentrations of volatile species. This may be due in part to differences between the methods in the retention of volatile species, particle-bound water and gas-to-particle conversion.

The TEOM analyser offers continuous operation, providing near real-time measurements for assessment and study of the temporal changes in ambient suspended particulate matter.

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