STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

AS 1462.18

METHODS OF TEST FOR UNPLASTICIZED PVC (UPVC) PIPES AND FITTINGS

METHOD 18: METHOD FOR DETERMINATION OF PVC AND TITANIUM DIOXIDE CONTENT

1 SCOPE. This Standard sets out the method for determining the PVC and titanium dioxide content of unplasticized PVC (UPVC) pipes and fittings.

2 PRINCIPLE.

2.1 PVC content. A sample of UPVC pipe or fitting is dissolved in tetrahydrofuran (THF) and centrifuged. The supernatant is decanted and absolute ethanol is added to precipitate the PVC which is dried and weighed.

2.2 Titanium dioxide content. A sample of UPVC pipe or fitting is ignited in a furnace and the resulting ash is boiled with sodium sulphate and sulphuric acid. This solution is diluted with distilled water and the concentration of titanium dioxide determined by spectrophotometry.

3 REFERENCED DOCUMENTS. The following Standards are referred to in this Standard:

AS 2162 Code of Practice for the Use of Volumetric Glassware.

AS 2163 Graduated Measuring Cylinders.

AS 2164 One-mark Volumetric Flasks.

AS 2166 One-mark Pipettes.

AS 2850 Chemical Analysis — Interlaboratory Test Programs — Guide to the Planning and Conduct — For Determining Precision of Analytical Method(s).

4 APPARATUS AND REAGENTS.

4.1 Reagents. Except where otherwise specified, only reagents of recognized analytical grade and only distilled water or water of an equivalent purity shall be used.

4.1.1 *Tetrahydrofuran (THF).*

NOTES:

1. CAUTION — Extremely flammable
   — May form explosive peroxide
   — Irritating to eyes and respiratory system.
2. Work with this solvent is to be carried out in a well-ventilated fume cupboard.

4.1.2 *Sulphuric acid (ρ_{20} 1840 kg/m^3).*

4.1.3 *Anhydrous sodium sulphate.*

4.1.4 *Hydrogen peroxide (30 percent).*

4.1.5 *Sulphuric acid* — 10 percent solution (1 part of concentrated sulphuric acid added to 9 parts of distilled water).

4.1.6 *Rutile titanium dioxide* — Tioxide R-PP25 (average assay 97.2% TiO_2).

4.1.7 *Absolute ethanol.*

4.2 Apparatus. The following apparatus is required:

(a) Ultraviolet/visible spectrophotometer set to read at 408.0 ±0.2 nm.
(b) Centrifuge capable of providing a relative centrifugal force (RCF) of approximately 3000.
(c) 100 mL glass thick-walled centrifuge tubes.
(d) Oven capable of being maintained at 50 ±5°C.
(e) Thermometers capable of indicating the required temperature to an accuracy of ±2°C.
(f) Muffle furnace capable of being maintained at 850 ±10°C.
(g) Balance capable of weighing to 0.1 mg.
(h) Whatman GF/c glass fibre filters.
(j) Porcelain or silica crucibles — 50 mL volume.