

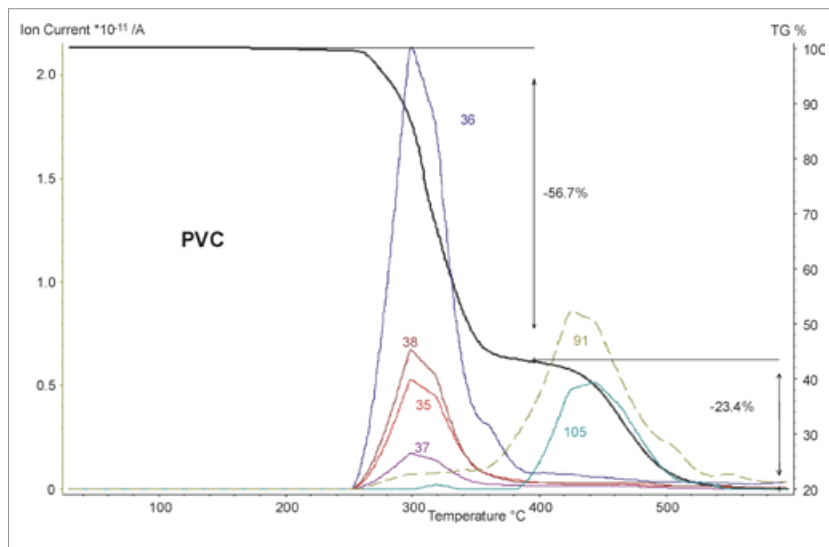
APPLICATION SHEET

POLYMERS – BUILDING MATERIAL

POLYVINYL CHLORIDE

Polyvinyl chloride is a widely used plastic produced by polymerization of the monomer vinyl chloride. Globally, over 50% of PVC manufactured is used in construction. As a building material, PVC is cheap and easy to assemble. There are many uses for PVC including window profiles,

pipes, plumbing fixing, roofing membranes, flooring, and electrical cables. Other applications are i.e. in clothing, upholstery and magnetic stripe cards etc. The waste management of PVC is either done by recycling (mechanical, chemical), deposit or thermally by waste combustion.



Instrument

TG 209 **F1 Iris**[®] – QMS 403 **Aeolos**[®]

Test Conditions

Temperature range	RT ... 1000°C
Heating/cooling rates	10 K/min
Atmosphere	Air at 40 ml/min
Sample mass	21.7 mg
Crucible	Alumina
Sensor	TG type Platine

Results

PVC decomposes in two main TG steps in an air atmosphere. Depending on the additives (flame retardants, plasticizers, stabilizers etc.), decomposition starts at temperatures higher than 200°C. During the 1st TG step, chlorine (35, 37 amu) and HCl (36, 38 amu) are evolved as can be seen from the picture. Fragments with higher mass numbers occur during the 2nd TG step where the polymer backbone cracks. From the point of waste disposal by combustion, appropriate flue gas filters have to be installed.