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## Thermal characterization of solid wastes

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### ABSTRACT

Nowadays biodegradable residential and market solid waste increasing enormously around globe. The maintenance of generated Wastage in Indian cities is essential as public health concern. Present study focused on residential and market biodegradable solid waste of two major cities in India. The thermal analysis data reveals that 9mg of biodegradable residential and market waste produces calorific value of 3713 and 4206 cal/g respectively. The thermal conductivities of residential and market wastes were 0.00868 and 0.0153 (Cal/cm/s<sup>o</sup>C). The experimental data from table (I) shows the volatile content and C/N ration of both residential and market waste. The residential and market solid waste contain mainly a high compostable and low combustible matter (paper, plastic, leather, rubber and wood). The metal content is less than 1%, fine earth ashes are high partly due to the presence of sewage sludge and silts. Only the biodegradable mass was considered to be a source of energy whereas the other groups were considered for material winning. Generally, the waste, which has thermal conductivity, would produce more energy on combustion. Thermal conductivity of market waste is higher than that of residential waste. The calorific value obtained from residential waste is comparatively less than that of market waste. Thermogravimetry and differential thermal analysis were recorded for a few representative solid waste samples in order to know the effect of temperature on the mass stability of the solid wastes, volatility, phase transition if any, and the corresponding heat changes. The DTA/TG/DTG curves were recorded for a selected set of samples from Hyderabad and Warangal municipalities in aerial environment.

**Keywords:** Residential solid waste, Market solid waste, calorific value, Thermal analysis.

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