Note

THERMAL ANALYSIS OF N-PHENYLBENZOHYDROXAMIC ACID (PBHA)

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The thermal dissociation of N-phenylbenzohydroxamic acid was studied by differential thermal analysis (DTA) and thermogravimetry (TG). The DTA curve showed two exothermic peaks caused by melting and/or decomposition of the compound.

N-phenylbenzohydroxamic acid (PBHA) is widely used as an analytical reagent for inorganic analysis [1–4]. It is desirable to study the thermal stability of the reagent.

Experimental

PBHA was synthesized as described elsewhere [5]. Its purity was checked by m.p, elemental analysis, IR and UV spectra.

Simultaneous TG and DTA plots were obtained at a constant heating rate of 8°/min on Mettler thermal analyser fitted with a 12-channel recorder. Alumina was used as a reference material for the DTA.

Results and discussion

The DTA and TG curves of PBHA are reproduced in Fig. 1 and data are given in Table 1.

Table 1

Thermal analysis of PBHA

DTA		
I exotherm	121°	melting and decomposition
II exotherm	180°	decomposition (complete)
	TG	
Wt loss	122–150°	decomposition (benzoic acid, benzanilide)
Wt loss	150–190°	complete decomposition (tars)

The DTA curves show two exothermic peaks, one very sharp at 121° and another broad at 178–180° with weight loss.

The TG curve of the compound heated in flowing air shows no change in weight up to 120° indicating the probable absence of water.

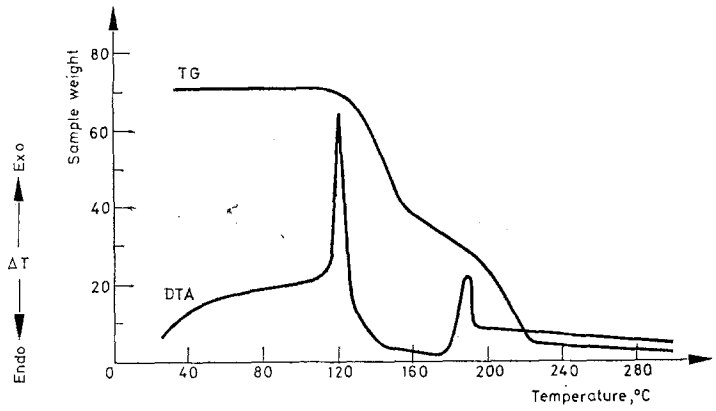

Fig. 1. DTA and TG curves of PBHA in air

The major products of PBHA were found by UV, IR and X-ray analysis to be benzoic acid, benzanilide and finally tars. At about 121–122° the PBHA melts and decomposes (I exotherm) into benzoic acid, benzanilide with continuous weight loss. Further at about 180° the organic matter decomposed into tars (II exotherm).

The thermal analysis suggests that PBHA is suitable as an analytical reagent or gravimetric estimation.

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