

Discussion (provided by AV)

The unknown was identified as acetanilide because many of its physical properties are similar to the physical properties of acetanilide. For instance, 25 mL of water was used to dissolve 1.07 g of the unknown. According to the solubility of acetanilide (0.54 g/100 mL), the minimum volume of water needed to dissolve the unknown, if it were acetanilide, is 21.4 mL.² The melting range of the purified unknown (109.1- 113.1 °C) is close to that of acetanilide (114 °C)² and is thought to be quite pure. Also, the unknown was identified as acetanilide because the measured melting point of the mixed unknown/acetanilide sample had a relatively narrow range, unlike the unknown/phenacetin mixture.

(where brown is your conclusion)