Zinc Borate Synthesis Using Hydrozincite and Boric Acid with Ultrasonic Method

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Abstract : Zinc borate is an important inorganic hydrate borate material, which can be use as a flame retardant agent and corrosion resistance material. This compound can loss its structural water content at higher than 290°C. Due to thermal stability; Zinc Borate can be used as flame reterdant at high temperature process of plastic and gum. In this study, the ultrasonic reaction of zinc borates were studied using hydrozincite (Zn5(CO3)2•(OH)6) and boric acid (H3BO3) raw materials. Before the synthesis raw materials were characterized by X-Ray Diffraction (XRD) and Fourier Transform Infrared Spectroscopy (FT-IR). Ultrasonic method is a new application on the zinc borate synthesis. The synthesis parameters were set to 90°C reaction temperature and 55 minutes of reaction time, with 1:1, 1:2, 1:3, 1:4 and 1:5 molar ratio of starting materials (Zn5(CO3)2•(OH)6 : H3BO3). After the zinc borate synthesis, the products analyzed by XRD and FT-IR. As a result, optimum molar ratio of 1:5 (Zn5(CO3)2•(OH)6:H3BO3) is determined for the synthesis of zinc borates with ultrasonic method. **Keywords :** borate, ultrasonic method, zinc borate, zinc borate synthesis

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