

## The Effect of the Reaction Time on the Microwave Synthesis of Magnesium Borates from $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$ , $\text{MgO}$ and $\text{H}_3\text{BO}_3$

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**Abstract :** Due to their strong mechanical and thermal properties magnesium borates have a wide usage area such as ceramic industry, detergent production, friction reducing additive and grease production. In this study, microwave synthesis of magnesium borates from  $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$  (Magnesium chloride hexahydrate),  $\text{MgO}$  (Magnesium oxide) and  $\text{H}_3\text{BO}_3$  (Boric acid) for different reaction times is researched. X-ray Diffraction (XRD) and Fourier Transform Infrared (FT-IR) Spectroscopy are used to find out how the reaction time sways on the products. The superficial properties are investigated with Scanning Electron Microscopy (SEM). According to XRD analysis, the synthesized compounds are 00-041-1407 pdf coded Shabinite ( $\text{Mg}_5(\text{BO}_3)_4\text{Cl}_2(\text{OH})_{5.4}(\text{H}_2\text{O})$ ) and 01-073-2158 pdf coded Karlite ( $\text{Mg}_7(\text{BO}_3)_3(\text{OH},\text{Cl})_5$ ).

**Keywords :** magnesium borate, microwave synthesis, XRD, SEM

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