$$Fe^{2+} + 2Fe^{3+} + (6 + X)OH^{-} \rightarrow Fe_3O_4 \cdots (1)$$
  
 $Fe(OH)_2 + XOH^{-} + O_2 \rightarrow Fe_3O_4 \cdots (2)$ 

Equation (1) is the reaction of the coprecipitation method to form magnetite. In the reaction, it is known that f ne magnetite particles are formed in an alkali solution<sup>6)</sup>. Equation (2) is the reaction of the air-oxidation method to form magnetite. The particle sizes formed in this reaction are larger than those of the coprecipitation method, being of submicron order<sup>7,8)</sup>. Some reports indicate that the particle shape depends on the kind of anion in the applied raw material solution, the equivalent ratio to alkali (2OH<sup>-</sup>/Fe<sup>2+</sup>), the hydroge g the theo, on,e

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## 3.3 Properties of Ferrite Core Using Fine Iron Oxide Powder

**Figure 8** shows the effect of iron oxide particle size and sintering temperature on sintered density of NiCuZn ferrites. By using fne iron oxide powder, a high sintered density above  $5.1 \times 10^3 \, \text{kg/m}^3$  was obtained

4.