CHAPTER V
CONCLUSIONS

Physical properties, mechanical property and chemical properties of tile specimens were strongly dependent on both composition and firing temperature. The color shades of tile specimens changed from brown to dark brown. The higher percentage of zinc waste and high temperature, the darker color specimen's were. Higher percentages of zinc waste in tile specimens yielded lower water absorption at lower firing temperature. The optimum firing condition of tile specimens T4 (1150°C), T5 (1125°C), T6 (1125°C), T7 (1100°C) and T8 (1100°C), bending strengths range from 61.6 MPa -107.26 MPa, which was at least double of the strength of specimen with out zinc waste (30MPa). All of these specimens passed chemical and toxic leaching test. Moreover, most of specimens showed abrasive resistance lower than that of the standard. The results exhibited that up to 70% of zinc waste in tile composition provided acceptable properties for application.

In the case of glazes, the color shades of glazes slightly changed to darker with increasing percent of zinc waste in glaze composition. However, the effect of amount of zinc waste on glossy and matt appearance of glaze was not investigated.

All of these results show that reutilizing zinc waste as raw material for developing tiles was the best alternative to dispose of zinc waste. Since, these unglazed tiles could be prepared with high percentage zinc waste loading at lower temperature. This method was a lower cost method compares to vitrification process and very practical for normal tile production. In addition, the color of unglazed tiles could be obtained from zinc waste without any addition of expensive body stains.