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ATTERBERG LIMIT OF KAOLINITE-LIME

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Abstract— One of the key parameters of geotechnical investigation is to Atterberg limit. With current approach in employment of stabilisation technique, there is a vital need to investigate the effect of stabilizers into Atterberg limit of mixture. This study focuses on lime effect on kaolinite liquid limit, plastic limit and plasticity index.

Keywords— Atterberg, Kaolinite, Lime

I. INTRODUCTION

Atterberg limit is a basic characteristic of the soil. Every soil investigation reports include Atterberg limit values [1-12]. This include liquid limit (LL) and plastic limit (PL) [13-21]. This shows workability of the soil. Lime is a cementitious material with various applications in different ground improvement sector [22-31]. For instance, lime is widely used in transport, rail and highway ground improvements [31-39]. Also, kaolinite clay is a type of soil that is abundant in the environment [40-46]. This study aims to investigate effect lime on Atterberg limit characteristics of the kaolinite clay.

II. MATERIALS

The material was selected with respect to their availabilities and benefit to community. They can be referred as:

a) Kaolinite:

Kaolinite was selected and sourced from a Perth's supplier. The pH of kaolinite was alkaline.

b) Lime

The highlighted ingredients were Cao which was roughly 80%.

III. COMPACTION TESTING

Table 1 shows the compaction characteristics of the mixes.

Table 1 Compaction characteristics of mixes

Sample Id	Lime	OMC %	MDD
K-L5	5	25	1.23
K-L10	10	29	1.18
K-L15	15	34	1.15

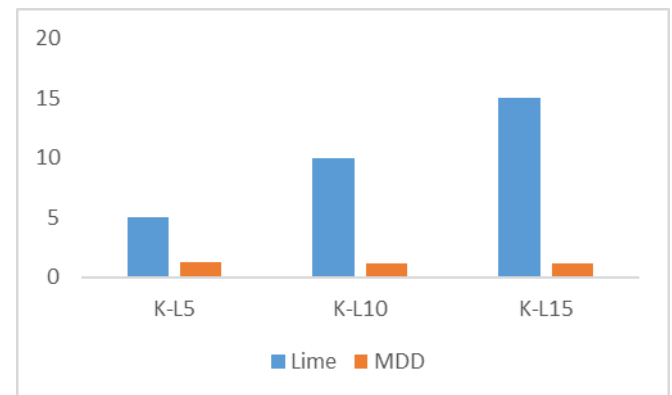


Fig. 1. Maximum dry density (MDD) of mixtures

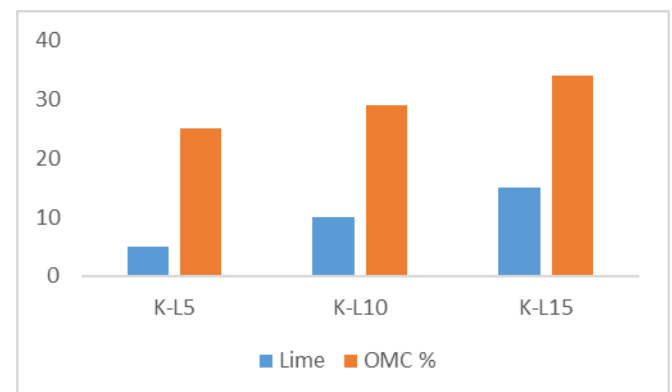


Fig. 2. Optimum moisture content (OMC) of mixtures



IV. ATTERBERG LIMIT

The atterberg limit tests were conducted for mixtures to get the values of LL, PL and PI. The following figures represent the changes in the above indices with respect to changes in lime percentage.

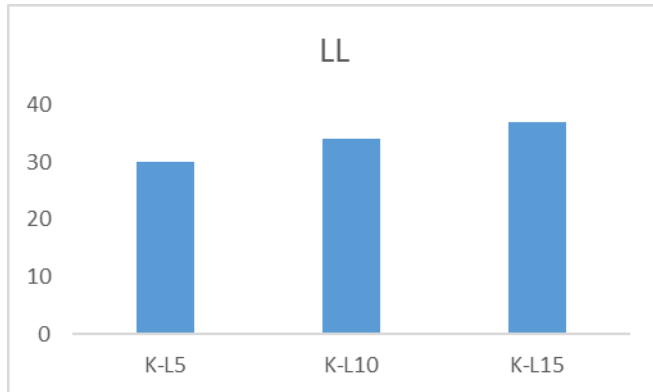


Fig. 3. Liquid limit (LL) of mixtures

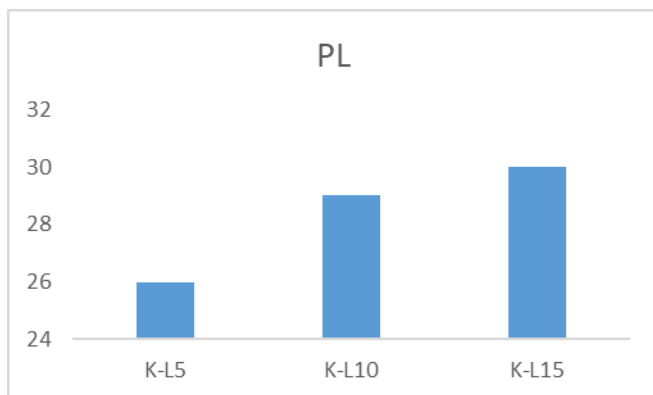


Fig. 4. Plastic limit (PL) of mixtures

V. CONCLUSION

A series of atterberg limit test was conducted the results showed with increasing in lime dosage LL, PL and PI increased at the same time OMC increased and MDD decreased as results of compaction tests.

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