

Product Evaluation

RE: Review of Whitemud Resources - Metakaolin

PRODUCT

Whitemud Metakaolin is distributed by Whitemud Resources Incorporated located in Calgary, Alberta. The mine and processing facility is located south of Moosejaw, Saskatchewan.

VENDOR CLAIMS AND INFORMATION

CLAIMS

Metakaolin's first documented use was at the Jupia Dam of Brazil in 1962. Metakaolin has been commercially available in North America since the mid 1990's in the eastern US. Metakaolin has been approved and used in many US states. Metakaolin is recommended to be used in concrete to increase strength, improve durability, mitigate alkali-silica reactivity (ASR), protect against sulfate attack and reduce efflorescence. Website for this product: <http://www.whitemudresources.com/>

DESCRIPTION

Metakaolin is a highly reactive pozzolan that enhances the strength, durability and workability of Portland Cement Concrete and other cement based products. Metakaolin is a fine off white powder produced by heating kaolin to 800^o C. Kaolin is fine white clay that has traditionally been used in the manufacture of porcelain and as a filler and coating for paper.

POTENTIAL USAGE

Whitemud Metakaolin can be used in ready mixed concrete, precast concrete, architectural concretes, glass fiber reinforced concrete, mortars, grouts and oil well cementing applications.

STANDARDS

Whitemud Metakaolin conforms to the requirements of CSA - CSA A3001, ASTM C 618, AASHTO M 295-07 as a Type 'N' (Natural) Pozzolan.

ALBERTA TRANSPORTATION COMMENTS

EXPERIENCE

Alberta Transportation has not used this product to date.

APPLICABLE STANDARDS

Currently Alberta Transportation does not have guidelines or specifications pertaining to the use of metakaolin, but has specifications for use of other supplementary cementing materials.

RECOMMENDATIONS

Whitemud Resources - Metakaolin be listed as a Potential Product under Alberta Transportation Products List, Natural Pozzolan Supplementary Cementing Materials based on the information provided. Final acceptance as a proven product will be based on field performance.

REQUIREMENTS FOR TRIAL PROJECTS:

- Use of Metakaolin shall be limited to bridge structures with a clear deck area less than 500 m² and projected AADT less than 6000.
- Metakaolin can be considered for a trial project when Class HPC or Class HPC with steel fibers concrete is specified.
- Metakaolin may not be used for precast bridge components.
- Trial batch testing shall be completed for each project mix incorporating Metakaolin and demonstrate that the concrete meets all specification requirements for the Class of concrete.
- Flyash shall be used in conjunction with Metakaolin.
- The mix shall contain between 8 – 12% Metakaolin.
- The total supplementary cementing materials (Flyash and Metakaolin) shall not exceed 22%.

TRIAL PROJECTS

Rishi Adhikari

cc Innovation Evaluation Group – Roger Skirrow
Dave Besuyen
Greg Whyte