**Ethylene Glycol Accelerated Weathering Test – A new IMPROVED Non-Subjective aggregate Durability Test Method**

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| Ethylene glycol has been used extensively in the past by the concrete and road construction industries to identify rock durability issues associated with smectite clay minerals. The presence of these clay minerals is synonymous with rock degradation under normal environmental wetting and drying cycles. However, such historical test methods are predominately based on a subjective visual interpretation, describing the observed degradation of individual rock pieces at fixed time intervals during the soaking process. In addition, some test methods include complex equations with multiple weighting factors applied to nominated degradation descriptors (e.g. spalling, fracture and disintegration) used to calculate a single durability indicator.  The presentation describes the development and implementation of an alternative non-subjective accelerated weathering test also using ethylene glycol. The research included metamorphic and volcanic rock types used extensively in New Zealand for road construction. The greatest benefit of the proposed new test method is the ability to eliminate the subjective visual assessment described in historical test methods and adequately quantify results to specify a contractual acceptance and rejection criteria. The test method also shows that good repeatability is possible from duplicate test samples. However, rock quality and quarry production consistency will influence the ability of the test method to report the same “percentage change in fines” over a prolonged test period. This was particularly evident within problematic and lower quality rock. The test findings are well supported by observed field performance, thus giving confidence in the new method’s usefulness. |