

Project: Aquapatch - Hamburg Data Summary
Date: 6/10/2015

Summary of Method

Hamburg test performed in accordance with AASHTO T 324-14
 Four specimens fabricated at NCAT from provided Aquapatch material
 Specimens fabricated to 7.0 +/- 0.5% air voids
 Specimens tested in pairs
 Specimens tested in 50°C water under a moving 158 lb wheel load at 50 passes per minute
 Test terminates at either 12.5 mm of rutting per set or at 20,000 total passes
 Rut depth is recorded as a function of wheel passes
 Final rut depth is reported along with the stripping inflection point (SIP)
 The SIP represents the number of passes at which the specimen begins to rapidly rut
 The SIP generally coincides with material stripping
 NCHRP Report 673 recommends less than 12.5 mm of rutting for a mixture with PG 64-22 or softer binder at 10,000 passes
 The SIP is generally expected to be above 10,000 passes for a mixture that performs well in the Hamburg test (Kvasnak et al., 2010)

Summary of Results

A machine error caused the test to be terminated prematurely (around 17,000 passes)
 The rut depth at 20,000 passes was extrapolated for both sets using a 5th order polynomial regression
 Both sets rutted less than 12.5 mm at 10,000 passes
 Based on the extrapolated rut depth at 20,000 passes, both sets rutted less than 12.5 mm at 20,000 passes
 The SIP was greater than 10,000 passes for both sets
 A large amount of tire pickup was noticed on the machine during testing. This is atypical for Hamburg testing on HMA or WMA.

Table 1: Hamburg Results Summary - Aquapatch - 2 sets

Mix ID	Sample ID	Sample 1 Air Voids (%)	Sample 2 Air Voids (%)	Average Air Voids (%)	Rut Depth @ 10,000 passes (mm)	Rut Depth @ 20,000 Passes (mm)*	Passes to 12.5mm Rut	Stripping Inflection Point (passes)**
Aquapatch	3,5	6.8	6.5	6.7	-1.88	-7.17	>17,000	16,400
Aquapatch	6,7	6.7	6.7	6.7	-2.47	-6.18	>17,000	>17,000

* = Extrapolated

** = Approximate due to early test termination

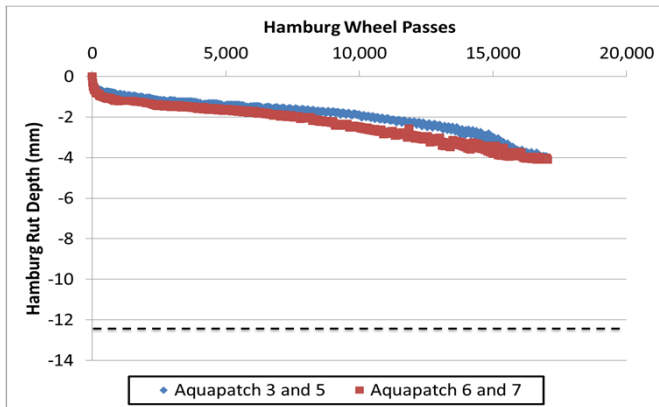


Figure 1: Rut Depth versus Number of Passes - Aquapatch - 2 sets



Figure 2: Photos of Aquapatch Specimens after Testing and Tire Pickup - Hamburg Test