

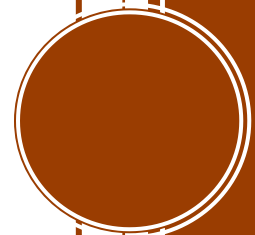


Chicago Testing
Laboratory, Inc.

RESISTANCE TO FLAME EXPOSURE OF RUBBER MODIFIED ASPHALT

Chicago Testing Laboratory, Inc.

4/9/2012





Hot In Place Recycling

Resistance to Flame Exposure of Rubber Modified Asphalt Loose and Compacted Specimens

Project Summary:

Samples of rubber modified hot mix asphalt (ARHM) were provided from a source in California and delivered to Chicago Testing Laboratory for analysis. The ARHM was tested for its resistance to direct flame exposure of loose and compacted specimens by using multiple flame production methods, including direct flame from two different propane torches. Local unmodified hot mix asphalt (HMA) was subjected to testing of loose and compacted specimens as a control sample. Observations were recorded visually, through video and photographs, and documented on a standard laboratory report.

This study included testing laboratory compacted and loose specimens of ARHM and HMA material. Specimens were compacted to the same gyration rate, and volumetric properties were not measured. Loose specimens were laid out in an asphalt testing pan. All specimens were subjected to the same duration and intensity of direct flame utilizing a propane torch. Direct flame was applied at a distance of no more than 6 inches from the material surface and held for a duration of at least 3 minutes.

Samples were monitored and observations were conducted to determine the relative effect of the flame exposure on each sample as documented below.

Observations:

1. Compacted ARHM and HMA specimens, when subjected to direct flame, showed minimal and similar material ignition and smoke. Both samples did show limited duration smoking after extended exposure of approximately 45 seconds.
2. Loose ARHM and HMA specimens, when subjected to direct flame, showed minimal and similar material ignition and smoke. Both samples did show limited duration smoking after exposure of approximately 5 to 10 seconds.
3. None of the samples/specimens tested showed any propensity for ignition.
4. Neither the ARHM nor the HMA specimens showed any greater propensity for ignition or smoking.



Figure 1: ARHM Compacted Specimen



Figure 2: ARHM Loose Sample



Figure 3: HMA Compacted Specimen



Figure 4: HMA Loose Sample

Conclusions:

This study was completed to determine the effects of direct flame on rubber modified asphalt material as compared to non-rubber modified asphalt material. After subjecting compacted and loose specimens to similar exposure to direct flame, neither sample showed any tendencies towards ignition and both showed minimal and brief duration smoking. No discernible difference was seen between the tendencies for ignition or smoking between the rubber modified (ARHM) and non-rubber modified (HMA) materials tested.

Based on the empirical observations completed in this study, and on the previously provided research information, there appears to be no increased risk of ignition when subjecting rubber modified asphalt (ARHM) to exposed flame than to subjecting conventional hot mix asphalt materials (HMA) to exposed flame.

Respectfully Submitted
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Field Report

No. 1

Project Name: Reheat R& D
Project Location/#: Warrenville Lab
Client: Gallagher
Contractor: Gallagher

Technician: Paul Yerkes
Type of Inspection: Laboratory Trials

CTL Proj #: 12WA800
Date: 2/27/2012
Weather: N/A

Time
Arrived _____
Departed _____
On Site _____
Travel _____
Total 4.00
Miles* _____

*Billed according to contract.

Summary and Technician Observations:

CTL technician received four one-gallon cans of HMA containing rubberized liquid asphalt cement from California DOT. Material was heated in 305F oven for 1 hour and then spread into a 13"x6"x2" sample pan. The sample was subjected to an open flame from a propane hand torch at a distance of no more than six inches. The HMA produced smoke after approximately 5-10 seconds but no material caught fire. The sample was exposed to the flame for two minutes.

A sample of HMA from an existing IDOT mix design (N70 recycled surface without rubber) was subjected to the same test and treated in the same manner as the California rubber mix. As with the first material, the IDOT HMA mix sample produced some smoke after 5-10 seconds but no material caught fire when exposed to the direct flame.

Reviewed by: _____



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Field Report

No. 2

Project Name: Reheat R& D
Project Location/#: Warrenville Lab
Client: Gallagher
Contractor: Gallagher

Technician: Tom Buckmaster
Type of Inspection: Laboratory Trials

CTL Proj #: 12WA800
Date: 3/12/2012
Weather: N/A

Time
Arrived _____
Departed _____
On Site _____
Travel _____
Total 4.00
Miles* _____

*Billed according to contract.

Summary and Technician Observations:

CTL technician prepared three laboratory specimens using a Superpave Gyratory Compactor (SGC). Specimens were prepared to have a final thickness of approximately three inches. One sample was prepared using material from California DOT containing rubberized asphalt cement. Two additional samples were prepared using material from Illinois with neat asphalt cement (PG 58-28). The samples were cooled to room temperature and then subjected to a direct flame from a propane blow torch at a distance of no more than six inches for a time of three minutes. Observations were recorded and pictures taken before and after exposure to flame. Samples were cut for observation within the compact specimen.

Both types of sample (rubberized and standard) reacted similarly when exposed to the direct flame. A small amount of smoke appeared at approximately 45 seconds and did not last for the duration of the test. Small flare ups were noted after one minute on both types of sample. No visible damage was notice to the aggregate inside of the compacted specimen.

Reviewed by: _____