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January 14, 2005

WoodCo USA, Inc.
191 Seif Rd.
Piketon, OH 45661

Attention: Ben Nathan

Reference: Flammability Evaluation of Pro-Toast™ Top Dressing and Mulch
CTL Project No. 04311179

Dear Mr. Nathan:

This letter refers to the evaluation of the Pro-Toast Top Dressing and Mulch toasted oak wood chip product manufactured by WoodCo USA.

BACKGROUND

The brochure claims that the WoodCo USA treatment process removes moisture from the wood. Moisture removal, among other benefits, gives a flame resistant property to the product. The product is marketed for use in interior planting areas where flame resistance is an important feature. Improperly discarded matches and cigarettes have been blamed for landscape mulch fires.

TESTING

1. The temperature at which the oak chips ignite without an outside spark was determined in an electric furnace chamber with a constant supply of heated air passed over the sample. The temperature was elevated at a slow controlled rate and the air was maintained at a controlled flow rate. The temperature at which an open flame was observed coming from the wood chip was recorded. Previous testing indicated that the autoignition temperature was independent of the sample thickness. The determination was performed in triplicate.

2. A lit paper match was placed on top of a ¾" deep layer of the wood chips held in a metal pie pan. This test was performed 90 separate times. The paper matches were common book matches, 1.4" x 0.125" x 0.040". The time that the match burned was recorded, as well recording if the wood chips were on fire after the match self-extinguished. If the wood chips did ignite, the time that the wood burned was recorded.

3. In tests similar to the paper match tests, a lit wooden match was placed on the wood chips. This test was performed 34 separate times. The wood matches were Ohio Blue Tip "strike on box" kitchen matches, 2.2" x 0.110" x 0.110". The time that the match burned was recorded, as well as recording if the wood chips were on fire after the match self-extinguished. If the wood chips did ignite on fire, the time that the wood burned was recorded.

4. In tests similar to the match tests, a lit cigarette was placed on the wood chips. This test was performed 7 separate times. The cigarette was a filtered Camel Light, 3.90" long and 0.30" diameter, with 2.44" burnable length. The time that the cigarette burned was recorded, as well as recording if the wood chips were on fire after the cigarette self-extinguished.

RESULTS

The autoignition temperature was determined to be 824°F ± 6.7°F.

The paper matches burned an average of 32.7 seconds, with a range of 5 to 99 seconds. In each case, the wood chips charred slightly where the match had burned. The wood chips were on fire 38 of the 90 times after the match self-extinguished. The average time that the wood chips burned before self-extinguishing was 2.38 seconds, with a range of 0 to 30 seconds. In only 4 tests did the wood burn for a period longer than 10 seconds; the wood chips never burned longer than 30 seconds.

The wood matches burned an average of 29.2 seconds, with a range of 9 to 60 seconds. In each case, the wood chips charred slightly where the match had burned. The wood chips were on fire 12 of the 34 times after the match self-extinguished. The average time that the wood chips burned before self-extinguishing was 2.94 seconds, with a range of 0 to 30 seconds. In only 4 tests did the wood burn for a period longer than 10 seconds; the wood chips never burned longer than 30 seconds.

The cigarettes burned an average of 13.2 minutes, with a range of 13.0 to 13.3 minutes. In each case, the wood chips discolored slightly where the cigarette had burned. The wood chips never caught on fire.

SUMMARY

The autoignition temperature of the Pro-Toast wood chip product is approximately 824°F. The *Fire Protection Handbook*, published by the National Fire Protection Association (17th edition, 1991), reports a self-ignition temperature of 410°F for untreated white oak. The Pro-Toast product has a substantially higher autoignition point than untreated oak.

Testing was performed to simulate the discarding of lit matches or cigarettes on the mulch. Burning matches that were placed on the wood chips sometimes ignited the wood chips. The resulting combustion typically self-extinguished in 2 to 3 seconds, never lasting longer than 30 seconds. Lit cigarettes never ignited the wood chips during the tests.

CTL Engineering's testing indicates that the sample of Pro-Toast Top Dressing and Mulch exhibits flame self-extinguishing properties.

CTL ENGINEERING

Randy Armbruster, Chief

(740) 947-2826

202 S. Market Street • Waverly, Ohio 45690

January 7, 2005

Mr. Ben Nathan
WOODCO, USA, Inc.
191 Seif Road
Piketon, OH 45661

Dear Mr. Nathan,

The Waverly Fire Department recently had occasion to conduct field testing on one of your products, Pro-Toast. Tests for flammability and combustion were performed on samples of the wood chips. Direct flame and lit cigarettes were used to try to ignite the product. In every case either the chips would self extinguish in a matter of seconds or would not burn at all.

It is the opinion of this department's fire prevention bureau that your product, Pro-Toast, when used in accordance with suggested practices, would be a very fire safe material for indoor landscaping and similar uses.

We have approved this product for use in our fire prevention district both as an outdoor ground cover material as well as an indoor mulch material.

Randy Armbruster
Fire Chief