

## Construction Products Division

GRACE

TO: P. M. Carkner  
D. J. Curreri  
R. Deskin  
K. M. Doyle  
M. Graziani  
J. W. Wolter  
W. R. Wright

DATE: August 6, 1987

FROM: J. M. Spiak

SUBJECT: ZMI Modification

cc: H. Cummings  
J. A. Danneker  
A. M. Gillen  
P. E. Korenberg  
R. H. Locke  
R. R. Lyons  
L. S. Shu  
M. A. Stecyk  
S. Venuti  
D. D. Walczyk

The following records substance of our July 31, 1987 and August 4, 1987 meeting. Our next meeting to review progress, will be Tuesday, August 18th at 9:00 a.m. in the Alewife Conference Room.

On June 24, 1987, air samples were collected at the Scioto Village School construction site in Delaware County, Ohio while a crew was pouring ZMI. Monitoring results indicated the OSHA Permissible Exposure Limit (PEL) and Action Level were exceeded by the worker pouring ZMI. Although the June monitoring results were inconsistent with all prior results, immediate action was taken at all plants using LY by increasing ZMI mineral oil treatment from 1.5 lbs to 3.0 lbs (@ .62/4 cu.ft. bag). A letter was hand delivered to the employer, International Masonry, Columbus, Ohio, notifying him of the test results. Reaction from the letter was minimal.

During the second shift on July 9, 1987 employees at Trenton noticed smoke/flames at the back wall where 800 bags of ZMI was stored. The material was produced July 7, 1987, treated with 3.0 lbs mineral oil. After the fire department extinguished the fire, they commented that when hit with water, the bags (ZMI) flared up more. Rebagging salvageable material started on July 13, 1987. Jack Ashworth reported that on July 14, 1987 when he was removing palletized bags, some where still too hot to touch and had black (sinzed) spots approximately 4" diameter. Temperature probes inserted in a bag measured 160°F opposite the black spot and 220°F at the black spot. When wind blew across the bag the 220°F probe shot-up to 350°F and the bag ignited into flames. Twenty minutes after the fire was put out, the probe read 320°F. No clinker was found in the bag only golf ball size chunks of material that broke-up very easily.

Manufacturing now monitors the temperature of material being bagged and takes precautions when storing newly produced material.

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- o Bob Deskin/Jack Wolter

Improvements at Libby may reduce tremolite 8-10 fold. Dallas will be the first plant to have 100% of their ore processed by the new method.

Since April to current, Libby head feed has been from a part of the mine that contains 4-5 times the amount of extremely fine tremolite. This may have effected the Scioto School field test.

Sun Oil and Witco were contacted for information concerning cumbustability of mineral oil when combined with vermiculite. No information was obtained.

- o Phil Carkner

Stated that the ZMI fire hazard may be due to the kraft paper bags. The flash point or smoldering point of 340-370°F may be reduced when in contact with the mineral oil.

A miniature bag of ZMI material treated with 3 lbs of mineral oil was placed in an oven for 46-50 hours @ 300°F in an attempt to simulate the Trenton condition. No smoldering or ignition was noted.

- o Dave Curreri

No new ZMI field jobs have been tested since the Scioto School. We will test Dallas material when available.

- o Other

It was stated again that switching over to SC ore is not an option. Due to the current (3 lb/bag) mineral oil treatment costs at \$.62/bag and the threat of another Trenton incident, our current treatment is not an acceptable option to meet the OSHA PEL's. Therefore, to reduce the fire hazard we will begin to add 2-5 lbs of water per bag. This amount of water is not detectable in the material.

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## Focus on ongoing work:

- A. Gillen        - Continued testing to determine cause/prevention of fire
- P. Carkner       - hazard in laboratory and at plants.
- evaluate other cost effective alternatives to mineral oil treatment
- effects water has on treated ZMI.
- measure yeild reduction due to additon of oil and water
- R. Deskin       - determine relationship of water vs. mineral oil relative
- D. Walczyk      - to f/cc control.
- look at cost effective alternatives to mineral oil.
- test bags from Scioto jobsite for presence and amount of mineral oil.
- initiate addition of water at all SC plants?
- D. Curreri      - continue to look for field jobs.

*Joe*

J. M. Spiak

JMS/pec

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