Niagara Falls, New York, October 19,197

REPORT NO. 77-T-111

FILE NO. 11023 & 11108

UNION CARBIDE CORPORATION

METALS DIVISION

TECHNOLOGY DEPARTMENT - ENGINEERING

TRIP TO: WPM Systems Inc., Denver Colorado

DATE: October 12, 1977

BY: L.G. Evans

ACCOMPANIED BY: R.O. Marsten - King City

PURPOSE: To Witness Bagging Test of Silica Fume and Asbestos (Dust and Pellets)

PERSONS CONTACTED: G. Morley
P. Moore

PURPOSE:

To determine the feasibility of bagging Silica Fume and Asbestos in the WPM Vacuum packer.

OBJECTIVES:

To densify, improve efficiency, eliminate dust problems during packing, and reduce the dustiness of the material.

DISCUSSION:

The tests were performed on the silica fume first, then asbestos dust and finally the asbestos pellets.

WPM tested the silica fume several days prior to our arrival and had already established the equipment setting. Therefore, the testing went fairly smoothly.

Several 16" x 24" x 8" (1.78 ft^3) bags were filled and weighed. Only one bag ruptured. This was caused by a poor seam in that particular bag.

The complete cycle i.e. the time to position a bag, fill it and position a new bag was not timed. The time to position the bag on the fill nozzle was very high because the nozzle diameter was too large for the bag used. This size can be changed for optimum operation.

The operation was somewhat dusty because their collector was not installed.

See the attachment on test procedure.

The asbestos dust test was only moderately successful. A ten pound bag of dust was emptied and repacked with only 12 lbs. The asbestos pellet test failed.

UCC 015293

PLAINTIFF'S EXHIBIT
UC-2383

Union Carbide trial exhibit UC-2383: L. G. Evans Trip Report on Bagging Tests of Silica Fume and Asbestos at WP... Published by AsbestosClaims.Law
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CONCLUSIONS:

1. The material density is doubled (12# to 23#) (silica fume).
2. One 50# bag can be filled per minute (silica fume).
3. Repeatability: plus or minus 10 oz. in 50# (silica fume).
4. Rate is estimated at 2500#/hr @ 80% operating time (silica fume).
5. The system is completely automatic except for positioning and removing the bags.
6. The dustiness of the Silica Fume is reduced.
7. Compressed air is required.
8. The non bridging hopper does not work with Silica Fume.

   A stable rathole is formed. This can be easily overcome by the incorporation of a mass flow hopper.
9. A plastic bag filler nozzle is not available at this time.
10. The estimated cost of the entire system (not incl. dust collector or air compressor) is $52,000.
11. The present delivery is 16-20 weeks after Purchase Order.
12. There is a possibility that a leasing arrangement can be agreed upon.
13. Bag used in test: 16" x 24" x 8" = 1.78 ft^3.
14. Weight of each bag average 40# (silica fume)
15. Asbestos dust - UCC Caledrin Asbestos Resin Grade 244.
    Initial weight per bag 10# - weight achieved in vacuum packer 12#.
16. Asbestos pellets -plugged hopper and fill pipe.
    Could not fill any bags.
17. This bagging method is far superior to any other means attempted to date for silica fume.
18. A safe, reliable, efficient and profitable system for UCAR silica fume at a rate of approximately one ton per hour can be designed around three pieces of equipment.

    a. Mass Flow Hopper.
    b. Georgia Marble Classifier.
    c. WPM Carter-Vac Packing System.
19. A complete lab. testing report will be issued by WPM Systems in approximately two weeks.

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RECOMMENDATIONS FOR SILICA FUME:

1. Design and fabricate a 50 - 100 ft^3 mass flow hopper.
2. Ship the hopper to WPM Systems Inc. and install it on their lab machine.
3. Run a second series of tests using a new 2.3 ft^3 bag. (Vol. to hold 50#)

TEST PROCEDURE:

1. Inflate a new bag.
2. Position on the material fill nozzle.
3. Set the scale to expected weight.

   In order to completely fill the bag and achieve the maximum density, this weight is set purposely high on the first bag so that the packing operation is never shut down by the scale. When the bag is full the packer will pulse. (This is detectable on the scale - the dial fluctuates plus and minus one pound of the total weight.)

4. The package is physically checked to determine if the bag is completely full.

   The material in the package is usually very taut since it conforms to the bag cage.

   If excess bag capacity remains the cage dimensions are increased. (There is a limit on the test machine - which we reached.)

5. The dimensions of the package are taken (ignoring the loose bag at the extremities) and the bag is weighed.
6. The following times are set: Time to draw initial vacuum, frequency that material valve is open (allowing material to enter bag) and duration of material flow.

   The vacuum is automatically broken and atmospheric air enters when material valve closes.

   Note: The bag acts as the filter media. During filling the material will tend to coat the inside of the bag blocking air flow. The air flow is reversed when outside air enters, cleaning the bag.

7. The scale is reset for automatic operation.

   This must be no more than the maximum expected from the previous test on a single bag.

8. A new bag is placed on the fill nozzle and the cage closed and latched.
9. The start botton is pushed and the following automatic operation follows:

   a. The door closes.

   b. A vacuum is drawn on the chamber.

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c. The material valve opens. (Scale records amount added.)

d. The vacuum is broken, cleaning bag interior.

e. " b " through " d" repeat until weight is within 5 pounds of desired.

f. At this point the dribble feature comes in, which only opens the material valve partially. This reduces the possibility of overshooting and improves the accuracy.

g. When the desired weight is achieved the chamber door and gauge open automatically

LGE/dm

L.G. EVANS

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ATTACH. IV

TRIP TO: Denver, Colorado

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