MONSANTO COMPANY

ORGANIC CHEMICALS DIVISION

ANNISTON PLANT

TRIP REPORT

Location Visited: Florida Drum Company, Pensacola, Florida

July 18-21, 1967

Distribution:

L. C. Fuhrmeister

H. L. Williams

H. L. Phillips

W. B. Papageorge

V. R. Haupt

J. MacPherson

H. L. Gray

Reported by: J. G. Bryant

Date: August 3, 1967

DSW 375288

STLCOPCB4099057

Personnel: J. G. Bryant

Persons Contacted: Mr. Lewis Gagnet and Don Long

Purpose of trip: Test various drum coating applications in an effort to reduce the extremely high costs of dalbon. Fabricate test containers for in transit testing.

Background:

Various containers have been tested over the past year. The present standard (double coated phenolic) has too poor of an impact resistance. The most successful candidiate was double coated dalbon lined drums. As expected, the cost of the lining is about three and one half times the cost of the present liner. We believe, we may be able to flush the drums and arrive at the same quality with a cheaper alternate.

Summary:

Twenty one test drums using various applications of epoxy phenolic lining were fabricated. Ten dalbon drums were fabricated. However, excessive baking temperatures burned the lining to the point of being unacceptable for testing. New dalbon lined drums baked at a lower temperature will be fabricated for testing.

Details:

The two problems needing attention in containers are the impact resistance and the cost of application. The present liner (phenolic) is the cheapest but, has the least impact resistance.

To test the least expensive alternate to phenolic, we made up five single coat epoxy phenolic. The surface of these drums "fish eyes" or has concave bubbles which yield bare spots (or at best minute coverage of the metal). To correct this problem five double coat drums were fabricated. The impact resistance (according to the lacquer manufacturer) is improved. With crude testing (ball hammer), I can see no difference between the clear epoxy phenolic and the clear phenolic.

The next least expensive alternate is the pigmented epoxy phenolic. The pigment is suspose to add impact resistance to the epoxy phenolic and yield improved adherence to the metal. Five drums with one coat of the pigmented epoxy phenolic were fabricated. The surface on these drums was very smooth and may have contained a few pin holes in the surface. Five double coat drums were fabricated for testing. The impact resistance, by my test was slightly better than clear phenolic but, no great improvement.

The third alternate is to use only one coat of the dablon lining. Five of the dalbon lined drums with one coat and five with the double coat were fabricated. These units were over baked and ruined. All of them are being redone and baked at a lower temperature.

STLCOPCB4099058

Discussion:

The dalbon liner is in a class of its own with an impact resistance which cannot be matched by any other liner. The crude tests with a ball hammer dent in the drum does not even crack the liner. We found the baking temperature for the liner is a critical factor in the impact resistance of the coating. For the drums baked at too high of a temperature (575°C), we achieved a brittle coating with a flat black finish. The impact resistance was less than normally achieved with dalbon baked at the correct temperature (475°C). Even the overbaked dablons impact resistance was considerably better than the epoxy phenolic. Dalbon cured at the proper temperature has a black glossy finish. Since two coat dalbon has proved successful, we feel with one coat we could obtain about the same performance at one half the costs.

Additionally, we found that impregnation of the drums with porocel will be slightly more difficult to control than anticipated. There are a number of alternates we can test for adding porocel to the drums once we find what the lining will do. The big problem is, anything we do approaches the cost of a single coat dalbon drum.

We feel that an Aroclor flush on a single coat of dalbon lining will probably clean the surface sufficiently. Without the lining cracking, there would be no reason for the quality to degrade. Plans for an automatic drum flushing technique are being developed. To test the effectiveness of the flushing and the various linings, the drums will be manually flushed with high quality Aroclor, filled, and shipped to New York and returned. The quality will be monitored before and upon return. Arrangements have been made with Toby White of Marketing and the tests should begin within the next two weeks.

A comparison of the drums is shown on the attached table.

J. G. Bryant

:jw
Attachment

DSW 375290

STLCOPCB4099059

DRUM COSTS

Type Container	Costs
Hot Dipped Galvanized 18 gauge	$13.53
16 gauge	$15.03
Present Double Coated Clear Phenolic	$ 8.05
Dalbon (Double Coat)	$11.90
Dalbon (Single Coat)	$ 9.40
Epoxy Phenolic (Pigmented-Double Coat)	$ 8.35
(Pigmented-Single Coat)	$ 7.70
Epoxy Phenolic (Double Coat)	$ 8.05
(Single Coat)	$ 7.55

DSW 375291