

SUBJECT

LOCATION

REFERENCE

*L. D. Miles*

Schenectady, May 6, 1949

RECEIVED

MAY - 9 1949

H. A. WINNE

Mr. H. A. Winne  
Room 467, Bldg. 2

Our men are continuing to report on the value of the meeting on April 5 which was set up by Mr. Warner with our Value Analysis Division. Both the information supplied at the meeting and the opportunity to learn where to go with problems of various natures relating to the Chemical Department gave the meeting exceptional value.

As one result, the Chemical Department has already found a means for making Mycalex electric iron insulators for 1.2¢ instead of 3¢--which may take the business from mica, as shown on page 2.

*H. L. Erlicher*  
Mr. H. L. Erlicher

HLE:AEM

*Five - Larry Miles is doing an outstanding job in this -*

*HLE*  
*5/9*

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MAY 9 1949

H. L. ERLICHER

# CHEMICAL DEPARTMENT--VALUE ANALYSIS MEETING

April 5, 1949

## PRESENT--

F.W. Warner----Plastics Division, Pittsfield  
E.E. George----Metallurgical Products, Plastics Div., Schdy.  
E.G. Gray-----Laminated Products, Plastics Division, Coshocton  
H.M. Patterson-Molded Products, Plastics Division, Pittsfield  
A.J. Sherburne-Insulation Products, Plastics Division, Schdy.  
F.E. Miller----Manufacturing Policy Division  
A. MacKenzie---Manufacturing Policy Division  
J.B. Young-----G. E. X-Ray Corporation  
H.L. Alberts---G. E. X-Ray Corporation  
G.G. Halstead--Value Analysis Division  
J.H. Lowndes---Value Analysis Division  
F.D. Nicol-----Value Analysis Division  
J.A. Keyes-----Value Analysis Division  
L.D. Miles-----Value Analysis Division  
G.E. Collins---Buyer, Chemicals

## PURPOSE--

To afford opportunity for Value Analysis Division to set forth specific problems to the Chemical Department, the solution of which would produce economies on the various products being analyzed and, at the same time, provide continuing worthwhile business for the Chemical Department. To further afford an opportunity for the Chemical Department to advise the Value Analysis Division of the new products which they manufacture which merit wider use in our products than they are now receiving.

## DISCUSSION--

Five items on the agenda pertain to paint:

1. Suitable paint for conduit boxes.
2. Suitable finish for washer outer tubs.
3. Suitable finish for washer inner tubs.
4. Suitable finish for refrigerator inner liner.
5. Suitable finish for X-Ray equipment.

Since the paint group was not represented, these matters will be referred to Mr. Ferguson, Engineer, and Mr. Sage, in charge of the Finishes Section.

Discussion followed concerning a suitable plastic material to replace the fuse body. It was brought out that spectacular adhesives are now available so that possibly the brass inner caps could be cemented onto the fiber tubes eliminating \$20,000- or \$30,000-worth of threading and tapping per year. Bob Johanson in the Research Laboratory will be consulted on this. No immediate suggestion for a suitable plastic fuse body could be made.

A suitable high temperature insulation to replace the present .040" thick loose mica stack on the electric iron is not readily available. Quinterra would be satisfactory but for its moisture absorption characteristic. The Chemical Department will determine if a treatment can be applied to the Quinterra (known in General Electric as Terratex) which will eliminate moisture absorption without more than doubling the cost. Silicone material, if .020" thickness would suffice, would cost slightly more than half the present mica cost. The Chemical Department will take another look and see if it can be gotten below. Mycalex for the job costs about 3¢ each as compared to 1.4¢ for the mica. The Mycalex process will also be again reviewed although it was thought that about all of the cavities possible were considered in each mold in order to arrive at the 3¢ price.

Mr. George reported that the price of the television focusing magnets had been reduced from 85¢ to 49¢ progressively and that a little more reduction could be made but that the requirements at Syracuse were so small that they offered little opportunity for production method improvement. He advised that, if the volume could be substantially increased, the price could be more substantially decreased. He will quote on the various arrangements of magnets requested by Mr. Halstead who will then provide costs to show the relative cost of providing the necessary magnetic field either by permanent magnets or electro-magnets. At the present time, it is provided by a combination of the two on G. E. equipment and by electro-magnets from the Philco equipment. A suitable plastic material for the float for the automatic washer was discussed. At the present time, 28¢ each or approximately \$8,000 per year is paid for a cork float. Plastic floats, if they would stand the conditions, would cost about 5¢ each for a savings of \$39,000. The styrenes and thermo-plastic materials

will not stand boiling water for sufficient length of time and it was felt that they could not be used. The Plastics group has considered a plastic float and also has made plastic agitators in the past and they will get out their records and determine if a suitable material is available. It was felt that, if a plastic material could be used for an agitator which must stand a great deal of continued stress, certainly there should be available a material suitable for a float which is in a sheltered location. Mr. Patterson will advise Mr. Halstead.

The use of a high heat-resistant polystyrene in lieu of urea in Slim-Line and similar jobs disclosed that it is probably a borderline case. There are certain designs, for example the pistol grip Slim-Line, in which polystyrene would be expected to do the job better than the present urea. In other designs, if under prolonged stress in addition to heat, polystyrene might distort. The virtue of polystyrene is the faster molding figure. Value Analysis will investigate the pistol grip Slim-Line equipment.

### CHEMICAL DEPARTMENT ITEMS

#### Thermistor--

This is a semi-conductor material having a high negative coefficient of resistivity. It comes in the form of washers, discs, rods, beads, or flakes and is available with or without leads. It has a very strongly negative characteristic and, accordingly, will "run away" and burn itself up if left unprotected across the line. In large quantities, some have been provided for 10¢ each. The price would be mostly from 25¢ to \$5 depending upon size, the leads required, and other details. The material is quite hard, physically about like porcelain.

#### Ferrites--

This material is suitable in lieu of laminations for magnetic devices, transformers, relays, solenoids, etc. It does not operate at as high a flux density as silicone steel; therefore, it is especially useful in sensitive devices and control devices. It has no eddy current losses. It is made by powdered metal technique. It can be made with properties which render it non-magnetic at a particular temperature. This can be varied from about zero up to several hundred degrees according to the composition of the material.

#### Constant Torque Drive--

The Metallurgical Section has provided by the use of permanent magnets, a mechanism which, regardless of speed, provides constant torque. Applications are being sought in all fields. It appears especially useful in the tensioning of yarn, wire, etc., but should have other applications.

## Plastics--

Mr. Patterson advised that Pittsfield has injection facilities for parts between 1½ oz. and 48 oz. and extruding facilities between 1½" and 6". The breaker strip on the refrigerator is now made of styrene, the inner door is made of laminated paper base molded plastic but may be changed to styrene. Concerning Mycalex, he advised that it is plastic at 1250°F to 1300°F and that it molds at 700°F to 750°F. A 7500 pellet is put into the machine, then a ram at 10 tons per square inch presses against it squirting it into the various cavities of the mold. They consider that the squirting must be complete within about two or three seconds or the material will be too cool and not fill out.

In the silicone field, they advise that a metal tape coated with silicone rubber cement on one side gives promise of being used to great advantage. This cement is set by heat and is very stable. Mr. Patterson can advise further details on silicone.

Concerning coils which are insulated with plastic material then later baked into a solid mass, they advise that Chemical Department No. 7031 is one suitable material and that Butvar, sold by others, does about the same job. Mr. Sherburne, who is in Bldg. 77 Schenectady, advises that they have been trying all manner of things with mica, such as shredding it and letting it settle, coating it on glass and other materials, etc., attempting to find a production manner of handling it. However, at the present time, the best mica tape is made by rows of people laying mica flaked by hand on the tape. He will welcome our mica and mica material problems.

The Coshocton plant specializes in laminated materials. Various bases, linen, cotton, fiberglass, paper, etc., are used. They have a fire resistant and arc resistant material of exceptional merit. It is a paper base treated laminate and has good mechanical properties, although its cost will be only a little above the cost of regular paper base laminates. Mr. Warner felt that if its merits were well known, it would have wider use.

Low pressure molding produces a strong, light, tough plastic.

In searching for economies in the use of laminated plastics, it was suggested that the following examinations be made:

- Change from cloth base to paper base.
- Change from linen base to canvas base.
- Change from linen to matte material which seems to display the properties of linen but costs 25 per cent less.

Silicone glass is available in sheets, rods, and tubes.

L. D. Miles