BUILDING PRODUCTS DIVISION

QUALITY CONTROL MONTHLY HIGHLIGHTS

VOL. 3 NO. 12 DATE May 15, 1974

EARL PASOLD RECEIVES 1973 TOP QUALITY AWARD - GAF BUILDING PRODUCTS DIV.

At a dinner attended by Erie Lake Plant supervision group given in his honor on May 2, 1974 Earl Pasold was awarded a plaque inscribed "GAF CORPORATION - Building Products Division Quality Excellence Award - 1973 - To Earl Pasold and His Staff at the Erie Lake Plant in Recognition of Achieving the Best Overall Quality Record in the Division - J. J. Klimas, Director of Quality Control and L. J. Faneuf, Director of Manufacturing".

The plaque was presented to Pasold by Harry H. Kaufman, Assistant Director of Quality Control of the Building Products Division. Tribute was paid to Earl by Bud Anderson, Erie plant manager, who spoke of the importance of quality at Erie and the contributions of Earl Pasold and the lab to their quality goals. Also attending the presentation were: Peter Petrone, recently retired Asphalt Mill Superintendant; James Mercurio, newly appointed Asphalt Mill Superintendant; Sam Purva, Asphalt Mill Foreman; Joe Sorze, Planning and Scheduling; Vincent Collino, Shipping and Receiving Superintendant; Jim Wilwohl, Personnel Manager; Ken Pomerleau, Office Manager; Dave Neiner, Traffic and Purchasing; Terry Trocha, Receiving Foreman; Clyde Barnes, Plant Control Laboratory Technician; Richard Peterman, Master Mechanic and S. Kupczyk, Plant Engineer.

A number of telegrams and letters conveying good wishes to Earl Pasold were read at the presentation. QCMH staff also extends its best wishes and congratulations to Pasold on receiving this award.

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QUALITY SPOTLIGHT

We are very pleased to announce the appearance of four asphalt mills and one mineral fiber mill in the quality spotlight for this month. We are indeed in a changing world situation and the effects of the changes are noticeable both in the struggle to keep the right types and the right amounts of raw materials coming in, and the proper frame of mind to insist on and to produce top quality materials in spite of the obstacles. The more deserving, therefore, are the teams of men listed below, of our great admiration:

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GAF Corporation | 114 Canal Road | South Bound Brook, N. J. | 08880 | (201) 356-3000

Asphalt Products

No. 1 - Erie - DMF - 0.45

Team of Bud Anderson, Earl Pasold, Pete Petrone (retiring), Jim Mercurio have done it again! More power to Erie!

No. 2 - Minneapolis - DMF - 0.89

Team of Al Nolan, Stu Robinson, and Larry Titchner: Well-seasoned professionals who are always in there pitching. Good job!

No. 3 - Joliet - DMF - 0.94

Team of Jim Kennedy, Shelby Freeman and Erv. Ericksen. Quality minded group with some new, great ideas. Right on!

No. 4 - Mt. Vernon - DMF - 1.07

Team of Phil Teague, Neil Mason and Norman Dixon. Certainly one of the highest potentials in our entire division. Hang in there, fellas!

Mineral Fiber Products

No. 1 - Mobile (M/F) - DMF - 0.00

Team of Herb Drawdy, Ned Trigg, Mark Whittington and Mack Hammac. Another great month for our Southern Gentlemen contingent. A deep bow from all of us.

Our congratulations to all of the above and best wishes for their continued successes.

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DEFECTIVE MATERIAL COMPLAINT ANALYSIS - FEBRUARY, 1974

Defective Material Complaint Costs totaled $40,000. for the month of February. Five plants were responsible for 72% of the actual costs: South Bound Brook (A) - 24%, Savannah - 15%, Dallas - 15%, Mobile (A) - 9%, and Kansas City - 9%.

Five plants accomplished a very low 4% of the monthly costs: Mobile (M/F), Denver, Erie, South Bound Brook (M/F), and Mt. Vernon.

The "Defective Materials Factor" averaged 2.53 for February. The highest DMF/s were by: Savannah - 6.86, South Bound Brook (A) - 6.41, St. Louis (M/F) - 4.32, and Dallas - 4.09.

The lowest DMF's were recorded by four plants: Mobile (M/F) - 0.00, Denver - 0.29, Erie - 0.45, and Minneapolis - 0.89.

The three major complaint areas constituting 74% of the actual costs were: Color Variation - 35% ($14,034.), Blistering - 25% ($10,180.), and Curling - 14% ($5,580.).

Quality Control is often looked upon as being mysterious, as if some magic is employed in accomplishing its goals. There seems to be an intangible and indefinable system that exists in those plants which enjoy success in consistently manufacturing quality products. The fact that this system has not been "bottled and sold" to all plants tends to label it as being highly complicated. This type of reasoning seems to be the obsession of today's world of automation and computerization.

Can we relate feeding raw materials into a roofing machine to feeding data into a computer? Will the proper raw materials and the proper data in conjunction with the proper processing program give the desired end results? The answer is obvious for computers.

However, our plants' computers are human individuals, each of whom has a bearing upon the quality of the end results. By whatever means, once the production worker is made cognizant of and acts upon quality, then the system has been created.

BALTIMORE 5/$2,865. (DMF -2.26)

1. Stuck Rolls 2/$2,158. Talc/Igepon absorption due to excessive heat in transit or customer storage is listed as the cause for both complaints on Strata-Ply 30 ($1,450.) and Universal Base Sheet ($708.) manufactured in 1972-73.

2. Color Variation 3/$707. Press variation (0.3 vs. 1.2g.) resulted in one complaint on Dark Mahogany ($273.) shingles produced in 1973. Mixture of color codes on Windsor Black ($234.) and poor granule adhesion on White ($200.) were the causes for the other two complaints on shingles made in 1972-73.

DALLAS 9/$5,989 (DMF - 4.05)

1. Blistering 7/$5,420. Unwetted stabilizer (6) and excess surface saturant (1) are listed as the contributing causes for these complaints on Cedar Blend (2/$1,637.), Redwood Blend (1/$915.), Charcoal Blend (1/$705.) Timberline and Wood Blend (1/$1,239.), Dark Mahogany (1/$497.), Charcoal (1/$427.) Standard Self-Sealing shingles manufactured in 1971 (1), 1972 (5), and 1973 (1).

2. Color Variation 1/$500. No cause is listed for this complaint on Wood Blend shingles produced in 1973.

DENVER 1/$229 (DMF - 0.29)

1. Color Variation 1/$229. Press variation resulted in this complaint on Charcoal shingles produced in 1972.

ERIE 6/$308. (DMF - 0.45)

1. Off Length 3/$242. Failure to cull "stops and starts" at the cutter was the cause for these complaints on strip shingles made in 1973.

JOLIET 12/$1,911. (DMF - 0.94)

1. Delamination - Timberline 4/$970. Cold shingle parts and/or low laminating adhesive temperature resulting in poor bonding between the dragon tooth and backer strip portions are listed as the causes for these complaints on Timberline shingles manufactured in late 1973. Since the combining of Timberline shingles is not restricted to warm weather, then it behooves Joliet to insure proper component and laminating adhesive temperatures.

2. Color Variation 2/$559. Bleeding (over press) in conjunction with talc contamination was the cause for one complaint on Redwood ($337.) Timberline shingles manufactured in 1973. The other complaint on Evergreen Tite-On shingles ($222.) made in 1973 was the result of press variation.

3. Fishmouthing 1/$154. Moisture absorption probably enhanced by borderline saturation resulted in this complaint on Charcoal Self-Sealing shingles produced in 1973.

4. Insufficient Granules 2/$102. Severe sand and talc contamination was the cause for both complaints on Stratavent ($67.) and Evergreen ($35.) Mineralized rolls produced in 1973.

KANSAS CITY 12/$3,445. (DMF - 3.26)

1. Color Variation 6/$2,251. Four complaints on White - bleeding and under-press (2/$683.), Charcoal ($486.), and Wood Blend ($199.) shingles made in 1972-73 were due to press variation. An improper blend (missing drops) resulted in the other two complaints on Charcoal ($470.) and Moss Green ($413.) shingles manufactured in 1972 and 1973.

2. Curling 2/$976. Undersaturation resulted in both complaints on Charcoal ($486.) and Jamaican Brown ($490.) shingles produced in 1972 and 1973.

3. Stuck Bundles 3/$168. No causes are listed for these complaints made on Self-Sealing shingles made in 1973.

MILLIS 10/$1,593 (DMF - 1.41)

1. Blistering 5/$855. No concrete contributing cause(s) could be found for these complaints on Black (3/$674.), Charcoal ($92.), and Pastel Gray ($89.) shingles manufactured in 1970 (2), 1971 (2), and 1972 (1).

2. Color Variation 2/$350. Incompatible headlap on Black ($200.) and slight press variation on Black ($150.) resulted in these complaints on shingles produced in 1973.

Millis (continued)

3. Fishmouthing 1/$221. Moisture absorption due to an unknown cause resulted in this complaint on White Nor'easters made in 1973.

MINNEAPOLIS 8/$815. (DMF - 0.89)

1. Blistering 2/$481. Incompatibility due to the past use of flux as the shingle saturant is listed as the probable contributing cause for both complaints on Dark Mahogany Self-Seals ($197.) and Dark Mahogany D/C Tite-On ($284.) shingles manufactured in 1970 and 1973.

2. Curling 1/$158. Undersaturation (160%) and low sealback coating (2.8 lbs./100 sq. ft.) were the causes for this complaint on White shingles made in 1968.

3. Color Variation 1/$87. This complaint on White shingles produced in 1973 was the result of asphalt staining, due to excessive pressure incurred during double tiering.

MOBILE 10/$3,557. (DMF - 2.54) - Asphalt Products

1. Blistering 3/$1,415. No contributing cause(s) could be determined for these complaints on Charcoal (2/$782.) and Wood Blend ($633.) shingles manufactured in 1969, 1970, and 1972.

2. Color Variation 2/$853. Press variation ($425.) and an incorrect blend ($428.) resulted in these complaints on Charcoal shingles produced in 1973.

3. Curling 2/$601. Undersaturation (141%) and low sealback coating (1.9 lbs./100 sq. ft.) resulted in these complaints on White ($218.) and Castle Gray shingles made in 1964 and 1969.

4. Stuck Rolls 1/$395. This complaint on No. 15 A.V. Asphalt Felt made in 1973 was caused by telescoping.

5. Off Width 1/$250. Sheet weave or improper guide setting at the cutter was the probable cause for this complaint on strip shingles produced in 1972.

MOBILE 0/$0 (DMF - 0.00) - M/F Products

MT. VERNON 5/$763. (DMF - 1.07)

1. Color Variation 3/$712. Press variation (0.31 vs. 0.90 gram loss) on Evergreen ($334.), headlap granules in butt portion on Charcoal ($265.), and back-to-face transfer (tipping?) on White ($113.) were the causes for these complaints on shingles made in 1973.

SAVANNAH 17/$6,019 (DMF - 6.86)

1. Color Variation 7/$3,793. Press variation (0.20 vs. 0.85 g., 0.07 vs. 0.53 g., 0.06 vs. 0.61 g.) resulted in three complaints on Dark Mahogany ($1,745.) shingles produced in 1972. Differential weathering (limestone vs. Fairmont stabilizers) on Dark Mahogany ($979.), staining on Rustic Brown ($405.), poor granule adhesion on White ($405.), and a missing blend drop on Moss Green ($259.) were listed as the cause for the other four complaints on shingles made in 1971 (1) and 1973 (3).

2. Blistering 2/$1,274. Excess surface saturant is listed as the contributing cause for both complaints on Moss Green ($809.) and Weathered Gray ($465.) shingles manufactured in 1971 and 1972. Inasmuch as 100% of one roof and 70% of the other were blistered, then the contributing cause is most probably one other than excess surface saturant.

3. Curling 1/$498. Underweight shingles (217 lbs./sq.) is listed as the cause for this complaint on Pastel Green Self-Seals made in 1973.

4. Off Length 2/$237. Failure to cull "stops and starts" at the cutter resulted in these complaints on strip shingles produced in 1973.

5. Stuck Bundles 1/$105. Missing release paper was the cause for this complaint on Self-Seals made in 1973.

SOUTH BOUND BROOK 35/$9,603. (DMF - 6.41) - Asphalt Products

1. Color Variation 12/$3,993. Press variation resulted in three complaints on Dark Mahogany ($590.), Moss Green ($348.) and Charcoal ($290.) shingles produced in 1973. Three other complaints on Charcoal ($438.), Ivy Green ($405.), and Castle Gray ($228.) shingles made in 1972 (1) and 1973 (2) were the result of an improper blend. Mixture of different color codes resulted in complaints on Ivy Green (2/$684.) and Windsor Black (1/$234.) shingles produced in 1972 (1) and 1973 (2). Staining on White (2/$295.) and headlap granules in butt on Evergreen (1/$481.) were the causes for the other complaints on shingles manufactured in 1973.

2. Curling 9/$3,347. Undersaturation resulted in all nine complaints on Honey Beige (3/$1,339.), White (3/$1,215.), Charcoal (2/$579.), and Pastel Gray (1/$214.) shingles produced in 1970 (1), 1971 (3), 1972 (4), and 1973 (1).

3. Stuck Rolls 3/$1,172. High percent saturation and tight winding were the causes for two complaints on No. 15 A.V. Asphalt Felt ($1,075.) produced in 1972 and 1973. Insufficient talc/Igepon resulted in the other complaint on Universal Base Sheet ($97.) made in 1973.

4. Off-Dimension Lines 1/$422. This complaint on Dubl-Coverage Rolls produced in 1973 was probably the result of a shifting sheet or improper guide setting.

5. Stuck Bundles 5/$419. Misaligned release paper (4/$279.) and excess seal-back coating (1/$140.) resulted in these complaints on Self-Seals made in 1973.

SOUTH BOUND BROOK 3/$478. (DMF - 0.92) - M/F Products

1. Blocking 2/$271. Print "Wraparound" was the cause for both complaints on Harvest Redtone ($178.) and Chestnut Brown ($93.) Stratalite made in 1972 and 1973.

2. Color Variation 1/$207. This complaint on Greentone Stratalite produced in 1973 was the result of mixing different color codes.

ST. LOUIS 5/$1,437. (DMF - 4.32) - M/F Products

1. Shipping Damage 3/$777. These complaints on Dura Shake made in 1972-73 were the result of damage incurred during shipment to Erie Sales Area.

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WORTH MENTIONING

ASBESTOS - THE SILICATE

Varieties of Silica and Silicates

Many of us, back in grammar school, learned of a very simple homily by Julia Fletcher Carney (no relation to Art Carney of the former Gleason Show) which somehow begins:

Little drops of water
little grains of sand,
Make the mighty ocean,
and the pleasant land.

Those grains of sand and other silicates literally do make up, according to geologists, some sixty percent of the earth's crust. In such a profuse abundance silica and silicates can be recognized in many forms. Silica is often found as massive or crystaline quartz. The latter is frequently pure and colorless, but sometimes it has a smoky appearance due to organic contaminants. A little manganese results in a violet colored variety known as amethyst. Opal, precious or otherwise, is a well-known type of non-crystalline silica. In combination with aluminum and other elements we have a long list of rocks and minerals. Of the precious and semi-precious varieties, there is the cool moonstone; the rare emerald; the pale blue aquamarine; jade, garnet, topaz, tourmaline and lapis lazuli. Of great importance industrially are such siliceous minerals as mica, talc, asbestos, vermiculite, orthoclase, kaolinite, mullite and cristobalite, to name only a few.

According to the dictionary, asbestos consists of a group of impure magnesium silicate minerals which occur in fibrous form in various colors such as white, green, gray or brown. Asbestos occurs naturally in rock formations around the world. This mineral can be separated from the host rock by milling, yielding millions of very fine fibers - often soft and silky to the touch but of great strength. There are seven varieties of asbestos, but only six are of commercial significance, and one, chrysotile asbestos, accounts for about 95% of the world's production. Three other commercially significant varieties of asbestos are crocidolite, amosite, and anthophyllite. Each of the four differs from the others, physically and chemically. Actinolite and Tremolite are less abundant asbestos materials.

These mineral fibers can be divided into two main classes on the basis of their crystalline structures: serpentine asbestos and amphibole asbestos.

Chrysotile, a flexible white magnesium silicate which can be attacked by acids, and which is the only asbestos fiber that carries a positive charge in water, is the lone member of the serpentine class. It has one major difference from the other asbestos minerals; it's generally curly rather than straight and, because it is flexible, it can be bent in a "U" shape. Crocidolite is blue, and Amosite is brown, whereas Anthophyllillite is brittle and acid-resistant.

What are the Uses of Asbestos

There are about 3,000 different products in daily use worldwide that utilize in some way the properties of asbestos, either alone or in combination with other materials. Typical uses include floor tile, electrical insulation, fire retardant clothing, lubricants, caulking materials, highway and roofing asphalts, accoustical tile, etc. The unique properties of asbestos make it desirable as a fire-proofing, insulating and sound-proofing material.

Grades of Asbestos

There are multiple grades of asbestos and those with the smaller identifying numbers such as #3 or #4 have very long fibers up to 1½ inches. The grades that are used in roofing cements or asphalt shingles may also be in letter grades such as 5 D or 7 R. They are basically short, fluffy fibers about 1/16 to 1/8 inch long. Basically asbestos fibers can be classified in two types; spinning and non-spinning.

In Vermont, where GAF has its mine, Chrysotile asbestos is mined, as it is in Quebec, Arizona, Russia, Turkey and Rhodesia. Just recently the California Calidria Mine has been producing commercial asbestos for Union Carbide.

Only about 8 percent of the total asbestos mined is long spinning fiber (about 1½ inches long); the remainder being too short for fabric or rope. The Turkish fiber is up to 3/4 inch in length. Asbestos produced in Quebec, as indicated above, is Chrysotile, occurring in serpentized rock in veins 3/4 inch to 1/2 inch wide, though veins as wide as 5 inches do occur.

Blue asbestos from South Africa is Crocidolite and runs in fiber lengths from 1/8 to 1½ inch.

Canadian asbestos is graded crude, mill fibers and shorts. Crudes are spinning fibers only 3/8 inch or longer, hand-cobbed. Mill fibers are obtained by crushing and screening. Shorts are the lowest grade of mill fibers.

Canadian and U. S. chrysotile asbestos fiber is graded and priced by length, since basically the longer the fiber the higher the utility. The Canadian asbestos industry does not, however, classify the fibers by direct length measurement, but by a dry screening test. The method is called the Quebec Standard Screen (Q. S.) test. One pound of fiber is mechanically shaken in four vertically stacked sieve boxes. (Sieve boxes have screens of 1/2 inch mesh, 4 mesh and 10 mesh, plus pan.) The relative proportions remaining on the sieves defines the grade. The longer the fiber, the larger is the amount that stays on the top coarse screens and the less on the lower finer mesh screens. Other tests can be used to further define the length distribution of fiber such as the wet screen Bauer McNett and the Suter Webb Comb. Our own Quality Control Manual spells out a Ro-tap Sieve Analysis for short fiber asbestos. We use only 50 grams Ro-tap and a nest of sieves, starting with the U. S. Nos. 12, 20, 40, 60, 80, and ending with the usual Pan. We ro-tap for ten minutes and then do a written percentage analytical report. We also do wet tests and actual performance tests, as required.

The Canadian grading system divides the milled fibers into five main groups; group 3, 4, 5, 6 and 7, with group 3 being the longest, and group 7 the shortest. Each group is further divided into sub-grades, identified in each group by the letters A to Z with "A" the longest and "Z" the shortest. (See 5 D or 7 R indicated above.) A third number might indicate the degree of openness such as 7 R3, etc.

There are more sophisticated methods of classifying fibers from the basics described above - including degree of fiberization, openness or surface area. Air permeability tests are used to measure surface area.

There are also special treatments given to the fibers - such as sodium or potassium silicate additions, etc. These grades may have the suffix SS to indicate Sodium Silicate, etc.

Asbestos - Its Use, History and Current Occupational Precautions

Asbestos has had a long history going back to the time of the Egyptians when it was used as lamp wick. The word asbestos itself is derived from the Greek meaning "unquenched" or "incombustible".

Archeologists in Finland have unearthed objects which indicate the earliest known use of asbestos goes back some forty-five centuries, when the mineral was used to hold together pieces of pottery before the clay was baked.

According to legend, the Emperor Charlemagne owned a "magic" asbestos table-cloth, which his stewards cleaned after royal banquets by throwing it into the fire and then retrieving it intact. History also records that Marco Polo found asbestos cloth on his journey to Asia.

Modern Interest in Asbestos - Occupational Regulations

With the 3,000 some odd products incorporating asbestos its use has come under regulation, as have other dust producing raw materials. As in other mineral and materials industries, it became necessary to protect employees against occupational health hazards. It was found that some workers exposed to excessive asbestos dust over a period of years developed a non-malignant lung disease called Asbestosis. As with many similar conditions, asbestosis is time-and-dose related - that is, it develops only after inhalation of excessive concentrations of asbestos dust over a long period of time. The National Safety Council, the American Standards Association and State Agencies have, over the years regulated the area working conditions in all sorts of dusty, noxious or otherwise uncomfortable industrial situations.

OSHA Regulations

On June 7, 1972 the Occupational Safety and Health Administration established by the Williams-Steiger Occupational Safety and Health Act of 1970 issued their own standards regulating asbestos dust exposures. These occupational standards deal with:

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(1) Permissible concentrations of asbestos fibers;
(2) Methods of compliance;
(3) Warning signs and labeling of potentially dangerous products;
(4) Monitoring of dust levels;
(5) Medical examination for employees;
(6) Record keeping by employees.

These standards have one basic purpose - to protect employees from exposure to potentially hazardous amounts of asbestos dust in their workplace.

The Industry Commitment

In the past ten years industry has spent some $110 million to implement work-safety controls in its mines and plants. At least another $95 million will be spent during the next three or four years to upgrade facilities to meet or exceed standards set by OSHA. Through its organizations - principally the Asbestos Information Association of North America - industry shares information on new control technology with its own members, its customers and small producers and users not associated with industry groups.

ASTM Participation

We represent G/F on ASTM Committee E-34 on the Task Group concerning Naturally Occurring Inorganic Fibers, which includes asbestos. We are helping to define and prepare standards for NIOSH, OSHA and/or other Federal Agencies with respect to asbestos and/or other Inorganic Fibers.

Plant Commitment

It is urgent that full compliance be had at each of our locations, with respect to the handling of work areas in which asbestos is used.

We are totally committed to our utmost in compliance.

H. H. Kaufman

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St. Louis (continued)

2. Flaking 1/$360. Painting over bloomed blanks resulting in poor paint adhesion is listed as the cause for this complaint on Storm Gray Dura Color manufactured in 1969.

3. Scuffing 1/$300. This complaint on Chestnut Brown Dura Shake made in 1972 was most probably the result of abrasion incurred during shipment to Erie.

TAMPA 4/$1,041. (DMF - 1.10)

1. Blistering 2/$735. Excess surface saturant (note: blistered in bundle patterns on roof) and undersaturation are the probable contributing causes for these two complaints on White ($476.) and Charcoal ($259.) shingles produced in 1972 and 1973.

2. Off Length 2/$306. "Stops and starts" and mechanical problem at the cutter resulted in these complaints on strip shingles made in 1973.

W. F. Workman

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Double Check That Mineral Shield Mastic

Having invested quite heavily in new spray equipment for GAF's Mineral Shield Roofing application, the roofing contractor is interested in putting this new equipment to work. It is also of obvious benefit to us to make sure that the contractor's use of our materials goes smoothly and easily.

For the most part, we are purchasing the Mineral Shield Mastics and do not have first hand control over their quality. It is important now, at the very outset of this new GAF system, to check the consistency of each batch of mastic as per W. F. Workman Q.C. Bulletin dated February 6, 1974. If any questions arise, please call or write.

What we can control is the Mineral Shield Membrane. Rolls should be absolutely dry and lined properly for good application.

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