

REQUEST AND AUTHORITY FOR CAPITAL
EXPENDITURES / RETIREMENTS

REPORTING CLASSIFICATION

A-3

DATE APPROVED

3/12/78

JOB ORDER NO.

CC-3952

DIVISION OR COMPANY

Organic Chemicals Dept.

LOCATION

Chicago Plant

J.O. CONTROL POINT

097

JOB TITLE

Purchase and install 30 H.P.
air classifying mill.

SUMMARY OF AMOUNTS

DESCRIPTION	LOCAL CURRENCY	U.S. DOLLARS
ESTIMATED PROJECT COST		\$47,649
DISMANTLEMENT EXPENSE		4,498
TRANSFER EQUIPMENT		-
GROSS AMOUNT FOR APPROVAL		\$52,147
LESS TRANSFER EQUIPMENT		
LESS SALVAGE OR TRADE-IN ALLOW.		
NET CASH REQUIRED (GOF-3027)		\$52,147

RETIREMENT DATA		ECONOMIC JUSTIFICATION		REVISION DETAIL (GROSS AMTS.)			
	AMOUNT		5-YEAR AVG.	REV. #	DATE	AMOUNT	COM. AUTHORIZATION
COST	4,463	NET SALES	500,000	1			
DISMANTLEMENT	4,498	NET SAVINGS BEFORE TAXES	150,000	2			
LESS SALVAGE		NET AFTER TAXES	74,000	3			
		% ROI (ON TOTAL INVEST.)	19%	4			
		PAYOUT YRS.	.6	5			
TOTAL - CHARGE RESERVE	8,961			6			

DESCRIPTION AND REASONS REQUIRED

Funds of -----\$52,147
are requested for the purchase and installation of a 30 H.P.
Mikro air classifying mill and a Mikro-Pulsaire dust collector.

Closed
12/78

SUMMARY OF ESTIMATED COST - Details on GOF-3027		ESTIMATE NO.	STARTING DATE March, 1978	COMPLETION DATE December, 1978
ITEM NO.	DESCRIPTION	MATERIALS	LABOR	ENGINEERING
	See attached	38,952	11,695	1,500
	NET CASH REQUIRED	38,952	11,695	1,500
ACCOUNTING TREATMENT		RECOMMENDATIONS AND APPROVALS (CHECK BOX)		
ITEM NO.	DEPR. RATE	NAME	REC. APPR.	DATE
Dr. \$31,956 PP&E (132)	7 1/4%	<i>[Signature]</i>		2/1/78
Dr. \$13,838 PP&E (195)	7 1/4%	<i>[Signature]</i>		2/1/78
Cr. \$ 4,463 PP&E (632)		<i>[Signature]</i>		2-1-78
Dr. \$ 4,463 Res. for Depr. (632)		<i>[Signature]</i>		2-1-78
Dr. \$ 4,498 Res. for Depr. (432)		<i>[Signature]</i>		3/2/78
Dr. \$ 1,855 Expense as incurred		<i>[Signature]</i>		3/4/78
ACCOUNTING TREATMENT / ECONOMICS APPROVED BY DIV. CONTROLLER (CHECK BOXES)		GENERAL MANAGER		
☒ <i>[Signature]</i>	☐ <i>[Signature]</i>	<i>[Signature]</i>		
POST AUDIT PERIOD		VICE-PRESIDENT		
DISTRIBUTION				

CYANAMID

Descriptions and Reasons Required

A. Proposed Work and Cost

Funds of -----\$52,147
are requested for the purchase and installation of a
30 H.P. Mikro air classifying mill and a Mikro-Pulsaire
dust collector.

B. Present Situation

The CYASTABS® (lead heat stabilizers) produced at the
Chicago Plant are utilized primarily in the PVC insulation
for the wire and cable industry.

Cyanamid's tribasic lead sulfate (CYASTAB 810) contains
hard particles in the range of 60-100 microns, which
causes serious problems in high speed wire extrusion:
excessive plugging of the extrusion screen paks and
spark failures. Western Electric has removed approval
of CYASTAB 810 in their wire compounds¹, resulting in a
business loss of approximately 1,000,000 pounds per year,
with a N.S.V. of \$500,000.

The hard particles originate in the reactor. The existing
mill (Mikropul 3TH--14 years old) yields a product meeting
our current specifications of 0.20% maximum particles retained
on a 325-mesh screen (44 microns). This amount of hard particles,
however, is no longer acceptable to Western Electric, who
demands no particles on a 325-mesh screen.

C. Justification

Extended trials on the Mikropul ACM pulverizer using both
CYASTAB 810 and 908 shows that this piece of equipment
will successfully grind and classify the stabilizers so
that there will be no hard, large gritty particles ².

Microscopic determination of the milled and classified
product from these trials show no particle larger than
35 microns, which is well below the customer's specification
of no particles larger than 44 microns (325 mesh).

Installation of this mill-classifier will assure a product
which will be acceptable to all wire and cable manufacturers,
including those which use the Western Electric PVC formulations,
and allow us to recover the 1,000,000 pounds per year 810
business recently lost.

¹See appendix #1.

²See appendix #2 and #3.

N14467.01

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A new dust collector must be purchased as the mill-classifier requires a collector with a capacity greater than the existing dust collector in the plant.

D. Commercial Factors

This order supports a 1978 Heat Stabilizer Sales Budget as follows:

<u>Sales-Pounds</u>	<u>Sales-Dollars</u>	<u>Profit on Sales</u>
7,950,000	\$3,985,000	1,071,000 (26.8%)

1977 Data

<u>Sales-Pounds</u>	<u>Sales-Dollars</u>	<u>Profit on Sales</u>
7,709,000	\$3,587,000	909,000 (25.3%)

E. Details

A mikropul model 30 mill-classifier and a new Mikropulsaire dust collector will be installed in place of the existing 3TH mill and dust collector located in the sulfate-phthalate manufacturing area.

The 3TH mill will be placed on the corporate scrap equipment list and the existing dust collector will be relocated to increase ventilation either on the P & S dryer or the large litharge kiln.

F. Production Factors

Installation of the Mikropul mill-classifier will enable the plant to meet customer demands for a smaller particle size. This mill has the capacity to handle present and all future sales demands. Also, the new mill is expected to cut airborne lead concentrations in the milling area.

G. Contingent Future Commitments

This proposal will not require additional funds to complete.

H. Alternatives Considered

Install a classifying screen at the discharge of the existing 3TH mill.

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Screening trials of the CYASTAB run at Rotex and Sweco were unsuccessful.

Double milling of CYASTAB in the existing mill did not reduce the hard particle content significantly and did aggravate the shop's airborne dust condition.

All attempts to eliminate hard particles by modifying wet processing conditions were unsuccessful.

I. Risks

No operating risks are involved.

J. Concise Summary

The purchase of a new classifier-pulverizer mill will enable the plant to regain the lost sulfate stabilizer business and prevent future loss of phthalate product line by meeting our customers' new specifications.

ECONOMIC JUSTIFICATION
CHICAGO PLANT

\$000

	<u>1st Year</u>	<u>Subsequent Years</u>
Annual Sales CYASTAB® 810		
Western Electric	\$ 500	\$ 500
Less: Cost of Production	<u>347</u>	<u>347</u>
Manufacturing Profit (30.6%)	153	153
Less: Costing Depreciation	3	3
Job Order Expense	<u>2</u>	<u>2</u>
Net Earnings Before Taxes	148	150
Taxes @ 51%	75	77
Investment Tax Credit 10%	<u>5</u>	<u>-</u>
Net After Taxes	78	73
Costing Depreciation	<u>3</u>	<u>3</u>
Cash Flow	81	76

Payout 48
 81 = .6 years

Incremental ROI 6-year average $\frac{74}{48} = \underline{154\%}$

ROI on Total Investment (6-year average)

New PPE	\$48	
Existing PPE	210	
Accounts Receivable	63	
Inventory	73	
Total Investment	<u>\$394</u>	<u>19% ROI</u>

N14467.02

DETAIL SHEET

SHEET NO.	JOB ORDER NO.	DATE
1		February 1978

COMPANY	LOCATION
American Cyanamid Co.	Chicago, Ill.

ITEM OR CODE NO.	DESCRIPTION	EQUIPMENT OR MATERIALS	LABOR	TOTAL	
100	CX 30 Mikro ACM Pulverizer	18,185	1,572	19,757	
110	Mikro-Pulsaire Dust Collector	10,920	2,918	13,838	
500	Piping	420	500	920	
530	Electrical	2,000	2,207	4,207	
840	Spare Parts	1,000		1,000	
850	Engineering	1,500		1,500	
		34,025	7,197	41,222	
940	Dismantlement		4,498	4,498	
981	Illinois Sales & Use Tax	1,855		1,855	
	Escalation	4,572		4,572	
		40,452	11,695	52,147	
	<u>Dismantlement</u>	<u>Acq. Date</u>	<u>Acq. Cost</u>	<u>Disposition</u>	
	Micro Pulverizer	6-71	4,463	Retire in place.	
	Dust Collector	6-71	2,695	Relocate at a later date.	

N14467.03

OC-3952
3/12/78
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Bound Break October 21, 1977

OFFICE OF CYASTAB AND DATE

AMT 10/21/77

TO: FILE

LOCATION:

FROM: Leigh C. Allen

SUBJECT: Western Electric
CYASTAB 810

REFERENCE:

COPY TO: Messrs. R. F. Anderson BB
W. Connor AK
J. Druzbacky BB
J. A. Gingras BB
S. R. Harvey BB
G. A. Menghi HO
M. Nichols AK
J. A. Zebrowski BB

In order to ascertain the exact details of the reported rejection of CYASTAB 810 by Western Electric for their 646 wire compound, the writer contacted Fred Marks of the Norcross, Georgia location.

Mr. Marks confirmed the fact that CYASTAB 810 has been removed from the approval list for both the 646 and 647 formulations. The reason given for the removal was an exceptionally high spark failure in the wire extruded from recent shipments of Pantasote compound. The problem asserted itself most in the Atlanta Wire Plant where automatic equipment rejects reels of wire after a certain number of spark failures. The Pantasote compound in question was generating 100% scrap in terms of rejected reels, and as a consequence, the material was rejected and turned back to Pantasote. Unfortunately, as a result of subsequent discussions with Pantasote, the problem was flagged as being one of hard gritty particles in the 810, as a consequence Mr. Marks has elected to remove the 810 from the Western approval list.

In order to be reinstated on the approval list, we will have to go through the complete approval process including the preparation and submission of a 2,000-pound lot of PVC compound for a plant trial at Norcross, followed by a subsequent full scale plant trial. Assuming success at this point, Western will reinstate our approval for the 646 and 647 formulations.

Laboratory evaluations conducted both here and in the Chicago plant laboratories have indicated that there is a certain percentage of hard, gritty particles in our product, which apparently are not present in the National Lead counterpart. Efforts are currently underway to find a source of these aggregates, and to develop procedures to eliminate them from our final product. The following steps are being taken at the Chicago plant:

- a. Several batches of 810 are being prepared according to the normal plant operational procedures. These batches are being sampled at each point in the process from litharge to finished product in order to provide a reading on the possible

N14467.04

FILE

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October 21, 1977

source of the aggregates as it is not known at this time whether or not these aggregates are with us from the original litharge production or whether they are generated in one of the manufacturing steps, for example, in the drier. Samples taken on the production runs will be examined microscopically for aggregate size and content. Preliminary review will be done at the Chicago plant with samples being forwarded to the Bound Brook laboratory. This phase of the program is currently underway, we anticipate receiving samples from the Chicago plant before the end of the week.

- b. From the above production of normal batches, materials will be run through the current mill with a smaller screen size to see whether or not we can effect a reduction in the number of aggregates via this procedure.
- c. Also in conjunction with Item A a portion of our standard production will be forwarded to an outside firm to evaluate the possibility of utilizing particle size reduction equipment to eliminate the aggregates in our product. Material has been selected for this, and should be forwarded to the selected company by the end of this week.
- d. One batch will be made without lauric acid or phthalic anhydride additions to determine what effect these two additives have on this agglomeration tendency.
- e. A batch will be prepared with a higher operating temperature in the reactor to determine whether or not the early precipitation of lauric acid or phthalic anhydride is causing a problem in the reaction whereby the precipitated or crystallized material is cementing together particles of lead stabilizer causing aggregates of material.
- f. We will be attempting to determine whether or not calcium stearate can be substituted into the process for either lauric acid or a portion of the phthalic anhydride. There is some evidence that increasing the overall basicity of the end treatment of our product would help the overall Brabender thermal stability of the material. It is known that National Lead uses barium stearate in their process as it is indicated in their patents that this is the case. Fortunately, there is three years left remaining on this patent so barium stearate is not a possibility for our process.

Steps D, E, and F should be completed by the end of October. Based on the information generated above, we should be in a fairly good position to (a) pinpoint the source of our particulates in our CYASTAB 810, and (b) have a pretty good handle on how we can go about removing these aggregate materials, and that point will be in a position to recommend any necessary process changes to management for their consideration.

FILE

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October 21, 1977

Going beyond the 810 disqualification issue, my discussions with Mr. Marks indicated that he is seriously considering a formulation change from a sulfate containing material to a phthalate containing product. The original formulation for this application was based on lead phthalate as the heat stabilizer, however, the switch to the sulfate was made because of a potential cost savings. Marks indicated that they felt they could possibly swing back to the phthalate, at reduced loadings, and effectively eliminate the spark failure and dispersion problems associated with the Tribasic lead sulfate containing formulations, while effecting no change in overall formulation cost. The impression left with the writer as a result of this discussion, was that Western will, in fact, be making the switch, and relatively quickly. In fact, it is a speculation of the writer that the willingness of BFGoodrich to now evaluate our CYASTAB 908 in their plant, and BFGoodrich's indication that they would need 1,000-2,000 pounds of material relatively quickly upon plant approval, may be an indication that the requests for trial compounds based on the phthalate containing stabilizer have already been issued to BFGoodrich for preparation. We, therefore, should stay on top of the 908 plant evaluation at BFGoodrich, in order to insure ourselves of a position in Western Electric's phthalate containing formulation should the above speculation, in fact, be true.

Leigh C. Allen

LCA/jel 4-5

Bound Brook January 24, 1978

Mr. J. A. Gingras

Bound Brook

Leigh C. Allen

Mikro-ACM Pulverizer

JAN 26 1978

R. F. Anderson	BB
F. B. Dorf	BB
H. C. Gaffney	CG/P✓
S. K. Harvey	BB
H. G. Thompson	BB
J. A. Zebrowski	BB

We have recently completed a second extended mill trial on the above grinding equipment to ascertain whether or not this type of apparatus will produce lead stabilizers with a particle size suitable for the wire and cable industry. As you are aware, our existing grinding facilities produce a product which contains many, fairly sizable, hard particles which cause problems in high speed wire extrusion. The investigation into the Mikro-ACM Pulverizer was initiated as a result of complaints on our product in this regard.

As a result of the two trials on both CYASTAB® 908, and CYASTAB 810, we have concluded that the Mikro-ACM Pulverizer is indeed a piece of equipment which will successfully grind and classify our products such that we will eliminate the problem of hard, large, gritty particles in the final material. The air classification system on this piece of equipment is quite sophisticated, and goes one step beyond the usual screening apparatus associated with fine grinding of powders. The system virtually eliminates the possibility of large particles passing through the system as a result of equipment malfunction, a hole in the screen, or a loose fitting screen pack. Preliminary review of CYASTAB 810 via the microscope at Mikro Pulverizer Corporation during the actual trial, revealed particles no greater 35 microns present in the finished product. Our current production normally ranges up to 60 to 100 micron particles, so a definite improvement in size and size classification has occurred. In addition, the impression of those people viewing these particles was that the 35 micron particles were quite soft and friable. We will be screening some of this material through a 325-mesh screen and reviewing, microscopically, the residue retained on the screen. During the previous mill trials, however, the screening through the 325-mesh screen left essentially nothing on the screen for analysis. We would hope that the similar circumstance would occur in this latter trial.

In general, we conclude that the Mikro-ACM represents a viable approach to obtaining a product which will be suitable for all wire and cable extrusion procedures including those utilized by Western Electric. The installation of this mill should significantly upgrade our CYASTAB 810 product line as well as the phthalate product line.

N14467.05

Mr. J. A. Gingras

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January 24, 1978

It is understood that a No. 10 Mikro-ACM is available for rental immediately. We would of course, be looking towards the purchase of a larger unit, namely, the Mikro-ACM No. 30. It is suggested that we seriously consider, however, the rental of this No. 10 Pulverizer for immediate installation and usage in the Chicago plant. This will provide us not only with an immediate capability of producing a product suitable for all applications, but will also allow us a chance to review the performance of this apparatus on an actual production scale prior to delivery of the actual commercial unit. A third advantage is that the Mikro Pulverizer system, is a completely enclosed system which is not prone to dusty emissions, and as a consequence, the institution of this ACM will help to minimize the air quality problems in the plant environment.

Leigh C. Allen

LCA/jel 2-1

To: H. C. Gaffney

Date: 1/19/78

Location: CG Plant

Reference.

From: J. F. Daly

JAN. 26 1978

Location: BB

Extension:

Copy to: L. C. Allen
R. F. Anderson
F. B. Dorf
S. R. Harvey
B. Terzic - CG PlantSubject: Grinding Trials at Mikropol,
Summit, New Jersey

In our first trial with the air classification mill on November 23, 1977, we had an unwaighable trace on 325 mesh - up to 50 microns. We also noted a tendency for the ground material to accumulate in the output section.

A second series of trials was run on January 17, 1978. In this series we intended to try for a slightly finer grind, about 40 microns maximum. We also wanted to determine whether the accumulation in the output section would continue to increase and plug the system, and if so, in how long. Further, we wished to confirm that CYASTAB® 908 was easier to grind than CYASTAB 810 as had been observed previously and check throughput rates for both 908 and 810.

All work was done in these trials and the November series on a 10 ACM. We would be purchasing a 30 ACM, having three times the capacity. We started with 810.

The first set of conditions tried resulted in a very fine grind, about 13 microns. This resulted, however, in the system plugging up after 50 pounds had been run.

Two more sets of conditions were then tried on 20-pound runs, resulting in grinds of 25 and 35 microns. The conditions for 35 microns were selected for a longer run.

In this longer run the system plugged up after 1200 pounds were run. The plugging was caused by packed powder in the output section and broke up easily. Injection of compressed air into the output chamber would free this build-up and permit continuous operation. In addition, while the 10 ACM has a right angle discharge, the outlet of the 30 ACM is straight, which would have less tendency to plug. We should order our ACM with fittings for air injection.

Next, a run was made with 908 using the same set of conditions as the long 810 run. A grind of 26 microns maximum was achieved, and no appreciable build-up was seen after 527 pounds were run.

H. C. Gaffney

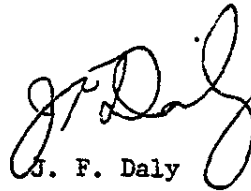
-2-

Throughputs are summarized below:

<u>Material</u>	<u>Maximum Size, Microns</u>	<u>Pounds Per Hour</u>		
		<u>10 ACM (Actual)</u>	<u>30 ACM (Calculated)</u>	<u>60 ACM (Calculated)</u>
810	35	1200	3600	7200
908	26	900	2700	5400

Two minor points were noted during the runs: one shut-down, there is a tendency for dust to blow back from the feed hopper. There is also a tendency for material to hang up in the dust collector hopper. A lid for the feed hopper and a vibrator on the output of the dust collector would be advisable.

In summary, we are quite satisfied that this equipment will do the job. Subject to confirmation of the above results by the Microscopy Group in Bound Brook, we can proceed with ordering.


J. F. Daly

JFD:sb

Debit/Credit Note

American Cyanamid Company
Wayne, NJ 07470TO: Mac Hager Lead Co.
Attn. B. Witterspoon
CNACCOUNTING MONTH Feb. 1980
C.N. NO. 4940-005

DESCRIPTION			AMOUNT
Your account has been charged (credited) for the following:			
Sale of Surplus Pulverizing Machine.			(2,500.00)
22- 1031 - 3952-000532			
REFERENCE	PREPARED BY	DATE	
C.B. Cashier's	R. Timmer	2/25/80	

NA 3100 REV. 2-78 2-78

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CYWI 24-0006859