

COLORED PIGMENTS

R&D

PAW
3-26-82

25846

- PROCESS IMPROVEMENT/DOCUMENTATION PROGRAM
DEFINITION

- BP-565-D - COPPER PHTHALOCYANINE FOR PLASTICS:
TECHNOLOGY CLARIFICATION

- PIGMENT TECHNOLOGY - A TWO PAGE PRIMER

PROCESS IMPROVEMENT/DOCUMENTATION PROGRAMS

PROGRAMS INCLUDE:

- DEVELOPMENT OF OPTIMIZED TECHNOLOGY TO IMPROVE QUALITY
REPRODUCIBILITY OF MAJOR PROBLEM PROCESSES
(M.P. 6.4)
- DEVELOPMENT OF NEW OPERATING FACILITIES TO
IMPROVE PROCESS CONTROL AND INCREASE
PRODUCTIVITY
(M.P. 2.6)
- DOCUMENT CURRENT AND IMPROVED PROCESS TECHNOLOGY
IN A FORMAT ACCEPTABLE TO PRODUCTION AND R&D.
(OPERATING INSTRUCTIONS TO BE UPDATED BY
PRODUCTION)
(M.P. 6.0)
- DEVELOP LOW INVESTMENT OPTIONS FOR CONTROL OF
HEAVY METALS IN NEWARK WASTE STREAM AND FOR CPC
BLUE AND KEROSENE LOSS CONTROL AT NEWPORT.
(M.P. 2.0)
- DEVELOP RAW MATERIAL AND SEMI-FINISHED PRODUCT
SPECIFICATIONS
(M.P. 1.0)

PROGRAMS ARE NEEDED:

- TO ALLOW PRODUCTION/R&D TO ACHIEVE ZERO BASE STAFFING GOALS.
 - ALLOWS OPERATION OF REPRODUCIBLE PROCESS TECHNOLOGY WITH MINIMUM PRODUCTION STAFF AND WITH LIMITED TECHNICAL ASSISTANCE FROM R&D.
 - TO CORRECT A SERIOUS LACK OF FORMAL PROCESS DOCUMENTATION AT BOTH PLANTS.
- TO RESOLVE MAJOR ENVIRONMENTAL CONCERNS BEFORE MANPOWER IS CUT.

HIGH MANPOWER REQUIRED TO MEET CRITICAL END OF 1982 TIMING FOR DOCUMENTATION

- TIMING SET BY BUSINESS DIVISION.
- GENERAL MANAGEMENT AGREES AND IS LOOKING FOR ON-TIME ACCOMPLISHMENT.

Production Study

PROGRAMS OF IMPLEMENTATION

BARE BONES (Zero Base Analysis)

Production:

- Reduce Newport and Newark Plant organization to operate safely, meeting legal requirements at the following production levels:

Newport	CPC	235M Lbs./Mo.
	QA	180M Lbs./Mo.
Newark		2800M Lbs./Mo.

- Establish a formal communication so a marked increase in production level requires six months' notification for manpower adjustment.

- * • Complete Process Documentation and Product Quality Management Programs so they are in place and operational with longer intervals between updating procedures and manuals.

- * • Redirect and allocate R&D and Production resources to assure all processes are technically sophisticated and can be operated within standard parameters producing quality product repetitively.

- Install a material handling system at Newport that simplifies raw material unloading and intra-plant product movement resulting in a reduction of manpower.

- Locate locker and shower facilities adjacent to or in the operating buildings at Newport so people administration is handled effectively with less supervision.

- Install second membrane press in the Newark Pressing and Drying area to reduce manpower.

- * • Switch YE-698 Batch Process at Newark to the Continuous Unit to reduce manpower.

- * • Switch Krolor® at Newark to the existing extruder that is freed up by moving YE-698 to the Continuous Unit. Reduction of manpower results.

TACTICS

R&D

- A THOROUGH REVIEW OF ALL U.S. AND EUROPEAN TSCA INVENTORY.
- CONTINUED NEW PRODUCT DEVELOPMENT EFFORT ON THREE MAJOR ENDEAVORS WITH COMPLETION TIMETABLES ON EACH
 - QA HIGH-SOLIDS ENAMELS
 - EASY-DISPERSING CPC FOR PLASTICS
 - DALAMAR® HIGH-SOLIDS DISPERSIONS FOR TRADE SALES PAINT
- A CONCENTRATED PRODUCTIVITY IMPROVEMENT PROGRAM RESULTING IN THOROUGH DOCUMENTATION OF ALL MANUFACTURING PROCESSES AND REQUIRED PROCESS MODIFICATION BY YEAR END 1982
- A SUBSTANTIAL MANPOWER AND COST REDUCTION PROGRAM, DELINEATED BY YEAR, CONSISTENT WITH THE RETENTION OF NECESSARY EXPERTISE TO PERFORM EFFECTIVELY

no.

BP-565-D

TECHNOLOGY CLARIFICATION

● PRODUCT

55% COPPER PHTHALOCYANINE BLUE

45% ACRYLIC MODIFIED POLYETHYLENE

● CRITICAL PROPERTY

HIGHLY DISPERSIBLE UNDER LOW SHEAR DISPERSION

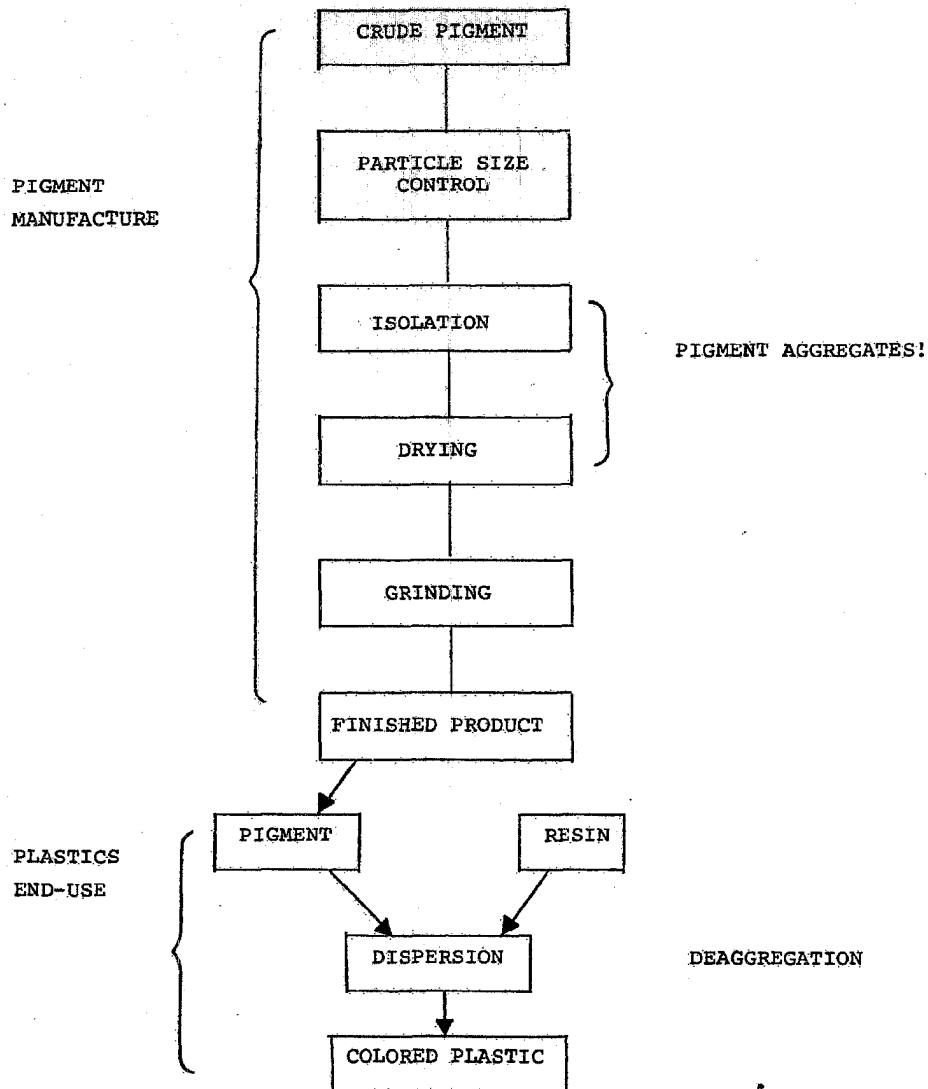
CONDITIONS IN PLASTICS SYSTEMS

● MARKET

THIN FILM PLASTICS APPLICATIONS

PIGMENTS FOR PLASTICS

FLOW SHEET



PROBLEM

PLASTICS DISPERSION EQUIPMENT USUALLY NOT SUFFICIENT TO COMPLETELY DEAGGREGATE PIGMENT. LEADS TO POOR STRENGTH AND SPECKS OF UNDISPERSED PIGMENT.

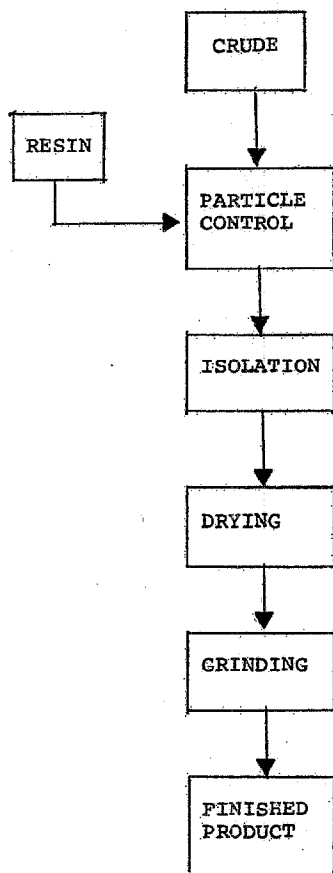
RESOLUTION

- DISPERSE AT HIGHER ENERGY - PLASTICS DISPERSION HOUSES
- AVOID AGGREGATION - PIGMENT MANUFACTURING

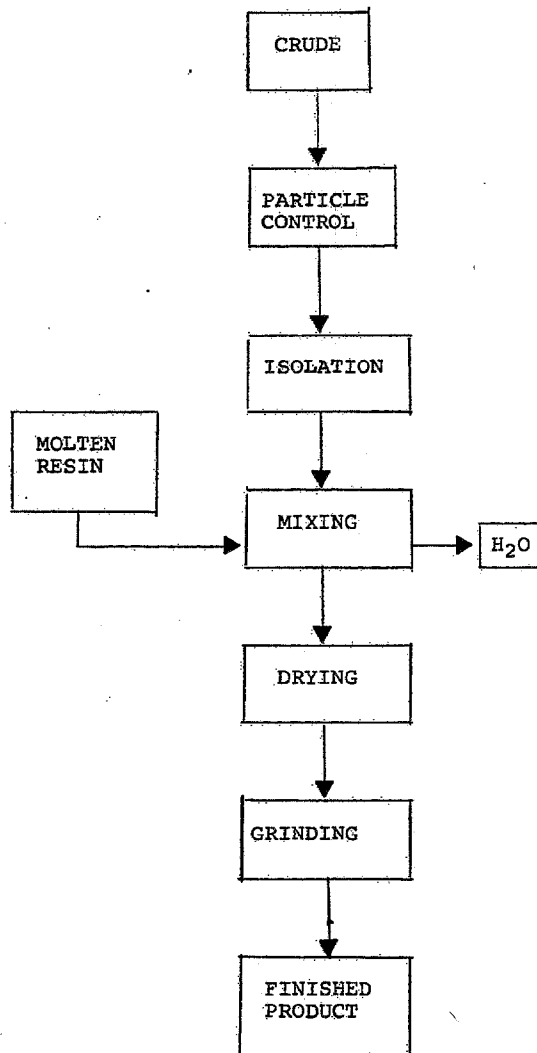
AVOIDING PIGMENT AGGREGATION

- USE AN END-USE COMPATIBLE SPACER MATERIAL TO KEEP PARTICLES APART.
- TWO APPROACHES:

DU PONT



AMER. CYANAMID



- DU PONT APPROACH AVOIDS AN EXTRA STEP.

PIGMENT TECHNOLOGY

● PIGMENTS PRODUCED BY:

(1) DIRECT SYNTHESIS

● LEAD CHROMATES

● AZO PIGMENTS

(2) CRUDE SYNTHESIS AND SEPARATE FINISHING

● QUINACRIDONE (QA)

● COPPER PHTHALOCYANINE (CPC)

● FINISHING

(1) PHYSICAL ATTRITION AND CONTROLLED RE-GROWTH

EXAMPLES:

● DISPERSION MILLING (DRY MILLING IN THE PRESENCE OF ALUM)

● PRE-MILLING (DRY MILLING - NO ALUM)
FOLLOWED BY -

- ACID SWELLING

- ACETONE MILLING

- SURFACTANT RECRYSTALLIZATION

(2) SOLUTION (IN H₂SO₄) AND RE-PRECIPTATION

EXAMPLE:

● HT (HIGH TURBULENCE) DROWNING

MANUFACTURING FLOW SHEET

