

W. R. GRACE & CO.
RESEARCH DIVISION



Washington Research Center, Clarksville, Maryland 21029

GRACE CONFIDENTIAL

CONSOLIDATED MONTHLY SUMMARY

SEPTEMBER 1970

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Washington Research Center, Clarksville, Maryland 21029

October 20, 1970

MONTHLY REPORT FOR SEPTEMBER 1970

CONSOLIDATED EDITION

GRACE CONFIDENTIAL

NOT TO GO OUTSIDE U.S.

This report contains information on the following
activities at the Washington Research Center.

INORGANIC RESEARCH

- I-1 AUTO EMISSIONS CATALYST
- I-2 INORGANIC PLASTAMICS
- I-3 ZEOLITE STABILITY AND ACTIVITY
- I-4 ADVANCED NAVAL FUELS
- I-5 ADVANCED SPACE FUELS
- I-6 EXPLORATORY - CLAY COMPOUNDS
- I-7 AUTOMATION OF LEAF MALTED MILK BALL PROCESS

ORGANIC RESEARCH

- O-1 CURABLE LIQUID POLYMERS - UV CURABLE INKS
- O-2 CURABLE LIQUID POLYMERS - LOW COST CLP SYSTEMS
- O-3 CURABLE LIQUID POLYMERS - ALTERNATE CURING AGENTS
- O-4 HIGH STRENGTH CLP's (ELASTOMERS)
- O-5 CLP - PHOTORESISTS
- O-6 CLP - OFFSET PLATE PROGRAM
- O-7 CURABLE LIQUID POLYMERS - NEW APPLICATION FOR CLP MATERIALS
- O-8 POLYMERIC ADHESIVES - CAN END FASTENING SYSTEMS
- O-9 CLP - MARKETING STUDIES
- O-10 CLP - DARK STABILITY

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ORGANIC RESEARCH, Cont'd.

- O-11 CLP - ORTHOPEDIC CASTS
- O-12 LETTERFLEX SUPPORT
- O-13 LETTERFLEX SUPPORT
- O-14 LETTERFLEX QUALITY CONTROL
- O-15 BASIC PHOTOPOLYMER STUDIES - POLYMER ACTIVATION
- O-16 FIRE RETARDANT MATERIALS
- O-17 ADHESION STUDIES - CRYOVAC COOPERATIVE STUDY
- O-18 PACKAGING MATERIALS - NON-HALOGENATED BARRIER MATERIALS
- O-19 CAN COMPOUNDS - OVERSTRIPE FOR CONOWELD SIDE SEAM
- O-20 POLYMER FOAM STUDIES
- O-21 PHOTOCHEMISTRY STUDIES
- O-22 EXPLORATORY - ALTERNATIVE CLP SYSTEMS

AGRICULTURAL RESEARCH

- A-1 VERMICULITE-MOSS PLANTING DEVICE
- A-2 REFORMULATION AND EVALUATION OF MONO-KOTE
- A-3 HERBICIDE COATED UREA
- A-4 PHOSPHATE ROCK SOLUBILIZATION WITH AMMONIUM BISULFATE
- A-5 WASTE WATER CLEAN-UP AND BY-PRODUCTS (FLORIDA)

BIOCHEMICAL RESEARCH

- B-1 ADAPTED RUMEN MICROBES (ARM)
- B-2 "CHRON-X"
- B-3 EXPLORATORY - ENZYME FEED ADDITIVES FOR RUMINANTS
- B-4 SALTS OF ISOBUTYRIC ACID AS A POULTRY FEED ADDITIVE

OTHER R&D

- OT-1 GRACE SUGAR PROCESS

These items are included in the various editions of the report as shown below:

ACG Edition	A-3,4,5; B-1,2,3,4
DAV Edition	I-1,2,3,6; O-16
HAMP Edition	O-16
COV Edition	O-9, 17, 18, 20, 21
HATCO Edition	O-16; B-4
European Edition	I-1,2,3,6; O-1,2,3,6,7,9,11,12,13,14,15,16,22; OT-1
SPG Edition	No items this month
PFD Edition	O-1,2,3,5,6,7,9,10,11,12,13,14,15,16,21,22
CPD Edition	I-6; O-9,16,20; A-1,2
P&CD Edition	O-2,3,5,7,9,10,13,15,16
D&A Edition	O-2,7,8,9,10,11,19,21
Consolidated Foreign Edition	I-1,2,3,6; O-1,2,3,5,6,7,8,10,11,12,13,15,16,17, O-18,19,20,21,22; OT-1
Consolidated Edition	All items

AGRICULTURAL RESEARCHA-1 VERMICULITE-MOSS PLANTING DEVICES (Project 4815)

The Keyes Fiber Company reported that the factors affecting their feasibility study on manufacturing and marketing Grace's vermiculite-moss planting devices are more involved than first anticipated. The project remains under study by both the Marketing Research and Engineering Departments of Keyes but a decision is not anticipated on whether or not to enter commercial operation until about January 1, 1971.

A-2 REFORMULATION AND EVALUATION OF MONO-KOTE (Project 2659)

A research program, prepared jointly with the Construction Products Division (CPD), for long-range study of the Mono-Kote problem was presented to CPD on September 10 and 11, 1970. The proposed program in essence was accepted.

It was agreed that for the immediate future, screening studies of additives to Mono-Kote will continue at WRC. The effects of additives will be evaluated in terms of bond strength between Mono-Kote and galvanized steel both at room temperature and elevated temperatures.

General studies on tensile shear, adhesive and cohesive bond strength of Mono-Kote to galvanized steel will also continue.

A-3 HERBICIDE COATED UREA (Project 4834)

Amchem Products, Inc. reported that results from the first tests of the urea/amiben product as a herbicide for use in rice probably will be meaningless because uncontrolled flooding of the field literally washed out the test. Further testing is under way with more carefully controlled conditions.

A-4 PHOSPHATE ROCK SOLUBILIZATION WITH AMMONIUM BISULFATE (New Project)

Previous laboratory work at WRC showed that it is possible to use ammonium bisulfate to convert P_2O_5 in phosphate rock to ammonium phosphate. Exploratory laboratory work indicates that up to 93% of the P_2O_5 as ammonium phosphate can be recovered by extraction with water. Presumably this solution could be granulated by conventional means.

In this process essentially all the ammonia and half of the sulfate required to make DAP are supplied by the ammonium sulfate. The other half of the sulfate is supplied by the sulfuric acid used in converting the ammonium sulfate to the bisulfate.

The work was shelved, however, as preliminary cost estimates did not appear sufficiently favorable at that time to warrant converting