

New Products and Equipment . . .

Carbo-Nitric Process for High Analysis Fertilizer

The carbo-nitric process discussed in the foreign news section is available for licensing from the Chemical and Industrial Corp. The process is rated to produce 13-11-13 fertilizer in granular form and uses CO₂ for acidulation of the slurry during ammoniation. The process is guaranteed to be 96% efficient in ammoniation of the slurry.

The process was developed originally in Europe for production of high analysis materials without ammonium nitrate or calcium nitrate. Other advantages claimed for the process include: phosphate rock does not need to be ground finer than 20 mesh, no sulfuric acid or phosphoric is necessary and the potash need not be in the form of sulphate.

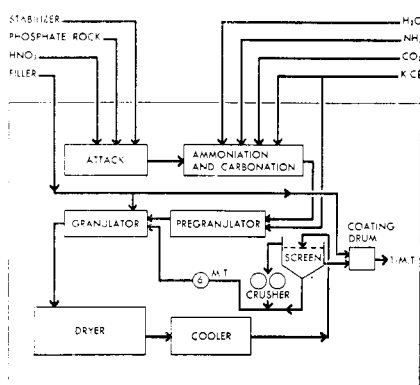
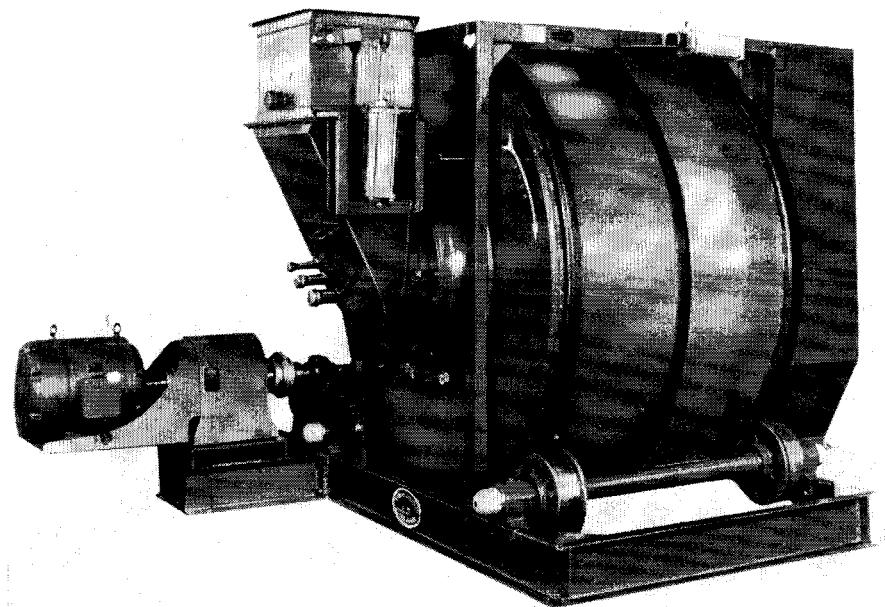
The process plant is claimed to be capable of producing fertilizers of higher analysis than 13-11-13, and the size of the granules produced can be varied over a relatively wide range. **PE1**

Disposable Aerosol Insecticide Bomb

A large size disposable aerosol insecticide bomb containing 3 lb. of active ingredients, including pyrethrin, allethrin, rotenone, and *n*-octyl sulfoxide is

Large Capacity Drum Type Mixer

Rotary blending type mixer available from Davidson-Kennedy Co. Suitable for dry or semi-wet materials, it features a sealed mixing unit with a self take-up seal on the inlet. Mixer flights of special alloy steel plate are arranged to give blending in minimum time. Mixer is available in 37 cu. ft., 59 cu. ft., and 69 cu. ft. mixing capacities **PE6**



Flow chart for carbo-nitric process

available from Whitmire Research Laboratories, Inc. Bomb (gross weight 4.75 lb.) treats over 600,000 cu. ft. **PE2**

Chelated Trace Elements

With increasing intensity of agriculture and use of three element fertilizers the question of trace elements has become important in agricultural production. Deficiencies of trace elements are, in some areas limiting factors in agricultural production. Iron deficiencies have proved to be particularly difficult since soil may contain relatively large amounts of iron but not in a form readily available to plants.

Iron deficiencies have been partially

remedied by spraying plants with a dilute solution of iron sulfate. Recently there has been interest in iron chelation compounds which can be applied to soil and remain in a form readily available to plants. The Refined Products Corp. has prepared an organic iron chelate which has been field tested in various areas and is available in commercial quantities. The chelate called Perma Green 135 can be added to fertilizers of either the solid or liquid type or can be used in the spray form. **PE3**

Nematocide for Turf And Ornamentals

V-C 13 Nematicide, Virginia Carolina's nematocide has been registered for sale for use on turf and ornamentals in Virginia and Florida. The nematocide, a formulation of O-2,4-dichlorophenyl O,O-diethyl phosphoro thioate, is mixed with water and applied either as a drench or by injection.

Application for registration of the nematocide has been made in several other states and approval is expected in the near future.

Virginia-Carolina is also studying the use of the material for nematode control on crop plants. **PE4**

Methyl Parathion to Control Cotton Insects

Methyl parathion, recommended for the control of insects and mites on cotton, is now available in commercial quantities from Monsanto.

The compound is effective in controlling the various species of aphids and mites when properly formulated and applied either as a liquid or a dust. It also is of value for boll weevil control.

The properties of methyl parathion are similar to those of parathion, Monsanto's Niran. It has essentially the same order of toxicity as the latter, and equal care is necessary in the handling of it. **PE5**

Nemagon Soil Fumigant

Nemagon, a new soil fumigant for control of nematodes, is now available for limited commercial use, from the Agricultural Chemicals Division of Shell Chemical Corp. Nemagon has already been tested on a wide variety of crops including cotton, grapes, citrus, and other tree crops such as peaches and walnuts. Some crops appear tolerant enough of this chemical so that applications can be made around the roots of the plant.

With established trees, applications of five to ten gal. per acre have controlled a wide variety of nematodes to a depth of 4 to 6 ft. Shell says the

ability of Nemagon to reach such depths is due to its stability in soil, its high density, and the manner in which it is held to soil particles. Since it is stable in soil, it gradually disperses, killing nematodes as it moves.

Nemagon (1, 2-dibromo, 3-chloropropane) is currently being manufactured on pilot plant scale. Both liquid and dry formulations will be marketed in 1955. The nematocide will be available for limited sales this season on such crops as citrus, cotton, and grapes. Nation-wide marketing is expected in 1956. **PE7**

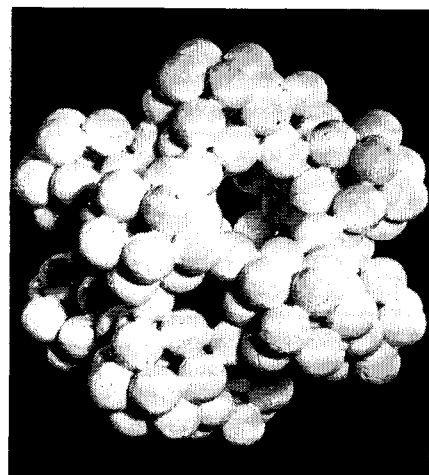
Urea, Borate Weed Killer

The Pacific Coast Borax Co. has introduced Ureabor, a weed and grasskiller developed specifically for industry. Ureabor, a complex of sodium borates and 3-*p*-chlorophenyl-1,1-dimethylurea, has been extensively tested throughout the United States. No mixing or spraying equipment is required for the herbicide; it is applied dry just as it comes from 50 lb. multi-wall paper sacks. Ureabor will be marketed by the company's agricultural sales division. **PE8**

Molecular Sieves, Selective Absorbents for Gases, Liquids

Two selective absorbents developed by Linde Air Products Co. may provide a new basis for separation and purification of mixtures of gases and liquids. The absorbents are capable of separating mixtures on the basis of differences of molecular size. Differences of boiling point have previously been a primary factor in selective adsorption separation techniques.

Model of molecular sieve crystal unit shows how the arrangement of the atoms forms several pores opening into a single cavity. Each crystal is composed of millions of these cells connected together to form an intricate network of pores and cavities



The selective absorbents are made by heating zeolite crystals to drive off the water of hydration. The resulting crystal matrix is made up of pores and cavities of extremely uniform size. Adsorption takes place on the interior of these cavities, but only molecules small enough to pass through the pores can be adsorbed on the crystal interior.

Linde believes that the molecular sieves will find widespread use in industry for such applications as the drying of gases and liquids. The sieves will operate at relatively high temperatures, can absorb water at its boiling temperature. The material is also being investigated for possible applications in catalysis and ion exchange. **PE9**

Steam and Water Mixer

A new steam and water mixer, which utilizes heat energy by injecting steam directly into water, has been developed by Fulton Sylphon Division of Robertshaw-Fulton Controls Co.

The steam-water mixer, may be used wherever hot water is required, and steam and water are available. It has a wide range of adaptability in industrial plants for processes of various kinds including chemical plants, dairy plants, bakeries, breweries, distilleries and confectionery plants.

Safety feature on the new control will shut down the mixer in the event of failure of the water supply. Operation is automatically resumed when the interference is corrected. **PE10**

Jet Agitator Nozzle Prevents Settling and Sedimentation

Many chemicals used in farm spraying tend to settle apart in the drum, during the spraying operation. In spite of

the movement of the tractor or rig as it moves across a field. This is particularly true where wetttable powders are used. To maintain a proper mix.

Spraying Systems Co. has designed a jet agitator nozzle, which can be near the bottom of the spray drum. Liquid is sprayed in three directions, creating a random agitation pattern that continuously maintains an equalized distribution of chemicals within the spray tank.

Design of the nozzle prevents the setting up of eddy currents and whirlpool action that could hinder the mixing process. The nozzle has been field tested with a variety of solutions and has proved effective. **PE11**

Reaction-Distillation Pilot Plant

A reaction-distillation pilot plant, is available from Patterson-Kelley Co. Made up of a 5-gallon reactor, agitator, condenser and decanter, the unit can be used to test and study a variety of chemical processing operations.

Design features include: Central gas injection and a flexible condensate flow arrangement. Gas is fed into the reactor through the hollow shaft of the agitator and enters into a reaction at the source of agitation.

A specially-designed baffle on the condenser neck diverts the flow of condensate away from the vapor inlet into the decanter. Decanted liquid can overflow into reactor or all of condensate can be returned to reactor by closing valve.

Additional connections in top head are provided to permit modified piping arrangements or installation of other auxiliary equipment.

Both endothermic and exothermic reactions, under pressures up to 150 psig, may be carried out with the unit. **PE12**

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