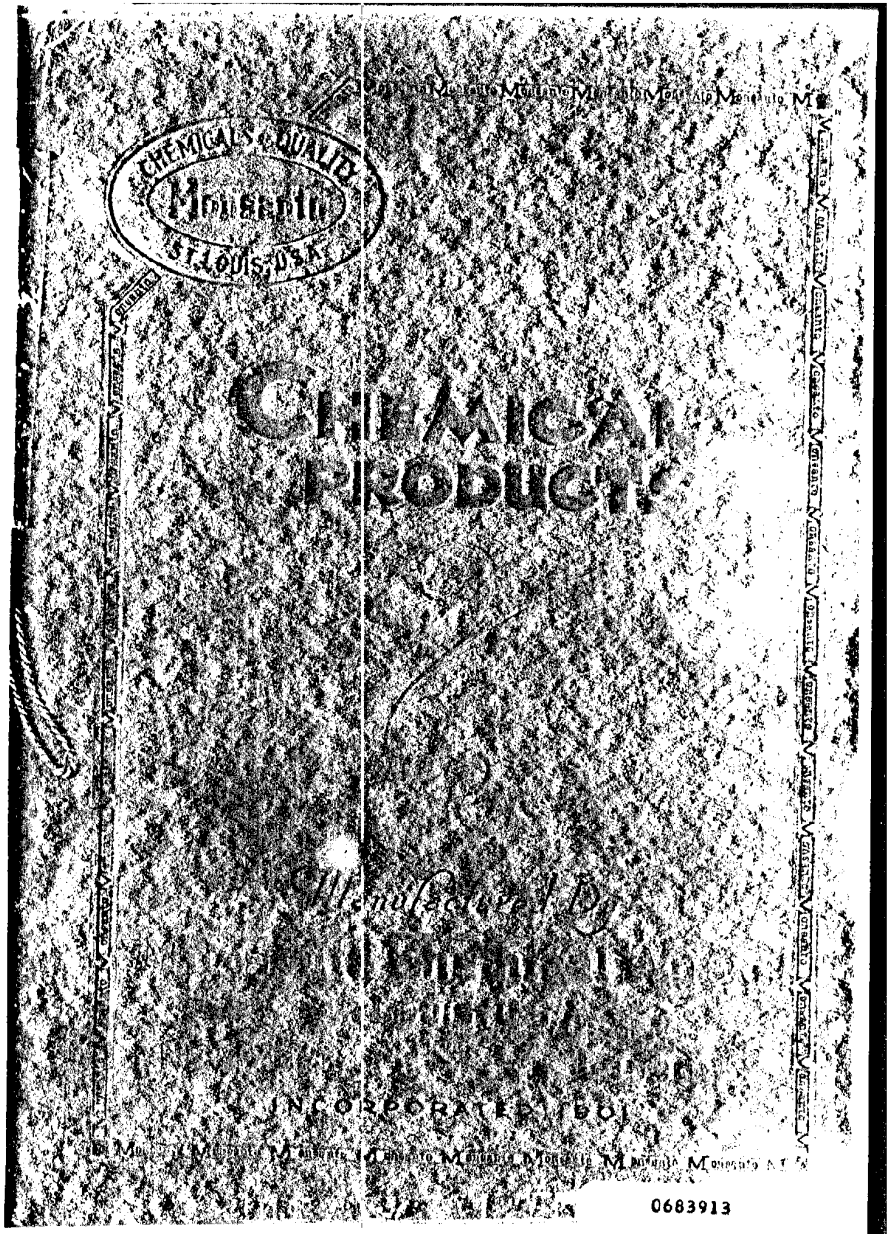


TOWOLDMON0041997
WATER_PCB-00026466

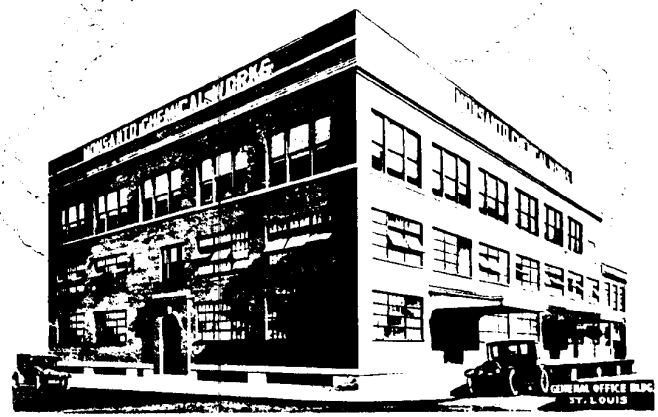
Monsanto Chemical Works

SAINT LOUIS, U.S.A.

1920

12 Platt Street
New York

62 London Wall
London, E.C.2



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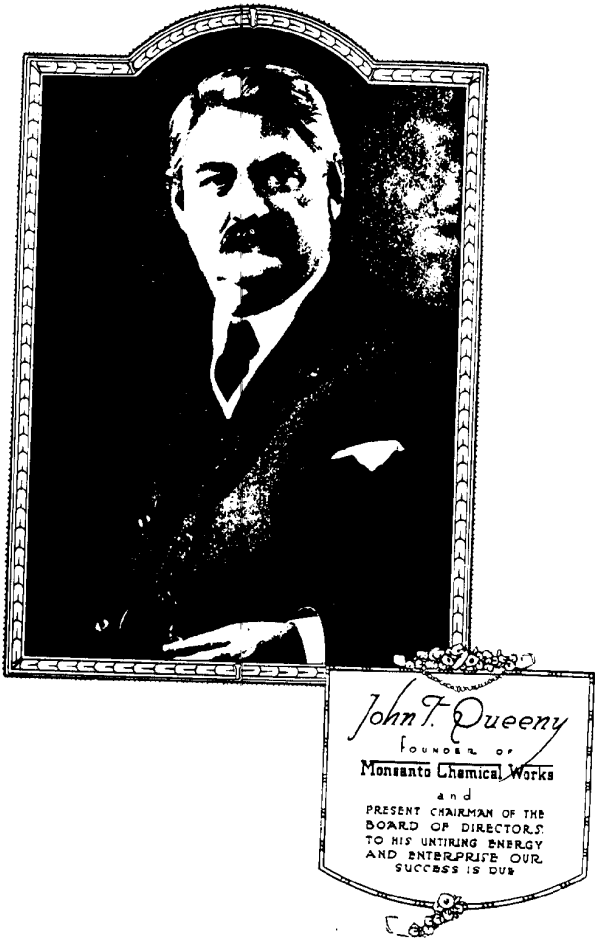

0683915

TOWOLDMON0041999
WATER_PCB-00026468

Foreword

IT IS, and always has been, our idea that "large output" follows "quality" and that in order to attain both quality and production, it is necessary to "concentrate." It has therefore, been our constant policy to concentrate our efforts on a few but important chemicals and to lead in the manufacture of whatever we undertake to produce.

Upon perusal of the following notes, it will be seen that it was not in a haphazard way that we undertook and developed the manufacture of medicinal chemicals derived from coal tar products. About nineteen years ago the comparatively small quantities of this character of chemicals that were produced in this country, were produced by factories established here by foreign chemical concerns, who naturally controlled them and their output, so that, properly speaking, here was the largest country in the world depending entirely for all practical purposes on foreign industry for its supplies of the medicinal chemicals above referred to.

Organized in 1901, we undertook the manufacture of medicinal and fine chemicals, which had prior to that time been produced in Europe only. As years went by, new products were taken up, and by constant concentrated efforts we were able to materially increase the output of American-made medicinal chemicals in spite of the most active foreign competition.

To the friendly and intelligent assistance lent us by the leading home pharmaceutical manufacturers and manufacturing consumers during the past nineteen years, which contributed materially to our success, we wish to express here our feelings of appreciation and gratitude.

In 1914 when the World War broke out, we undertook the manufacture of all the intermediates required by us in our manufacture, and which prior to that time were imported from Europe. Today we are independent of all foreign sources of supply for our raw materials.

In order to further strengthen our position we acquired, in 1917, the acid plant of the Commercial Acid Company, and in 1919 we started to erect an Electrolytic Plant for the production of Caustic Soda and Chlorine, which plant is now about completed.

So equipped, we feel confident that we are in position to serve our friends to better advantage than ever before.

MONSANTO CHEMICAL WORKS.

Saint Louis,
February, 1920.

0683916

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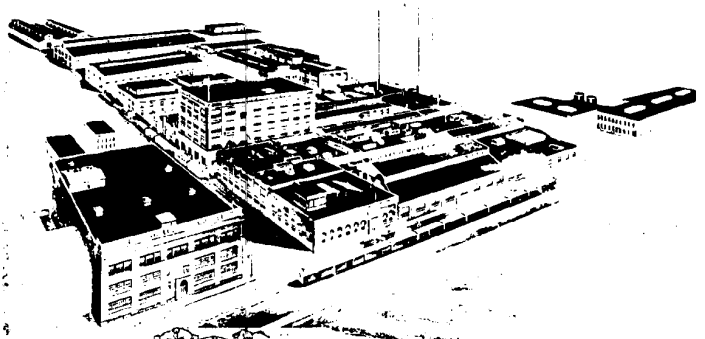
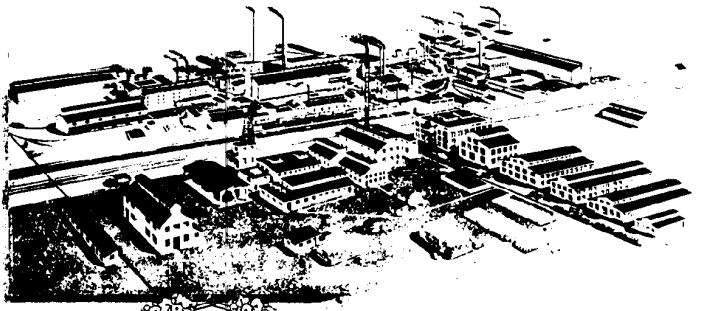


Saint Louis Works

WHERE FINE AND
MEDICAL
CHEMICALS
ARE MADE

0683917

TOWOLDMON0042001
WATER_PCB-00026470



East Saint Louis Works

WHERE HEAVY CHEMICALS, SUCH AS ACIDS PHENOL AND INTERMEDIATES ARE MADE

0683918

TOWOLDMON0042002
WATER_PCB-00026471

Address reply to Director of Purchase, Storage and Traffic, Washington, D. C. War Department.

WAR DEPARTMENT
OFFICE OF THE CHIEF OF STAFF
PURCHASE, STORAGE AND TRAFFIC DIVISION
WASHINGTON

October 10, 1919

Refer to File

NO: 220.5

FROM: The Director of Purchase, Storage and Traffic.

TO: Monsanto Chemical Works, St. Louis, Mo.

SUBJECT: Certificate of Merit.

1. In accordance with the recommendation of the Surgeon General of the Army a certificate of merit has been sent to you under separate cover.

2. The citation by the Surgeon General of the Army is as follows:

"Their unceasing efforts, particularly in experiments in the manufacture of chemicals and drugs which had never before been made in this country, and their extraordinary success and production of this material was of exceptional importance to the Government. The quantity and quality of supplies furnished the Medical Department particularly when consideration is given to the character and their nonavailability elsewhere, were of exceptional importance".

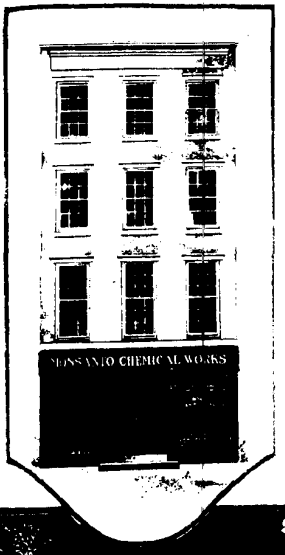
3. It is very gratifying to me to be enabled to transmit this visible recognition of patriotic war service.

Geo. W. Burr,
Major General, Assistant Chief of Staff,
Director of Purchase, Storage and Traffic.

The letter which accompanied our Certificate of Merit

0683919

TOWOLDMON0042003
WATER_PCB-00026472



New York Building

12 Platt St.



New York Offices

0683920

TOWOLDMON0042004
WATER_PCB-00026473



General Offices
ST. LOUIS





Superintendents Offices

Accounting Dept.

0683921

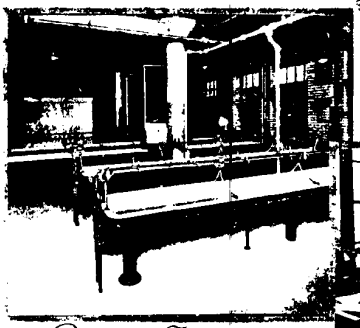
TOWOLDMON0042005
WATER_PCB-00026474



First Aid Room



Lunch Room



Corner in Lavatories

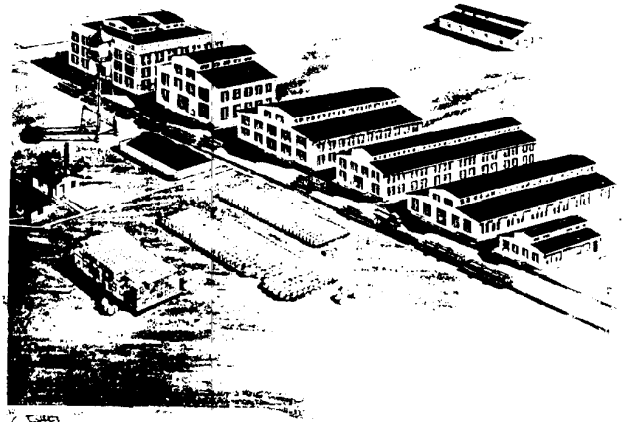


Drafting Room

We endeavor to keep our employees healthy and happy. Men who work with poisonous chemicals are required to take daily showers, and are provided with changes of underclothing daily, which are laundered in our well appointed laundry. Rubber boots, gloves, goggles, etc., are also issued. These are views in our Service Building, in which every convenience is provided for our employees.

0683922

TOWOLDMON0042006
WATER_PCB-00026475



Synthetic Camphor Works

WHICH ARE BEING CONSTRUCTED NEAR OUR EAST ST. LOUIS FACTORY

0683923

TOWOLDMON0042007
WATER_PCB-00026476

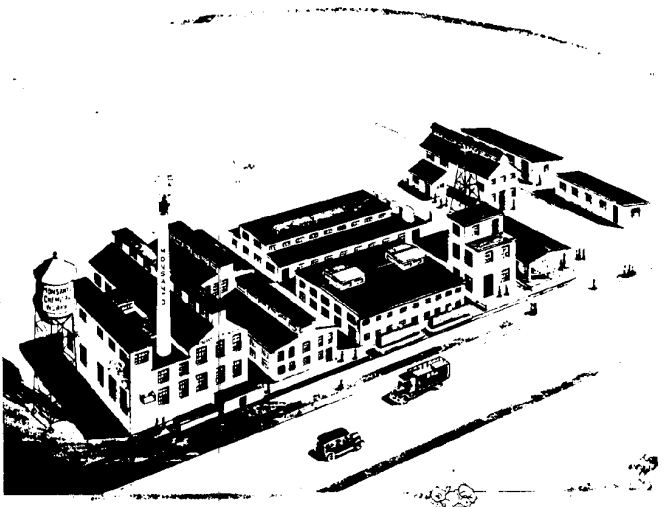
Our Synthetic Camphor Plant

which is being constructed in connection with our East St. Louis Works, is the outgrowth of the demand for a product which is no longer available in sufficiently large quantities to satisfy the demand. We have the most improved method of manufacture, which has been developed after many years of effort by various manufacturers the world over. Through this process, we expect to be manufacturing synthetic Camphor in quantities large enough to be sufficient for most needs.

Our Synthetic Camphor will be equal to the natural product for all practical purposes.

0683924

TOWOLDMON0042008
WATER_PCB-00026477



Chlorine and Caustic Soda Plant

WHICH IS ADJACENT TO OUR EAST ST. LOUIS PLANT

0683925

TOWOLDMON0042009
WATER_PCB-00026478

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0683926

TOWOLDMON0042010
WATER_PCB-00026479

MONSANTO CHEMICALS-QUALITY MONSANTO ST. LOUIS U.S.A. CHEMICAL WORKS

ACETANILID, U. S. P.

$C_6H_5 \cdot NH \cdot CH_3CO$ - 35.08

Manufactured in two forms, the crystal and the powdered. A powerful antipyretic used extensively in remedies for headaches, neuralgia, etc. Used by tablet manufacturers, pharmaceutical houses, patent medicine manufacturers, etc.

MONSANTO SPECIFICATIONS:

White, shining, crystalline laminae or white powder.
Free of aniline salts.
Ash: not over 0.05%.
Melting point: 114°-115°C.

U. S. P. Melting point: 112°-114°C.
British Pharm. Melting point: 113°C.
German Pharm. Melting point: 113°-114°C.
Japanese Pharm. Melting point: 113°-114°C.

Our product is of high purity, as indicated by the melting point, and considerably higher than that required by the above Pharmacopoeias.

0683927

TOWOLDMON0042011
WATER_PCB-00026480

ACETPHENETIDIN, U. S. P.
PHENACETIN

$1{:}4\text{-}C_6H_4 \cdot OC_2H_5 \cdot NH \cdot CH_3 \cdot CO \cdot = 179.11$

Used as an analgesic, antipyretic and nervine sedative. This preparation is generally given preference over acetanilid by reason of the fact that it has a weaker depressing action on the heart than acetanilid. Used by tablet manufacturers, pharmaceutical houses, patent medicine manufacturers, etc.

MONSANTO SPECIFICATIONS:

White, glistening, crystalline powder.

Odorless.

Ash: not over 0.05%.

Free of para-phenetidin, acetanilid and carbonizable impurities.

Melting Point: 134°-135°C.

U. S. P. Melting Point: 133°-135°C.

British Pharm. Melting Point: 135°C.

German Pharm. Melting Point: 134°-135°C.

Japanese Pharm. Melting Point: 134°-135°C.

Our product is of high purity, as indicated by the melting point, and higher than that required by U. S. Pharmacopoeia.

0683928

TOWOLDMON0042012
WATER_PCB-00026481

MONSANTO CHEMICAL WORKS

ACETYL SALICYLIC ACID

ASPIRIN

1:2-C_6H_4·O·CH_3CO·COOH = 180.06

Used as an analgesic and antipyretic and as a specific in acute rheumatism. Used by tablet manufacturers, pharmaceutical houses, patent medicine manufacturers, etc.

MONSANTO SPECIFICATIONS:

White, odorless powder.

Free of sulphates, chlorides.

Free of salicylic acid or only faint trace.

Melting Point: 133-135° when inserted in heating medium at 130° and heated at a rate of 1° per minute.

Aspirin is not yet official in the U. S. P.

Our product conforms with the specifications of New and Non-Official Remedies and the British, Japanese and German Pharmacopoeias.

British Pharm. Melting Point: 133-135°C.

Japanese Pharm. Melting Point: 135°C.

German Pharm. Melting Point: About 135°C.

0683929

TOWOLDMON0042013
WATER_PCB-00026482

MONSANTO CHEMICAL WORKS

CAFFEINE, U. S. P.

PURE ALKALOID

$C_3H \cdot (CH_3)_3 \cdot O_2N_4 + H_2O = 212.14$

Marketed in cubes and in flaky form. It is a valuable diuretic, cardiac, and cerebral stimulant. Used by tablet manufacturers, pharmaceutical houses, patent medicine manufacturers, etc.

MONSANTO SPECIFICATIONS:

White, odorless, silky needles of bitter taste.

Less than 9% water of crystallization.

Free of other alkaloids.

Ash: not over 0.05%.

With sulphuric or nitric acid not more than a faint yellowish color.

Melting Point: 235-237°.

U. S. P. Melting Point: 235-237°C.

British Pharm. Melting Point: 235°C.

Japanese Pharm. Melting Point: 230-235°C.

German Pharm. Melting Point: 234-235°C.

0683930

TOWOLDMON0042014
WATER_PCB-00026483

MONSANTO CHEMICAL WORKS

CHLORAL HYDRATE, U. S. P.

CRYSTALS

$CCl_3 \cdot COH + H_2O = 165.4$

A powerful hypnotic, used particularly in acute mania, and delirium tremens. Used by pharmaceutical houses, tablet manufacturers, patent medicine manufacturers, veterinarians, etc.

MONSANTO SPECIFICATIONS:

Transparent, colorless, rhomboidal crystals.

At least 99.5% by titration.

Free of chlorides, alcoholates and other organic impurities.

Ash: not over 0.05%.

0683931

TOWOLDMON0042015
WATER_PCB-00026484

COUMARIN

$C_6H_4{\cdot}CH_2{\cdot}OCO = 146.05$

Coumarin is a white crystalline body chemically identical with the chief aromatic constituent of the Tonka Bean. One ounce is equal in flavoring value to about three pounds of best Angostura Beans. This has a stronger flavor than Vanillin and is often used in connection with the latter to reinforce it or to make a much stronger flavor.

MONSANTO SPECIFICATIONS:

White prismatic crystals, having characteristic fragrant odor. One gram must be clearly and completely soluble in 10cc alcohol, 95%.

Melting Point: 68°-69°.

Melting Point National Formulary IV 67°-68°.

0683932

TOWOLDMON0042016
WATER_PCB-00026485

MONSANTO CHEMICALS = QUALITY MONSANTO ST LOUIS U.S.A. CHEMICAL WORKS

GLYCEROPHOSPHATES

CALCIUM GLYCEROPHOSPHATE U. S. P.

SODIUM GLYCEROPHOSPHATE U. S. P. CRYSTALS.

SODIUM GLYCEROPHOSPHATE U. S. P. POWDERED.

SODIUM GLYCEROPHOSPHATE POWDERED ANHYDROUS

SODIUM GLYCEROPHOSPHATE SOLUTION U. S. P.

POTASSIUM GLYCEROPHOSPHATE 75%.

POTASSIUM GLYCEROPHOSPHATE 50%.

IRON GLYCEROPHOSPHATE, POWDERED.

IRON GLYCEROPHOSPHATE, SCALES.

MANGANESE GLYCEROPHOSPHATE.

MAGNESIUM GLYCEROPHOSPHATE.

ACID CALCIUM GLYCEROPHOSPHATE 50%.

GLYCEROPHOSPHORIC ACID 25%.

The GLYCEROPHOSPHATES are chiefly used in the form of elixirs, wines, tablets, etc., as a general tonic in neurasthenia, rachitia, etc.

The introduction of our glycerophosphates six years ago revolutionized all then existing standards and caused the adoption of higher standards of purity for these salts. As a consequence we are today the leading manufacturers of these products.

0683933

TOWOLDMON0042017
WATER_PCB-00026486

MONSANTO CHEMICAL WORKS

CALCIUM GLYCEROPHOSPHATE, U. S. P.

$C_3H_5 \cdot (OH)_2 \cdot PO_4 \cdot Ca + H_2O = 228.18$

MONSANTO SPECIFICATIONS:

Fine white powder, odorless and almost tasteless.

Should contain no less than 98% Calcium Glycerophosphate plus one molecule water of crystallization.

Calcium sulphate: not more than 0.5%.

Calcium chloride: not more than 0.1%.

Dissolves clear and completely in fifty parts of water (25°).

Free of mineral phosphates.

Free of organic acids, which are sometimes added to increase the solubility.

0683934

TOWOLDMON0042018
WATER_PCB-00026487

MONSANTO CHEMICAL WORKS

IRON CLYCEROPHOSPHATE POWDER

$Fe_2(C_3H_7O_6P)_3$ = 621.97

MONSANTO SPECIFICATIONS:

Yellowish green powder.

14-16% Iron.

Containing not more than traces of sulphates and maximum of 0.3% ferric chloride.

IRON GLYCEROPHOSPHATE SCALES

$Fe_2(C_3H_7O_6P)_3$ - 621.97

MONSANTO SPECIFICATIONS:

Yellowish green shining scales.
13-15% Iron.

Otherwise same as Iron Powder.

This product is still in demand by certain users although its cost of manufacture and selling price are both considerably higher than in the case of the powdered product.

0683935

TOWOLDMON0042019
WATER_PCB-00026488

MONSANTO CHEMICAL WORKS

MAGNESIUM GLYCEROPHOSPHATE

$C_3H_5 \cdot (OH)_2 \cdot PO_4 \cdot Mg$ = 194.42

MONSANTO SPECIFICATIONS:

White powder, containing maximum of

0.2% magnesium chloride

3.5% water.

0.2% calcium oxide.

Trace magnesium sulphate.

56.8%-57.8% ash on dry basis.

Free of mineral phosphates.

0683936

TOWOLDMON0042020
WATER_PCB-00026489

MONSANTO CHEMICAL WORKS

MANGANESE GLYCEROPHOSPHATE

$C_3H_5(OH)_2PO_4Mn$ = 225.03

MONSANTO SPECIFICATIONS:

Light pink powder, containing 4-5% moisture and a maximum of

0.5% manganese chloride.

0.2% manganese sulphate.

62.5%-63.5% ash on dry basis.

Free of mineral phosphates.

0683937

TOWOLDMON0042021
WATER_PCB-00026490

MONSANTO CHEMICAL WORKS

POTASSIUM GLYCEROPHOSPHATE

50% SOLUTION

$C_3H_5 \cdot (OH)_2 \cdot PO_4 \cdot K_2$ + Aqua

MONSANTO SPECIFICATIONS:

Slightly yellowish, clear liquid, containing at least 50% of the anhydrous salt.

Containing a maximum of
0.3% potassium chloride.
0.1% potassium sulphate.

0683938

TOWOLDMON0042022
WATER_PCB-00026491

MONSANTO CHEMICAL WORKS

POTASSIUM GLYCEROPHOSPHATE

75% SOLUTION

$C_3H_5 \cdot (OH)_2 \cdot PO_4 \cdot K_2$ + Aqua

MONSANTO SPECIFICATIONS:

Clear, light yellow, aqueous solution of Potassium Glycerophosphate, containing 74.5-75% of the anhydrous salt.

Containing a maximum of
0.3% potassium chloride.
0.1% potassium sulphate.

0683939

TOWOLDMON0042023
WATER_PCB-00026492

MONSANTO CHEMICAL WORKS

SODIUM GLYCEROPHOSPHATE
ANHYDROUS

$C_3H_5 \cdot (OH)_2 \cdot PO_4 \cdot Na_2 = 216.10$

MONSANTO SPECIFICATIONS:

White powder containing 95-97% of the anhydrous salt.

Containing not more than traces of sodium sulphate and not more than 0.15% sodium chloride.

0683940

TOWOLDMON0042024
WATER_PCB-00026493

MONSANTO CHEMICAL WORKS

SODIUM GLYCEROPHOSPHATE, U. S. P.

CRYSTALS

$C_3H_5 \cdot (OH)_2 \cdot PO_4 \cdot Na_2 + 5\frac{1}{2} H_2O = 305.19$

MONSANTO SPECIFICATIONS:

White powder or monoclinic crystals, containing not less than 68% of the anhydrous salt.

Free of sulphate and mineral phosphate, and containing not more than 0.1% sodium chloride.

0683941

TOWOLDMON0042025
WATER_PCB-00026494

MONSANTO CHEMICAL WORKS

SODIUM GLYCEROPHOSPHATE SOLUTION, U. S. P.

$C_3 H_5 \cdot (OH)_2 \cdot PO_4 \cdot Na_2$ + Aqua

MONSANTO SPECIFICATIONS:

Colorless, or slightly yellowish, clear, aqueous solution of Sodium Glycerophosphate containing not less than 50% anhydrous Sodium Glycerophosphate. This solution is equivalent to a 75% solution of Sodium Glycerophosphate Crystals and was formerly known as Sodium Glycerophosphate 75% solution.

Contains a maximum of

0.5% sodium sulphate.

0.2% sodium chloride.

0683942

TOWOLDMON0042026
WATER_PCB-00026495

MONSANTO CHEMICAL WORKS

ACID CALCIUM GLYCEROPHOSPHATE

50% SOLUTION

$(C_3H_5 \cdot (OH)_2 \cdot PO_4 \cdot H)_2 Ca$ + Aqua.

MONSANTO SPECIFICATIONS:

Yellowish, clear solution.

50-52% by titration (with phenolphthalein) neutral to methyl Orange.

No free glycerophosphoric acid or citric acid.

Contains a maximum of
0.2% calcium chloride.
0.5% calcium sulphate.

FAC- THESTY

0683943

TOWOLDMON0042027
WATER_PCB-00026496

MONSANTO CHEMICAL WORKS

GLYCEROPHOSPHORIC ACID

$C_3H_5(OH)_2PO_4H_2$ = 172.11

MONSANTO SPECIFICATIONS:

Clear solution, colorless or faintly yellowish.
Titration: 25% or over.

Contains a maximum of

0.25% calcium oxide.

Trace magnesium oxide.

0.20% sulphates as calcium sulphate.

0683944

TOWOLDMON0042028
WATER_PCB-00026497

MONSANTO CHEMICAL WORKS

PHENOL, U. S. P.

$C_6H_5 \cdot OH = 94.04$

Uses: Very widely used as an antiseptic and disinfectant.

MONSANTO SPECIFICATIONS:

Crystallizing point—39° minimum.

Odor—pure and sweet when hot—no smoky odor.

Solution in water 1:15 should show no color.

Solution in 10% NaOH 1:10 should show no color.

Solution in 10% NaOH 1:20 should show no turbidity.

Ash: not more than .05%.

0683945

TOWOLDMON0042029
WATER_PCB-00026498

MONSANTO CHEMICAL WORKS

PHENOLPHTHALEIN, U. S. P.

$(C_6H_4 \cdot OH)_2 \cdot CO \cdot C_6H_4 \cdot CO = 318.11$

Used medicinally as an aperient and a cathartic. Used by pharmaceutical houses, tablet manufacturers, patent medicine manufacturers, etc.

MONSANTO SPECIFICATIONS:

White or faintly yellowish, odorless and tasteless powder.

Completely soluble in alkali hydroxides (no fluorane).

Ash: 0.05% maximum.

No heavy metals.

Melting Point: 258°-261°.

U. S. P. 253°.

British Pharm. 250°-253°.

German Pharm. About 260°.

Our product is of high purity, as indicated by the melting point, and considerably higher than that required by U. S. and British Pharmacopoeias.

0683946

TOWOLDMON0042030
WATER_PCB-00026499

SACCHARIN

Saccharin is about 550 times sweeter than sugar. It is not a food but a condiment, just like salt, pepper, and other spices; and is used in very small quantities by reason of its intense sweetness. Its value as a sweetener in foods has been conclusively demonstrated; in fact, Saccharin has been used for over thirty-five years; and, during recent years, by millions of people daily.

Physicians agree that sugar is the cause of a great many digestive disturbances; in many cases, forbid its use altogether and prescribe Saccharin as a sweetener. Children's digestive troubles are frequently caused by excessive use of sugar and yet they crave for sweets. There is, therefore, not only a legitimate field but, indeed, a demand for a harmless sweetener, such as Saccharin.

The above statements are made in order to correct a false impression which has existed in some circles regarding Saccharin. It is to be expected that this attitude will change in time as a result of a fair examination of the facts, which demonstrate the value of this product as an ideal sweetener. It is destined to play an important part in preventing an excessive consumption of sugar, which is today increasing by leaps and bounds. Saccharin will satisfy the craving for sweets with less danger of an unbalanced diet, resulting from the ever increasing consumption of sugar.

Saccharin is marketed in three forms:

SACCHARIN Insoluble, which is Pure Saccharin about 550 times sweeter than sugar; very slightly soluble in cold water, and more so in hot water.

SACCHARIN Soluble Powdered, is the Sodium Salt of Pure Saccharin in the powdered form, about 500 times sweeter than sugar; freely soluble in hot or cold water. For this reason, this form is generally preferred as a sweetener in drinks (carbonated beverages, etc.), and generally speaking, whenever a sweetener is required in solution.

SACCHARIN Soluble Granular, is a Sodium Salt of Saccharin in the form of small crystals. It has the same properties as Saccharin Soluble Powdered.

0683947

TOWOLDMON0042031
WATER_PCB-00026500

MONSANTO CHEMICAL WORKS

SACCHARIN, U. S. P.
INSOLUBLE

$C_6H_4 \cdot SO_2 \cdot CO \cdot NH = 183.12$

MONSANTO SPECIFICATIONS:

White, crystalline powder, 550 times sweeter than sugar. 1 gram must dissolve clearly and completely in 5cc sodium carbonate solution 10% (absence of sulfamid).

Ash: not over 0.5%.

Melting Point: 222°-225°.

Melting Point U. S. P.: 219°-222°.

Melting Point French Codex: 223°-225°.

0683948

TOWOLDMON0042032
WATER_PCB-00026501

MONSANTO CHEMICAL WORKS

SOLUBLE SACCHARIN, U. S. P.

GRANULAR OR FINE CRYSTALS

$C_6H_4 \cdot SO_2 \cdot CO \cdot N Na + 2 H_2O = 241.14$

MONSANTO SPECIFICATIONS:

A soluble granular sodium salt about 500 times sweeter than sugar.

Occurs in colorless, rhombic prisms, containing 14% to 14.5% water of crystallization.

Completely and clearly soluble in water 1:3.

Neutral or slightly alkaline to litmus.

Produces no red color with phenolphthalein.

Contains no benzoates or salicylates.

Conforms in all respects with U. S. P. requirements.

0683949

TOWOLDMON0042033
WATER_PCB-00026502

MONSANTO CHEMICALS = QUALITY Monsanto ST LOUIS U.S.A. CHEMICAL WORKS

SOLUBLE SACCHARIN, U. S. P.
POWDERED

$C_6H_4 \cdot SO_2 \cdot CO \cdot N\,Na + Aqua.$

MONSANTO SPECIFICATIONS:

A soluble powdered sodium salt about 500 times sweeter than sugar.

White crystalline powder containing 5% to 6% water of crystallization.

Other specifications same as under Granular.

0683950

TOWOLDMON0042034
WATER_PCB-00026503

MONSANTO CHEMICAL WORKS

SALICYLIC ACID, U. S. P.

$C_6H_4OH \cdot COOH = 138.05$

Used as a specific in acute rheumatism, as an antipyretic in pneumonia, typhoid, etc. Also as an analgesic.

MONSANTO SPECIFICATIONS:

White, fine prismatic needles, containing not less than 99.5% $C_7H_6O_3$ (on dry basis).

Free of iron, phenol, and hydrochloric acid.

Ash: not over 0.1%.

Not more than a light yellow color with c. p. sulphuric acid.

Melting Point: 158°-159°C.

U. S. P.: 156°-159°C.

British Pharm.: 156°-157°C.

German Pharm.: About 157°C.

0683951

TOWOLDMON0042035
WATER_PCB-00026504

MONSANTO CHEMICAL WORKS

SODIUM SALICYLATE, U. S. P.

$C_6H_4 \cdot OH \cdot COO \cdot Na = 160.04$

An extensively used antirheumatic, antiseptic, and antipyretic. The chief users being pharmaceutical houses, tablet manufacturers, and patent medicine manufacturers.

MONSANTO SPECIFICATIONS:

White or faint pink powder. Aqueous solution 1:10 when freshly made is colorless or nearly so, and neutral or slightly acid to litmus.

Sulphites or thiosulphates: none.

Heavy metals: none.

Assay: 99.5%-100.0% on dry basis.

0683952

TOWOLDMON0042036
WATER_PCB-00026505

MONSANTO CHEMICAL WORKS

SALOL, U. S. P.

1:2 - $C_6H_4 \cdot OH \cdot COO \cdot C_6H_5$ = 214.08

Used as an antipyretic, antiseptic, and intestinal disinfectant liberating carbolic and salicylic acid in the lower intestines.

MONSANTO SPECIFICATIONS:

Small white crystals having aromatic odor, and a characteristic taste.

Free of phenol, salicylic acid, sulphate or chloride.

Ash: not over 0.05%.

Melting Point: 41-43°C.

Complies in every respect with the U. S. and British Pharmacopoeias requirements.

0683953

TOWOLDMON0042037
WATER_PCB-00026506

MONSANTO CHEMICAL WORKS

VANILLIN

4:3:1 – $C_6H_3 \cdot OH \cdot OCH_3 \cdot COH$ = 153.06

Vanillin, which is the active flavoring principle of the vanilla bean, is produced synthetically from cloves. It is a flaky white crystal. One ounce is equal in flavoring value to about thirty ounces of vanilla bean. Vanillin is used to a great extent by bakers, ice cream manufacturers, chocolate and candy manufacturers, perfumers, extract manufacturers; also pharmaceutical manufacturers, etc.

MONSANTO SPECIFICATIONS:

Fine white or slightly yellowish crystalline needles, readily soluble in alcohol.

Ash: not over 0.05%.

Melting Point: 81°-82°C.

Melting Point U. S. P.: 80°-82°C.

PAGE PORTUGUESE

0683954

TOWOLDMON0042038
WATER_PCB-00026507

MONSANTO CHEMICAL WORKS

THE NEW ANTISEPTICS

CHLORAMINE-T.
DI-CHLORAMINE-T.
CHLORCOSANE.
HALAZONE.

The difficulties experienced with Dakin's Solution (sodium hypochlorite solution) have been overcome by Dr. Dakin, himself, in his new discoveries, Chloramine-T and Dichloramine-T, which are now marketed in stable form and for the use of which an elaborate technic is not necessary.

Chloramine-T can be used in a strong aqueous solution (up to 2%). It has a prolonged antiseptic action and is very effective when acting in the presence of much blood.

Dichloramine-T, is similar in all respects to Chloramine-T, but it is more powerful. It is best dissolved in Chlorcosane a highly chlorinated paraffin oil, which acts as a reservoir from which the antiseptic gradually passes into the tissue and body fluids.

Halazone is recommended for the sterilization of water. It was used in the recent war by the allied armies with great success and, as with Chloramine-T and Dichloramine-T it rendered great service.

MONSANTO CHEMICAL WORKS

CHLORAMINE–T

1:4-$CH_3 \cdot C_6H_4 \cdot SO_2 \cdot Na \cdot NCl + 3H_2O$ = 281.68

MONSANTO SPECIFICATIONS:

A white crystalline powder or scales, having a slight chlorous odor.

Containing 17%-20% water of crystallization.

Available chlorine: 12.25%-13.0%.

Freely and completely soluble in water.

0683956

TOWOLDMON0042040
WATER_PCB-00026509

MONSANTO CHEMICAL WORKS

DICHLORAMINE–T

$CH_3 \cdot C_6H_4 \cdot SO_2 \cdot NCl_2 - 240.09$

MONSANTO SPECIFICATIONS:

Slightly yellowish crystals, having a chlorous odor.
Containing 28%-30% available chlorine.
Melting Point: between 79° and 82°C.
Soluble in benzol, chloroform, and eucalyptol.

Dichloramine-T Monsanto, will remain usable in crystal form for at least six months when kept in a cool place.

0683957

TOWOLDMON0042041
WATER_PCB-00026510

MONSANTO CHEMICAL WORKS

CHLORCOSANE

This is the most satisfactory solvent for Dichloramine-T known at this time.

MONSANTO SPECIFICATIONS:

Light yellow or very light amber colored oil.
Odorless, tasteless and neutral to litmus when extracted with distilled water.
Water extract is also free of carbonates and chlorides or shows only very faint trace of the latter.
Contains 27%-30% chlorine in stable combination.

0683958

TOWOLDMON0042042
WATER_PCB-00026511

MONSANTO CHEMICAL WORKS

HALAZONE

1:4- $C_6H_4 \cdot SO_2 \cdot NCl_2 \cdot COOH$ = 270.08

A powerful disinfectant, acting like chlorine but has the advantage of being stable in solid form. Used for sterilizing water and general sanitation work.

MONSANTO SPECIFICATIONS:

A white powder, having a chlorous odor.

Slightly soluble in acetic acid and soluble with formation of the alkali salt in alkali hydroxide solution.

Ash: Less than 1%.

Available chlorine: 24%-26%.

Melting Point: 180°-190°.

0683959

TOWOLDMON0042043
WATER_PCB-00026512

MONSANTO CHEMICAL WORKS

COAL TAR
INTERMEDIATES

0683960

TOWOLDMON0042044
WATER_PCB-00026513

MONSANTO CHEMICAL WORKS

ACETANILID
TECHNICAL

$C_6H_5 \cdot NH \cdot CH_3 \cdot CO$ = 135.08

Used by dye manufacturers.

MONSANTO SPECIFICATIONS:

Light brown coarse granular particles.
Moisture: about 1.5%.
Cryst. Point: 112° - 114°C.
Impurities: traces of aniline salts.

0683961

TOWOLDMON0042045
WATER_PCB-00026514

MONSANTO CHEMICAL WORKS

ANTHRANILIC ACID

1:2 – $C_6H_4 \cdot NH_2 \cdot COOH$ = 137.06

Used extensively in dyestuff manufacture and in synthetic perfumes.

MONSANTO SPECIFICATIONS:

Refined

Fine yellowish crystalline powder.

Melting Point: 144°-146°C.

Purity: 98% or over Anthranilic Acid.

Crude

Fine yellow to light brown fine crystals.

Melting Point: 144°-146°C.

Purity: 95%-98% Anthranilic Acid.

PAGE PERTINENT

0683962

TOWOLDMON0042046
WATER_PCB-00026515

MONSANTO CHEMICAL WORKS

MONO-CHLORBENZOL

$C_6H_5 \cdot Cl.$ = 112.52

Used by dye and explosive manufacturers.

MONSANTO SPECIFICATIONS:

A water white liquid, 97% distilling within 1.0°C between 130.5° and 132.5°C.

Specific Gravity 1.1105 at 20°C.

0683963

TOWOLDMON0042047
WATER_PCB-00026516

ORTHO-CHLOR-PARA-TOLUENE SODIUM SULPHONATE

1:2:4-$CH_3 \cdot C_6H_3 \cdot Cl \cdot SO_3 \cdot Na$ = 228.58

Used as a dye intermediate.

MONSANTO SPECIFICATIONS:

White or yellowish white scales.
Containing less than 2% water of crystallization.
Total chlorine: 14.5%-15.5%.
Inorganic chlorine: not more than 1.5%.

0683964

TOWOLDMON0042048
WATER_PCB-00026517

MONSANTO CHEMICAL WORKS

ORTHO-NITRO-CHLORBENZOL

1:2-Cl·C_6H_4·NO_2· = 157.50

Used as an intermediate for dyes.

MONSANTO SPECIFICATIONS:

Light yellow crystals or liquid of characteristic aromatic odor.

Cryst. Point: 31°-32°C (dried product).

Moisture: 0.5% maximum.

99% ortho-nitro-chlorbenzol.

0683965

TOWOLDMON0042049
WATER_PCB-00026518

MONSANTO CHEMICALS • QUALITY Monsanto ST LOUIS USA CHEMICAL WORKS

PARA-DICHLORBENZOL

$1:4\text{-}C_6H_4 \cdot Cl_2 = 146.96$

Used as an insecticide; also as a "carbon remover" preparation for automobile engines.

MONSANTO SPECIFICATIONS:

White crystals with a characteristic odor.
Melting Point: 52°-53°C.

0683966

TOWOLDMON0042050
WATER_PCB-00026519

MONSANTO CHEMICAL WORKS

PARA-NITRO-CHLORBENZOL

$1:4\text{-}Cl\cdot C_6H_4\cdot NO_2 = 157.50$

Used for production of para-nitranilin and various dye intermediates.

MONSANTO SPECIFICATIONS:

Light yellow crystals of characteristic aromatic odor.

Cryst. Point: 81.0°C. (minimum)
Melting Point: 81.0°-83.0°C.
} On dry product.

Moisture: 3.0%-5.0%.

98%-99% para-nitro-chlorbenzol on dry basis.

0683967

TOWOLDMON0042051
WATER_PCB-00026520

MONSANTO CHEMICAL WORKS

PARA-NITROPHENOL

$1:4 - NO_2 \cdot C_6H_4 \cdot OH = 139.11$

Used for the preparation of para-amidophenol (photographic developers) and dye intermediates.

MONSANTO SPECIFICATIONS:

Light yellow to light brown crystals.
Melting Point: 112.5°-114.6°C.
Volatility with steam, complete.

0683968

TOWOLDMON0042052
WATER_PCB-00026521

MONSANTO CHEMICAL WORKS

PARA—TOLUENE SODIUM SULFONATE

1:4- $CH_3 \cdot C_6H_4 \cdot SO_3 \cdot Na$ = 194.12

Used for manufacturing dye intermediates such as chlortoluene-sulfonate, nitro toluene-sulfonate and toluidinsulfonic acid, etc., etc.

MONSANTO SPECIFICATIONS:

Not more than 2.0% moisture.
Not more than 2.0% sodium chloride.
Not more than 0.5% sodium carbonate.

0683969

TOWOLDMON0042053
WATER_PCB-00026522

PARA—TOLUENE—SULFONAMID

$1:4\text{-}CH_3 \cdot C_6H_4 \cdot SO_2 \cdot NH_2 = 171.20$

Used as a raw material for chloramine antiseptics and aeroplane dope.

MONSANTO SPECIFICATIONS:

Brownish, crystalline powder.
Crystallizing Point: 136°-137°C.

0683970

TOWOLDMON0042054
WATER_PCB-00026523

MONSANTO CHEMICAL WORKS

PARA-TOLUENE-SULFON-CHLORIDE

1:4 - $CH_3 \cdot C_6H_4 \cdot SO_2 \cdot Cl = 190.6$

Used as a raw material for para-toluene-sulfonamid.

MONSANTO SPECIFICATIONS:

White or yellowish crystalline product.
Cryst. Point 64°-67° C.
Titration: 96%-98% by hydrolysis.

0683971

TOWOLDMON0042055
WATER_PCB-00026524

MONSANTO CHEMICAL WORKS

PHENOL
TECHNICAL
CARBOLIC ACID

C_6H_5OH = 94.05

Used in the manufacture of explosives, dyes and pharmaceuticals and as a general disinfectant and antiseptic.

MONSANTO SPECIFICATIONS:

Colorless—or slightly yellowish or pinkish tinged crystals or crystalline mass, having a crystallizing point of 39°-41°C.

One part is clearly soluble in 20 parts 10% sodium hydroxide solution.

0683972

TOWOLDMON0042056
WATER_PCB-00026525

MONSANTO CHEMICAL WORKS

PHTHALIC ANHYDRIDE

$C_6H_4(CO)_2O = 148.07$

Used for manufacture of Anthranilic Acid, Eosine, Rhodamine, and other phthalein dyes.

MONSANTO SPECIFICATIONS:

White needles, odorless or almost odorless.
Cryst. Point: not below 130.5°C.
Solubility: complete in benzol.
Ash: less than 0.05%.
Titration: - 99.7% or over.

0683973

TOWOLDMON0042057
WATER_PCB-00026526

MONSANTO CHEMICAL WORKS

SALICYLIC ACID
TECHNICAL

$C_6H_4 \cdot OH \cdot COOH$ = 138.09

Used by dye manufacturers.

MONSANTO SPECIFICATIONS:

Color: light buff tint.
Melting Point: 158°-159°C.
98% -99% Salicylic Acid.
1.0% ash (maximum).
0.10% moisture (maximum).
0.50% sulphates (maximum).

0683974

TOWOLDMON0042058
WATER_PCB-00026527

MONSANTO CHEMICAL WORKS

CHEMICALS • QUALITY
ST. LOUIS, U.S.A.

ACIDS
AND
HEAVY CHEMICALS

0683975

TOWOLDMON0042059
WATER_PCB-00026528

MONSANTO CHEMICALS — QUALITY — MONSANTO — ST LOUIS U.S.A. — CHEMICAL WORKS

AMMONIUM CHROME ALUM

$(NH_4)_2SO_4 \cdot Cr_2(SO_4)_3 + 24\ H_2O$ = 957.

Used in dyeing, calico printing and tanning.

MONSANTO SPECIFICATIONS:

Octahedral crystals, violet-green by reflected light—
dark Burgundy red by transmitted light.

Not less than 15.0% chrome oxide (Cr_2O_3).

Free sulphuric acid – 2.0% maximum.

0683976

TOWOLDMON0042060
WATER_PCB-00026529

MONSANTO CHEMICAL WORKS

CHLOROSULFONIC ACID

$Cl \cdot SO_2OH$ = 116.5

Used in dye and pharmaceutical industries.

MONSANTO SPECIFICATIONS:

White liquid, of specific gravity 1.74-1.75 at 15°C.
Chlorosulfonic acid: not less than 96%.
Sulfuric acid (free): not more than 4%.
Hydrochloric acid (free): not more than 0.5%.
No free sulfur dioxide and trioxide.

0683977

TOWOLDMON0042061
WATER_PCB-00026530

MONSANTO CHEMICAL WORKS

HYDROCHLORIC ACID

MURIATIC ACID

HCl - 36.45

18° – B.
20° – B.
22° – B.

Used for sugar refining, dyes, galvanizing, pickling, floor compositions, manufacture of various chemicals.

MONSANTO SPECIFICATIONS:

To meet requirements of consumer, in percentage and impurities such as iron and sulphuric acid.

0683978

TOWOLDMON0042062
WATER_PCB-00026531

MONSANTO CHEMICAL WORKS

MIXED ACID

NITRATING ACID

HNO_3 H_2SO_4

Used for nitration work in explosives, dyes, etc.

MONSANTO SPECIFICATIONS:

Can be made in any strengths

36% HNO_3
61% H_2SO_4
3% H_2O
— For nitrating glycerine.

33% HNO_3
57% H_2SO_4
10% H_2O
— For nitrating benzol, etc.

Maximum 0.1% N_2O_3.

0683979

TOWOLDMON0042063
WATER_PCB-00026532

MONSANTO CHEMICAL WORKS

NITRE-CAKE

$NaHSO_4 = 102.07$

Used in chemical, metallurgical and many other industries as a substitute for sulphuric acid.

MONSANTO SPECIFICATIONS:

White, powder or cake, containing 30 to 35% available sulphuric acid, and a maximum of 2% impurities, such as insoluble silica, iron, etc.

0683980

TOWOLDMON0042064
WATER_PCB-00026533

MONSANTO CHEMICAL WORKS

NITRIC ACID

AQUA FORTIS

HNO_3 - 63.02

36° — 38° — 40° — 42° — Baume

Used for explosives, dyes, metal works, dipping baths, etc.

MONSANTO SPECIFICATIONS:

Colorless, with traces of iron, hydrochloric and sulphuric acids.

Fe – less than .005% Fe.

0683981

TOWOLDMON0042065
WATER_PCB-00026534

MONSANTO CHEMICAL WORKS

SODIUM SULPHATE

SALT CAKE

Na_2SO_4 = 142.06

Used for manufacturing plate and window glass, caustic soda by the Leblanc process, and medicinal "Glauber's Salt." $Na_2SO_4 + 10\ H_2O$.

MONSANTO SPECIFICATIONS:

White in color and 95%-96% sodium sulphate.
1.0% maximum sulphuric acid.
1.0% maximum sodium chloride.
Slight insoluble matter.

0683982

TOWOLDMON0042066
WATER_PCB-00026535

MONSANTO CHEMICALS FOR QUALITY Monsanto ST. LOUIS U.S.A. CHEMICAL WORKS

SULPHURIC ACID

H_2SO_4 - 98.02

60° - Be
66° - Be
98% - 100%

Used by manufacturers of chemicals, explosives, dyes, phosphates, textiles, fertilizers and in photo-engraving, metal working, oil refining and the iron and steel industries.

FUMING SULPHURIC ACID

OLEUM

$H_2SO_4 \cdot SO_3$

15% & 20% SO

0683983

TOWOLDMON0042067
WATER_PCB-00026536

MONSANTO CHEMICALS — QUALITY — ST. LOUIS U.S.A. CHEMICAL WORKS

ZINC CHLORIDE

50% SOLUTION

$ZnCl_2$ = 136.29

Used as a wood preservative for railroad ties, poles, etc. In manufacture of artificial silk and leather, for cotton sizing.

MONSANTO SPECIFICATIONS:

Straw colored liquid.

Specific gravity 1.54-1.60 at 15°C.

Containing about 50% $ZnCl_2$.

Can be furnished as per specifications of American Wood Preservers Association.

0683984

TOWOLDMON0042068
WATER_PCB-00026537

IN ITS location, Monsanto Chemical Works is fortunate. The natural resources, from which raw material is drawn, surround it.

Our plants are located on the banks of the Mississippi, thus insuring us an adequate supply of water for cooling and general factory work.

The great Illinois coal fields lie but forty miles away.

Louisiana sulphur is unloaded at our works from barges which ply between Saint Louis and the Southern sulphur mines.

Kansas salt, the purest salt available, is but eight hours away.

Large gas plants of the city of Saint Louis supply us with our coal-tar oils.

From these raw materials we make our own intermediates; and, from these, we build up the products that we market.

0683985

CURRAN—ST LOUIS

TOWOLDMON0042069
WATER_PCB-00026538