innovation



products catalog '66

Monsanto

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TOWOLDMON0041295

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manufacturing

. . . through the ingenuity and efficiency that keeps top-quality products coming to you at the lowest cost.

marketing

. . . to continually make it both desirable and easy for you to do business with Monsanto. We know to meet our marketing objectives, we must help you fulfill yours.

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administrative

. . . to keep our product quality a part of your success pattern — Monsanto men and women move ahead to serve you.

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- Chemstrand Company Division
- Hydrocarbons and Polymers Division
- Inorganic Chemicals Division
- International Division
- Organic Chemicals Division
- Packaging Division
- Plastic Products and Resins Division

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0557566

TOWOLDMON0041300

SODIUM BENZOATE, U.S.P. AND TECHNICAL

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 144.11

STANDARD FORM: Powder.

SPECIFICATIONS: U.S.P. Grade: Thin white flakes or white powder; solubility in water (10:100 at 25°C.) complete; solubility in 90% ethyl alcohol (1.50 at 25°C.) complete; 0.30 ml N/10 NaOH to 0.20 ml N/10 HCl per 2.0 grams; moisture 0.50% max.; assay 99.0% min.; chlorides (as NaCl) 0.10% max.

Technical Grade: White or slightly tinted powder; assay 99.0% min. (dry basis); solution in water (10:18) essentially complete but slightly inferior to U.S.P. quality; heavy metals 20 ppm; moisture 0.5% e.

GRADES: U.S.P. and Technical.

USES: U.S.P. Grade: For preserving foods, tobacco and medicinal preparations.

Technical Grades: As an industrial preservative and rust inhibitor.

SHIPPING INFORMATION: Sodium Benzoate. 100-lb., 50-lb. and 25-lb. fiber drums.

SODIUM BISULFITE ANHYDROUS

See Page M5/17

[redacted]

ADIPIC ACID, FOOD AND TECHNICAL GRADES

See Page M5/13

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See Page M5/26

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See Page M5/14

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SODIUM ACID PYROPHOSPHATE

See Page M5/14

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See Page M5/26

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See Page M5/27

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FUNCTIONAL FLUIDS: AIRBORNE, INDUSTRIAL, SPECIALTY

AIRBORNE

COOLANOL 45® DIELECTRIC COOLANT FOR ELECTRONIC EQUIPMENT

See Page M5/12

OS-45® TYPE III HIGH TEMPERATURE AIRCRAFT HYDRAULIC FLUID.

See Page M5/12

OS-45® TYPE IV HIGH TEMPERATURE AIRCRAFT HYDRAULIC FLUID.

See Page M5/12

SKYDROL® 500-A FIRE RESISTANT JET AIRCRAFT HYDRAULIC FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Moisture .20% max.; neutralization number 0.10 max.; Sp. Gr. 25°/25°C. 1.060-1.066; viscosity at 100°F. 11.7±0.4 cs.

PROPERTIES: A clear, purple, fire-resistant hydraulic fluid with excellent lubricity. Operational at −65°F.

USES: Hydraulic fluid for hydraulic systems in turbo jet and turbo prop aircraft, which must be operational at −65°F.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum. 1-qt. cans; 1-gal. cans; 5-gal. cans; 54-gal. drums.

SKYDROL® 7000 FIRE RESISTANT AIRCRAFT HYDRAULIC FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

TYPICAL ANALYSIS: Cloud point below 0°F.; moisture 0.25% max.; neutralization number 0.2 max.; Sp. Gr. 1.080 to 1.086 at 25°/25°C.; pour point −70°F. or lower.

PROPERTIES: A clear, green fire-resistant hydraulic fluid with outstanding lubricity, stability, non-corrosiveness, excellent viscosity-temperature characteristics, and resistance to oxidation.

USES: Hydraulic fluid in aircraft cabin superchargers, expansion turbines for air-conditioning systems and the aircraft hydraulic system itself.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum. 1-qt. cans; 1-gal. cans; 5-gal. cans; 54-gal. drums.

INDUSTRIAL

PYDRAUL® AC COMPRESSOR LUBRICANT

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

(Continued on next page)

TOWOLDMON0041301

TYPICAL ANALYSIS: Viscosity at 100°F.—405 SSU, 210°F.—42 SSU; moisture—0.15% max.; neutralization number (acid)—0.15 max.; sp. gr. at 25°/25°C.—1.340-1.360.

PROPERTIES: A clear blue, mobile straight synthetic fire resistant air compressor lubricant with excellent lubricity.

USES: A fire and explosion resistant lubricant for air compressors, such as those used in air separation plants, plant air systems, ammonia synthesis plants, gas transmission booster stations and other type processing plants.

SHIPPING INFORMATION: Chemicals NOIBN. 54-gal. steel drums; 5-gal. cans.

PYDRAUL® F-9 HYDRAULIC FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Viscosity at 100°F.—245 SSU, 210°F.—45 SSU; moisture—0.20% max.; neutralization number (acid)—0.30 max.; sp. gr. at 25°/25°C.—1.270-1.300.

PROPERTIES: A cloudy blue liquid; straight synthetic fire resistant fluid with excellent lubricity and pumping characteristics; non-corrosive, extremely stable to both heat and air; recoverable by filtration; designed for long service life.

USES: Fire resistant hydraulic fluid in die-casting machines, hydraulic presses, automatic welding machines and similar applications requiring a medium viscosity fluid.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum. 55-gal. steel drums and 5-gal. cans.

PYDRAUL® 60 HYDRAULIC FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Viscosity at 100°F.—60 SSU, 210°F.—34 SSU; moisture—0.10% max.; neutralization number (acid)—0.25 max.; sp. gr. at 25°/25°C.—1.088-1.091.

PROPERTIES: A cloudy blue liquid, straight synthetic fire resistant hydraulic fluid with excellent lubricating and pumping characteristics.

USES: A fire resistant hydraulic fluid in systems requiring extremely low viscosity.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum. 54-gal. steel drums and 5-gal. cans.

PYDRAUL® 150 HYDRAULIC FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Viscosity at 100°F.—150 SSU 210°F.—50 SSU; moisture—0.15% max.; neutralization number (acid)—0.10 max.; sp. gr. at 25°/25°C.—1.119-1.135.

PROPERTIES: A cloudy blue liquid, straight synthetic fire resistant hydraulic fluid of low viscosity with excellent lubricity and low temperature pumping characteristics.

USES: Fire resistant hydraulic fluid in equipment which operates out of doors at low temperatures part or all of the time, such as Askania Regulator Equipment, fork-lift trucks and similar equipment with cold weather fluid requirements.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum. 51-gal. steel drums; 5-gal. cans.

PYDRAUL® 625 HYDRAULIC FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Viscosity at 100°F.—625 SSU, 210°F.—45 SSU; moisture—0.15% max.; neutralization number (acid)—0.30 max.; sp. gr. at 25°/25°C.—1.340-1.370.

PROPERTIES: A cloud, blue liquid, straight synthetic fire resistant hydraulic fluid of high viscosity with excellent lubricity and pumping characteristics.

USES: A fire resistant hydraulic fluid in equipment requiring a high viscosity medium, such as large forging presses, extrusion presses and some die-casting machines.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum. 54-gal. steel drums; 5-gal. cans.

PYDRAUL® A-200 HYDRAULIC FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Viscosity at 100°F.—230 SSU, 210°F.—41.9 SSU; moisture—0.05% max.; neutralization number (acid)—0.05-1.10 max.; sp. gr. at 25°/25°C.—1.415-1.430.

*Monsanto Trademark

PROPERTIES: A cloudy blue liquid, straight synthetic, fire-resistant hydraulic fluid with excellent lubricity, non-corrosive, extremely stable to both heat and air, recoverable by permanent filtration; designed for long service life. Loss by filtration does not [illegible] even under extreme conditions, as [illegible] A 1,000 hour test with perfect score; A-200 is shear stable and undergoes no loss of viscosity after years of severe use.

USES: Fire resistant hydraulic fluid in die-casting machines, hydraulic presses, automatic welding machines and similar applications requiring a medium viscosity fluid.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum. 54-gal. steel drums; 5-gal. cans.

THERMINOL® FR — HEAT TRANSFER LIQUIDS

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: Clear, colorless liquids with high boiling points (above 600°F.), thermally and oxidatively stable to 600°F. and extremely fire resistant.

USES: *Therminol* FR liquids are fire resistant heat transfer media produced to rigid specifications important to heat transfer.

There are three *Therminol* FR products: *Therminol* FR-1 with low temperature fluidity, excellent for processes requiring both heating and cooling; *Therminol* FR-2 with the optimum balance of properties for use in most common industrial heat transfer systems; *Therminol* FR-3 with highest boiling point for special processing equipment applications.

SANTOWAX* OMP — ORGANIC NUCLEAR REACTOR COOLANT

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Solid

PROPERTIES: A high boiling thermal and radiation resistant heat transfer medium.

USES: Organic nuclear reactor coolant and high temperature industrial heat transfer medium.

HEAVY CHEMICALS

ALUMINUM CHLORIDE SOLUTION 32° Bé.

INORGANIC DIVISION

MOLECULAR WEIGHT: 266.7

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Neutral salt, low in iron content; solutions have an acid reaction but contain no free acid. $AlCl_3 \cdot 6H_2O$, 50.3%; Al_2O_3, 10.6%; Fe, 0.005%.

USES: Carbonizing fine wool such as piece goods, raw stock or slubdy; crabbing in an exceptionally white, lofty wool; carbinizing colored goods where it has very little stripping action; soap manufacture for treatment of glycerine lyes where chloride of alumina is more desirable than sulfate.

SHIPPING INFORMATION: Aluminum Chloride Liquid. Tank cars; tank trucks.

ALUMINUM SULFATE

See Page M5/51

BATTERY ACID *Electrolyte.*

INORGANIC DIVISION

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Practically colorless liquid; H_2SO_4 93.2% min.; iron 0.005% max.; nitrogen compounds (as HNO_3) 0.001% max.; Sp. Gr., 1.835.

USES: Electrolyte is sulfuric acid, especially adapted to the needs of the storage battery trade.

SHIPPING INFORMATION: Sulfuric Acid. "Corrosive" label required. Tank trucks and tank cars.

CARBON DIOXIDE

INORGANIC DIVISION

FORMULA: CO_2

MOLECULAR WEIGHT: 44.0

PROPERTIES: Marketed in liquid form which is colorless and odorless.

USES: As inert gas atmosphere, for fire extinguishers, in carbonated beverages, and for carbon dioxide blasting.

SHIPPING INFORMATION: Carbon Dioxide. Steel cylinders and tank cars.

TOWOLDMON0041302

ACL®

See Page M5/54

AROCLOR® POLYCHLORINATED POLYPHENYLS

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquids, resins or solids.

PROPERTIES: Chlorinated aromatic hydrocarbons varying from water-white mobile liquids and pale yellow viscous oils to light amber resins and opaque crystalline solids.

GENERAL INFORMATION: *Aroclor* liquids have excellent electrical characteristics, high dielectric strength and resistivity, low power factor; certain of the liquids have a high dielectric constant as compared with mineral oils.

USES: *Aroclor* liquids are used as dielectrics for condensers or capacitors and transformers. They are used to impregnate carbon resistors, and when combined with other plastic materials, they are excellent sealers or impregnating agents for a variety of electrical apparatus. *Aroclor* compounds also find use as liquid thermostat fluids; vacuum diffusion pump fluids; swelling agents for automotive transmission seals; and, as additives and base stocks for specialty lubricants, oil and greases.

SHIPPING INFORMATION: Resin Synthetic NOIBN without filler, 600-lb. steel drums; 500-lb. net fiber drums; 100-lb. net bags.

BENZYL CHLORIDE *Also known as alpha-chlorotoluene.*

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 126.58

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, colorless liquid; Sp. Gr. 1.104-1.110 at 15.5°/15.5°C. Boiling range at 760 mm 2°C. max. including 179.4°C.

USES: A highly reactive aralkyl halide used in the production of the following: dyestuffs; perfume bases such as benzyl alcohol, acetate and other esters; plasticizers; resins; wetting agents; germicides; rubber accelerators; gasoline gum inhibitors; benzyl benzoate; and pharmaceuticals.

SHIPPING INFORMATION: Chemicals NOIBN. Corrosive liquid (white label required). 475-lb. nickel drums; 2000-gal. 2-compartment nickel tank trucks.

BENZYL CHLORIDE, *Inhibited with 0.25% triethylamine*

ORGANIC DIVISION—LITERATURE AVAILABLE

SPECIFICATIONS: Same as for preceding product.

CONTAINERS: 475-lb. lacquer-lined drums.

CHLORAMINE-T

See Page M5/49

ortho-DICHLOROBENZENE

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 147.01

STANDARD FORM: Liquid.

SPECIFICATIONS: Appearance, practically clear; Color, 30 APHA max.; Crystallizing Point, minus 7.0°C. max.; Distilling Range—first drop 177.7°C. min.—90% (1-91 mL) 4.3°C. max.—dry point 188.5°C. max.

USES: Degreasing formulations; tar, grease, paint and carbon removers; spotting agents in dry cleaning; metal polishes; wool and felt scouring; insecticide formulations; and treating of sewage and garbage for odor control.

SHIPPING CLASSIFICATION: ortho-Dichlorobenzol. 55-gal., 18-gauge black iron drums, bulk.

GUAIACOL

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 124.13.

STANDARD FORM: Light yellow liquid.

SPECIFICATIONS: Crystallizing Point 27.5°C. min.

USES: Chemical intermediate in the manufacture of flavors, perfumes and pharmaceuticals. Also used as an "anti-skinning" agent for paints and as an inhibitor in certain petroleum specialties.

SHIPPING INFORMATION: Chemicals NOIBN, 500-lb. drums.

ortho-NITROCHLOROBENZENE

Also known as ortho-chloronitrobenzene.

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 157.56

STANDARD FORM: Crystalline

SPECIFICATIONS: Green-yellow crystalline mass; crystallizing point 31.8°C. min. (dry basis).

USES: An intermediate in the synthesis of o-aminophenol (dyestuffs intermediate and photographic developer), dichlorobenzidine (chrome-dyestuffs intermediate), and many other organic intermediate chemicals and a solvent in synthetic-petroleum processes. CAUTION: This material is toxic. Avoid breathing vapors. Avoid contact with the skin. Toxicity reference: U. S. Public Health Bulletin No. 271 (1941).

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 600-lb. steel drums; tank cars.

para-NITROCHLOROBENZENE

Also known as para-chloronitrobenzene.

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 157.56

STANDARD FORM: Flakes.

SPECIFICATIONS: Appearance light yellow flakes or crystalline mass; crystallizing point 82.5°C. min.

USES: In the manufacture of disodium-benzene-meta-disulfonate; para-aminophenol; 2-chloro-5-nitrobenzene sulfonic acid; 2,6-dichloro-4-nitroaniline; and 5-amino-2-anilino benzene sulfonic acid; pharmaceutical acetophenetidin "Dinsone" an agent for treatment of Hansen's disease (Abbott patent); and a variety of anti-oxidants and urea inhibitors. CAUTION: This product is toxic. Avoid breathing its vapors and avoid contact with the skin. Toxicity reference: U. S. Public Health Bulletin No. 271 (1941).

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 325-lb. fiber drums.

MONSANTO® PENTA *Pentachlorophenol, Technical.*

See Page M5/49

PHTHALYL CHLORIDE *Phthaloyl Chloride.*

ORGANIC DIVISION

MOLECULAR WEIGHT: 203.03

STANDARD FORM: Liquid.

SPECIFICATIONS: Yellowish liquid; assay 95.0% min.; crystallizing point 9.0°C. min.

USES: Manufacture of plasticizers and resins, general organic synthesis.

SHIPPING INFORMATION: Chemicals NOIBN. Corrosive liquid (white label required). 605-lb. nickel drums.

SANTOCHLOR® para-DICHLOROBENZENE

See Page M5/10

SANTOPHEN® 1 GERMICIDE *ortho-benzyl-parachlorophenol.*

See Page M5/49

SANTOPHEN® 1 SOLUTION

See Page M5/49

TCC *3, 4 4' Trichlorocarbanilide.*

See Page M5/49

MONSANTO

ACRYLONITRILE

HYDROCARBONS AND POLYMERS DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 53.03

STANDARD FORM: Liquid.

SPECIFICATIONS: Form, clear liquid; color, water white, not over 15 APHA platinum-cobalt scale; distillation range, 74.5-78.5°C. (at 760 mm); refractive index 25°C., 1.3882-1.3891; water, 0.25-0.45%; inhibitor 35-45 ppm Monsanto MQ); acidity not greater than 20 ppm calculated as acetic acid; aldehydes not greater than 100 ppm calculated as acetaldehyde; divinylacetylene not greater than 5 ppm; hydrogen cyanide not greater than 5 ppm; iron (soluble) not greater than 0.2 ppm; methyl vinyl ketone not greater than 0.01%; peroxides not greater than 1 ppm calculated as hydrogen peroxide; non-volatile matter not greater than 0.01%; stability not less than 4 hours exposed to oxygen at 100 pounds per square inch and hot 0°C.

PROPERTIES: A bi-functional hydrocarbon. It is stable under ordinary conditions, but can be made to react with a wide variety of other materials. Will copolymerize with most commercial vinyl monomers, will join chemically with a variety of natural or synthetic resin-forming.

USES: Production of synthetic textile fibers, nitrile synthetic rubber, copolymers, and chemical intermediates.

INDUSTRIAL USES: [illegible]

SHIPPING INFORMATION: Tank cars, drums (350 lbs.), tank trucks. Rail & Truck: Chemicals NOIBN

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TOWOLDMON0041303