



H.M.S. Beagle's BenchMark Legacy Chemicals™

In 1936, in their manual for their highly respected and much sought-after chemistry sets, the A.C. Gilbert Company, of New Haven Connecticut, published a list of the chemicals, minerals and apparatus and equipment that one would need to conduct all, or most, of the experiments and demonstrations for the chemistry set. This manual was, *Chemistry for Boys*, and contained directions for scores of experiments, depending upon the actual edition and printing of the manual. The manual was compiled for A.C. Gilbert under the direction of The Bethwood Research Laboratory, of Bethany, Connecticut, and was edited by Treat B. Johnson, Ph.D., and Elbert M. Shelton, Ph.D., in collaboration with Albert C. Gilbert, M.D..

For the first time since the A.C. Gilbert Company offered their chemistry sets to the curious children of the world, H.M.S. Beagle has assembled a collection of 50+ chemicals that duplicates the chemicals specified, and offered for sale, in the manuals that accompanied the Gilbert chemistry sets. This set is called the "BenchMark Legacy Chemicals™ Kit" and comes boxed with a CD-ROM with an Adobe PDF of the 1936 edition of the *Chemistry for Boys* manual. The chemicals in this set include all of the hard-to-find substances such as cochineal and logwood as well as the more common ones such as sodium bicarbonate (baking soda). Unlike the chemicals that were found in the A.C. Gilbert sets, these chemicals are purer and, except for the solutions, undiluted. This is an important distinction since some of the chemicals found in the Gilbert sets, as well as other sets of the time, were manufactured with carriers or diluents. For instance, ordinary sodium chloride (table salt) was used to "cut" the more expensive chemicals. In a chemical such as cobalt chloride the salt was of no consequence since none of the experiments suffered any interferences due to the adulterant. The observed results were the same.

The BenchMark Legacy Chemicals™ are repackaged and manufactured from reagent, USP, laboratory grade and technical grade chemicals. The majority being reagent grade chemicals. Also, unlike some of the chemistry sets of old, the BenchMark Legacy Chemicals™ are packaged in glass bottles with Polycone sealed, phenolic caps. Old chemistry sets often had some of the chemicals packaged in fiberboard or wooden containers, and while these kits today can be very valuable to collectors, the chemicals' integrity suffered. Other kits, especially less expensive one had the chemicals packaged in small, flat-bottom test tubes with cork stoppers. The stoppers became brittle and most broke off in the mouth of the tube.

It is H.M.S. Beagle's hope that home experimenters will find hours of enjoyment from this kit. Eventually we will also offer a set of minerals to compliment the chemical kit. The following, then, is a complete list of the chemicals contained in the BenchMark Legacy Chemicals™ Kit. Each name is accompanied by the name used by the A.C. Gilbert Company as well as the package size of each chemical. Just for fun we have also included the

price for each of the Gilbert chemicals. Keep in mind, however, that the list did not specify the package size of any of the chemicals, and it is safe to assume that our kit actually has larger sizes of most, if not all, of the original Gilbert chemicals. For \$6.20 a boy or girl could purchase this entire list of Gilbert chemicals, not counting any fees for "postage and handling." If all 56 chemicals are individually purchased from H.M.S. Beagle the total retail cost would be more than \$160.00 (not including any sales tax or shipping costs). The CD-ROM would be another \$5.00.

The boxed set of our BenchMark Legacy Chemicals™ will sell for \$124.95 and will include a sturdy, 10" x 10" x 4" tall, storage box for all 56 chemicals and a CD-ROM with the 1936 edition of *Chemistry for Boys* and the material safety data sheets (MSDSs) for all 56 chemicals in Adobe PDF format. For those who want to relive their childhoods, want to introduce a whole new generation to the wonders of home chemistry experimentation, or just want to add some useful, interesting and hard-to-find chemicals to their home labs, this is the chemical kit to own.

Chemical List:

(Arranged in the order originally published by the A.C. Gilbert Company)

- CHEM-001 Aluminum Sulfate Octadecahydrate, 25 g (= #1 Aluminum Sulphate, \$0.10)
- CHEM-002 Ammonium Chloride, 15 g (= #2 Ammonium Chloride, \$0.10)
- CHEM-003 Ammonium Nitrate, 15 g (= #3 Ammonium Nitrate, \$0.10)
- CHEM-004 Sodium Tetraborate Decahydrate, 15 g (= #4 Borax, \$0.10)
- CHEM-005 Boric Acid, 15 g (= #5 Boric Acid, \$0.10)
- CHEM-006 Calcium Hypochlorite, 15 g (= #7 Calcium Hypochlorite, \$0.10)
- CHEM-007 Calcium Chloride Dihydrate, 15 g (= #8 Calcium Chloride, \$0.10)
- CHEM-008 Calcium Carbonate, 15 g (= #9 Calcium Carbonate, \$0.10)
- CHEM-009 1,7,7-Trimethylbicyclo-[2.2.1]-heptan-2-one, 15 g (= #10 Camphor Gum, \$0.10)
- CHEM-010 Calcium Oxide, 10 g (= #11 Calcium Oxide, \$0.10)
- CHEM-011 Calcium Phosphate, Monobasic Monohydrate, 15 g (= #12 Calcium Monophosphate, \$0.10)
- CHEM-012 Calcium Sulfate Dihydrate, 15 g (= #13 Calcium Sulfate, \$0.10)
- CHEM-515 Carbon Tetrachloride, 25 mL (= #15 Carbon Tetrachloride, \$0.10)
- CHEM-013 Cobalt Chloride Hexahydrate, 15 g (= #16 Cobalt Chloride, \$0.10)
- CHEM-014 Cochineal, Powder, 15 g (= #17 Cochineal, \$0.10)
- CHEM-015 Copper (II) Sulfate Pentahydrate, 30 g (= #20 Copper Sulphate, \$0.10)
- CHEM-016 Ammonium Iron (II) Sulfate Hexahydrate, 15 g (= #21 Ferrous Ammonium Sulphate, \$0.10)
- CHEM-017 Ammonium Iron (III) Sulfate Dodecahydrate, 15 g (= #22 Ferric Ammonium Sulphate, \$0.10)
- CHEM-018 Acacia, 15 g (= #23 Gum Arabic, \$0.10)
- CHEM-019 1,2,3-Propanetriol, 25 g (= #24 Glycerine, \$0.15)
- CHEM-020 Hematoxylin, 6 g (= #28 Logwood, \$0.10)
- CHEM-021 Magnesium Sulfate Heptahydrate, 15 g (= #29 Magnesium Sulphate, \$0.10)
- CHEM-022 Manganese (IV) Oxide, 15 g (= #30 Manganese Dioxide, \$0.10)
- CHEM-023 Manganese (II) Sulfate Monohydrate, 15 g (= #31 Manganese Sulphate, \$0.10)

CHEM-024 Ammonium Nickel (II) Sulfate Hexahydrate, 15 g (= #32 Nickel Ammonium Sulphate, \$0.15)

CHEM-025 3,3-Bis(4-hydroxyphenyl)-1-(3H)-isobenzofuranone Solution, 1% in Ethanol, 25 mL (= #33 Phenolphthalein, \$0.20)

CHEM-026 Potassium Nitrate, 25 g (= #34 Potassium Nitrate, \$0.15)

CHEM-027 Potassium Permanganate, 25 g (= #35 Potassium Permanganate, \$0.10)

CHEM-028 Iron (II) Sulfide, 15 g (= #36 Powdered Iron Sulphide, \$0.10)

CHEM-029 Carbon, 6.006 g (= #37 Powdered Charcoal, \$0.10)

CHEM-030 Iron, 5.585 g (= #38 Powdered Iron, \$0.10)

CHEM-031A Magnesium, 12.15 g (= #39 Powdered Magnesium, \$0.15)

CHEM-032 Zinc, 6.538 g (= #40 Powdered Zinc, \$0.10)

CHEM-033 Sodium Hydrogen Carbonate, 25 g (= #42 Sodium Bicarbonate, \$0.10)

CHEM-034 Sodium Hydrogen Sulfate Monohydrate, 15 g (= #43 Sodium Bisulphate, \$0.20)

CHEM-035 Sodium Metabisulfite, 15 g (= #44 Sodium Bisulphite, \$0.15)

CHEM-036 Sodium Carbonate, 15 g (= #45 Sodium Carbonate, \$0.10)

CHEM-037 Sodium Hexacyanoferrate (II) Decahydrate, 15 g (= #46 Sodium Ferrocyanide, \$0.10)

CHEM-543 Sodium Iodide, 1.0 M, 25 mL (= #47 Sodium Iodide Solution, \$0.10)

CHEM-038 Sodium Silicate Solution, 25 mL (= #48 Sodium Silicate, \$0.10)

CHEM-039 Sodium Thiocyanate, 15 g (= #49 Sodium Sulphocyanate, \$0.15)

CHEM-040 Sodium Thiosulfate Pentahydrate, 25 g (= #50 Sodium Thiosulphate, \$0.10)

CHEM-042 Strontium Nitrate, 25 g (= # 51 Strontium Nitrate, \$0.10)

CHEM-043 Sulfur, 16.032 g (= #53 Sulphur, \$0.10)

CHEM-054 Tannic Acid, 10 g (= #54 Tannic Acid, \$0.20 (this chemical is not actually listed in the referenced edition of *Chemistry for Boys*, but is listed in both earlier and later editions))

CHEM-146 2,3-Dihydroxybutanoic Acid, 15 g (= #55 Tartaric Acid, \$0.20)

CHEM-541 Nigrosine, Water Soluble, 5 g (= #50 Nigrosine, \$0.10)

CHEM-542 Saunders, Red, 15 g (= #61 Red Saunders, \$0.05)

CHEM-044 Gum Benzoin, 15 g (= #63 Gum Benzoin, \$0.15)

CHEM-145 Collodion, Flexible, 25 mL (= #64 Collodion, \$0.10 (this chemical is not actually listed in the referenced edition of *Chemistry for Boys*, but is listed in both earlier and later editions))

CHEM-045 Ethanoic Acid, 1.0 M, 25 mL (= #65 Acetic Acid, \$0.10)

CHEM-392 Reagent Alcohol, 25 mL (= #68 Denatured Alcohol, \$0.05)

CHEM-049 Ammonium Hydroxide, 1.0 M, 25 mL (= #69 Ammonia, \$0.05)

CHEM-041 Strontium Chloride Hexahydrate, 15 g (= #73 Strontium Chloride, \$0.10)

CHEM-103 2-Propanone, 25 mL (= #74 Acetone, \$0.10)

CHEM-050 Chromium (III) Potassium Sulfate Dodecahydrate, 25 g (= #75 Chrome Alum, \$0.10)