

LEAD INDUSTRIES ASSOCIATION

480 LEXINGTON AVENUE

NEW YORK 17, N. Y.

METALLIC LEAD PRODUCTS DIVISION

January 11, 1951

CHEMICAL BULLETIN NO. 42

SUBJECT: REVIEW OF MATERIALS
OF CONSTRUCTION FOR CHEMICAL
PROCESS INDUSTRIES

To Members of the Metallic Lead Products Divisions

The McGraw-Hill Book Company, New York, has just published a new book, "Materials of Construction for Chemical Process Industries" by James A. Lee, former Managing Editor of CHEMICAL ENGINEERING and its predecessor, CHEMICAL AND METALLURGICAL ENGINEERING. This is the latest addition to the well-known McGraw-Hill "Chemical Engineering Series." The book is noteworthy for its excellent treatment of lead as a material of chemical construction.

Mr. Lee, with whom staff members of the Association have enjoyed a cordial personal relationship for a number of years, has indeed presented the most up-to-date, unprejudiced report on the use of lead in the chemical process industries that has as yet been published. For over twenty years the author has been closely associated with developments in this general field. He has accumulated extensive files of information published by engineers and other workers covering experiences with construction materials and commercial chemical plants. It is interesting to note that a large percentage of the references to lead are based directly on material submitted to CHEMICAL ENGINEERING since 1946 by the Lead Industries Association as contributions to the "Corrosion Forum" series.

The author discusses each important chemical in terms of the materials of construction used in its manufacture, the process itself, the materials used for handling the finished chemical and the materials used in packaging. Under "Handling," for example, the author lists and discusses individually practically all of the common materials of construction where applicable such as lead, high silicon iron, chemical porcelain and stoneware, Wrothite, tantalum, silicones, rubber lining, carbon and graphite, Hastelloy, Carbide, wood, Duralnet, nickel alloys, chemical stoneware, Harex, glass lined steel, stainless steel, protective coatings and Saran.



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He describes the performance of each of these materials with the corrosive in question. Case histories of past performance are frequently cited, particularly where they point up the advantage of the material.

The following are the chemicals with which lead is specifically mentioned as a possible material of construction:

Acetic Acid	Magnesium Chloride
Acetophenone	Mercuric Sulphate
Adipic Acid	Mixed Acids
Aluminum Sulphate	Osalic - Sulphuric Acids
Ammonium Bifluoride	Pentachlorethane
Ammonium Fluoride	Perchloroethylene
Ammonium Phosphate	Phenol (Sulphonation)
Ammonium Sulphate	Phenyl Isocyanate
Arsenic Acid	Phosphoric Acid
Benzylphenol	Phosphorus Oxide
Benzyl Chloride	Phosphorus Trichloride
Carbolactam	Potassium Metabisulphite
Carbon Tetrachloride	Soap
Chlorobenzaldehyde Sulphonic Acid	Sodium Bifluorides
Chlorethane Sulphuric Acid Sodium Salt	Sodium Carbonate
Chlorinated Polyvinyl Chloride	Sodium Chloride
Chlorine	Sodium Metabisulphite
Chlorobromomethane	Sodium Sulphate
Chromic Acid	Sodium Sulphide
Chromic Acid-Sodium Bisulphate	Sodium Sulphite
Citric Acid	Sulphated Oils
Copper Sulphate	Sulphate Pulp, Bleached
Diethyl Triiodoglycolate	Sulphite Pulp
Dihydroxydiphenyl Sulphene	Sulphur Dioxide
Diphenylpropane	Sulphuric Acid
Dry Colors	Tartaric Acid
Fatty Acids	Tetrachlorethane
Fluorolubes	Titanium Dioxide (Manufacture)
Hexachlorbutadiene	Titanium Tetrachloride
Hexachlorethane	Triisopropylbenzyl Chloride
Hydrochloric Acid	Trinitrotoluol (TNT)
Hydrocyanic Acid	Urea
Hydrofluoric Acid	Zinc Chloride
Hydrogen Peroxide	Zinc Sulphate

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Published in 1950 and based on a subject that is rapidly expanding and changing, it is easy to understand why some few sections do not reflect the latest practices, at least insofar as lead is concerned. Conspicuous, too, are the results of years of practical effort expended in the corrosion field by the International Nickel Company. This Company, having flooded virtually all engineering literature with excellent data on the performance of nickel and nickel alloys, the author could hardly fail to devote considerable space to these alloys - if only because of the mass of information available to him. But judged on the whole, "Materials of Construction for Chemical Process Industries" is a fine reference book that should be available to all individuals charged with specifying or selling materials of chemical construction. Price, \$6.50 per copy.

Very truly yours,

John D. Fitzgerald
Secretary