BIBLIOGRAPHICAL ABSTRACTS

1951-1960

ADDITIONAL REFERENCES FOR 1951 TO 1956

1951

(671C) A. A. G. Chapman (to Larive-Derustit S. à. r. l.), "Electrolytic Removal of Rust from Metals," German Patent No. 814,231, Sept. 20, 1951; Chemical Abstracts, Vol. 51, p. 11895 (1957).

See reference No. 727.

1952

(727A) E. Christen and R. A. Christen, "Removal of Boiler Incrustations," French Patent No. 1,007,205, May 5, 1952; Chemical Abstracts, Vol. 51, p. 9986 (1957).

Composition is prepared by allowing sodium hypochlorite or potassium hypochlorite to react with an aqueous solution of ethanol, to which menthol has been added.

(734A) L. Hemmer and R. Chaufton (to Standard française des pétroles, Soc. anon.), "Detergent," French Patent No. 1,007,765, May 9, 1952; Chemical Abstracts, Vol. 51, p. 10100 (1957).

A composition for cleaning motor parts of internal combustion engines contains at least 5 per cent of an amine with up to 7 carbon atoms, preferably triethanolamine, in solution in hydrocarbons, alcohols or other hydroxyl containing compounds with less than 10 carbon atoms.

(762A) Revêtement integral des metaux S.a.r.l., "Metal Cleaning," French Patent No. 1,013,073, July 22, 1952; Chemical Abstracts, Vol. 51, p. 11230 (1957).

A composition for cleaning metals especially those coming into contact with organic matter, contains $Cr_2O_3.7H_2O$ 23, sodium carbonate anhydrous 3.5, concentrated sulfuric acid 2.5, concentrated hydrochloric acid 1 and water 70 parts by weight.

(780A) J. G. Vail, "Soluble Silicates-Their Properties and Uses," Vol. 2, pp. 29-65, Reinhold Pub. Co., New York (1952).

Discussed several test methods. Given are many tables, curves, and illustrations concerning effectiveness of silicate-containing compositions in cleaning and corrosion prevention. Subtitles are soaking; iron surfaces; non-ferrous metals-surface attack; corrosion inhibition; electrolytic cleaning of steel, brass, zinc and zinc alloys, magnesium; electro-erosion; metallurgical fluxes.

1953

(789B) B. Blaser (to Henkel & Cie. G. m. b. H.), "Liquids for Cleaning Metals," German Patent No. 898,651, Dec. 3, 1953; Chemical Abstracts, Vol. 52, p. 6820 (1958).

Aqueous emulsions of insoluble organic solvents are prepared by stirring hydrocarbons, paraffin oil, dodecyl alcohol or decahydronaphthalene with dried urea. Surface active agents may be added to the mixture kneaded under vacuum.

1954

(858Aa) O. Christofle, "Composition for Cleaning and Protection of Metallic Surfaces," French Patent No. 1,051,330, Jan. 14, 1954; Chemical Abstracts, Vol. 52, p. 14516 (1958).

The composition is made by dissolving or triturating a silver salt and a stannous salt. This prevents the oxidation and sulfuration, especially of silver objects, by formation of an adherent monomolecular layer of silver-tin complex. The mechanism is given as the breaking of the unstable equilibrium of silver and tin ions by the superficial silver oxide layer of the object being cleaned.

(860Ca) C. Girè, "Applications of Nonionics in Metallurgy in Function of Their Hydroxyethylation Degree," 1st World Congress on Surface Activity, Vol. 2, pp. 872-878 (1954).

Discussion of nonionics with regard to their degree of ethoxylation, and to sulfation of the alcohol end group of the glycolic chain, to render the nonionics soluble for use in the rapid degreasing operation of metals, at high temperatures.

(861Ca) V. Hong, S. L. Eisler, D. Bootzin and A. Harrison, "Radiometric Study of the Adsorption Characteristics of a Calcium Sulfonate Rust Inhibitor," Corrosion, Vol. 10, pp. 343-348 (1954).

Vapor degreasing of steel panel by trichloroethylene, petroleum naphtha (b.p. 55 to 57C) and petroleum ether. Calcium tagged dinonyl naphthalene sulfonate adsorbed on the surface was removed best by trichloroethylene, in one wash, and further degreasing not reducing count by more than 3 per cent, but 1048 counts per minute at this point, with a background count of 70, indicating considerable tightly adsorbed surfactant.

(863Fa) "Chemical Cleaning of Ferrous Salt Water Piping Systems," Military Specification, MIL-C-18159(Ships), Oct. 29, 1954.

Covers chemical agents, mobile treating equipment and procedure for removal of deposits, scale, and marine growth from systems such as fire main and flushing piping systems. Composition will be hydrochloric acid, inhibitor may contain a wetting agent, also oil emulsifier and silica-dissolving agent. No pitting shall result, surface tension shall be 32 dynes/cm or less, and neutralizing solution shall contain soda ash and sodium dichromate. Details of operation given.

(866B) Société Continentale Parker, "Emulsion Cleaner for Pickling and Degreasing Metals," French Patent No. 1,059,577, March 25, 1954; Chemical Abstracts, Vol. 52, p. 17764 (1958).

The cleaner consists of a nonionic emulsifier 3 to 20, water 25 to 50, acid such as sulfuric or phosphoric 1 to 30, and hydrocarbon solvent up to 10 per cent.

(873Aa) E. Wintergerst (to Aktiengesellschaft Kühnle, Kopp and Kausch), "Keeping Clean the Heating Surfaces of Steam Boilers, Evaporators, and Other Heat Exchangers," German Patent No. 903,079, Feb. 1, 1954; Chemical Abstracts, Vol. 52, p. 8430 (1958).

Heating surfaces are kept clean by means of ultrasonic waves along with silicone-base lacquers as protective coatings and silicone-base pastes or emulsions which are added to the liquid which tends to give undesired deposits.

1955

(874A) N. Kn. Andreev, "Bath for Removing an Oxide Film," U.S.S.R. Patent No. 101,315, Nov. 30, 1955; Chemical Abstracts, Vol. 51, p. 12813 (1957).

For removing an oxide film, a bath is used containing sodium hydroxide 550 to 700, sodium nitrate 40 to 70, and sodium nitrite 170 to 250 g./l. Magnesium alloys are prepared for welding by additional treatment in a bath containing 140 to 220 g/l chromic oxide at room temperature.

(879A) R. M. Burns and W. W. Bradley, "Protective Coatings for Metals," Reinhold Publishing Corp., New York, pp. 22-39 (1955).

Review of alkaline degreasing and materials used. Discussion of solvent cleaning and operations. Methods for descaling compared on cost basis. Section on evaluation of cleanliness of metal surfaces showing sensitivity based on Linford and Saubestre work, Reference 685.

(892A) R. Kaiser (to Langbein-Pfanhauser Werke A.-G.), "Cleaning Scale-Coated and Dirty Wire," German Patent No. 928,081, May 23, 1955; Chemical Abstracts, Vol. 52, p. 1042 (1958).

Cleaning wire to be galvanized or electroplated with zinc is accomplished by feeding the wire through agitated flat boxes filled with a burnishing material such as glass beads, coke or pumice pellets.

(892B) K. Kajimoto and K. Komatsubara (to Oriental Titanium Industries Co.), "Cleaners for Molten Metals," Japanese Patent No. 3903, June 9, 1955; Chemical Abstracts, Vol. 51, p. 12806 (1957).

Ti_2O_3 is a good cleaner for molten metals to remove oxides of other metals or the dusts from the furnace wall or crucibles. The TiO present in the Ti_2O_3 is reduced to give metallic Ti which may form titanium alloys with the metals to be cleaned.

(893A) I. J. Krems and J. F. Gerecht (to Colgate Palmolive Co.), "Cleaners for Metals," German Patent No. 931,973, Aug. 22, 1955; Chemical Abstracts, Vol. 52, p. 17764 (1958).

Synthetic water soluble cleaners which prevent tarnishing of metal surfaces preferably consist of water soluble polyphosphates to which up to about 1 per cent of a small amount of a triazine compound is added. Especially active surfactant cleaners added to the above are alkylarene sulfonates.

(893B) I. V. Krotov and T. M. Khachadurova, "Simultaneous Degreasing, Freeing from Rust, and Parkerizing," Trudy Moskov. Aviatsion. Inst., No. 52, pp. 5-7 (1955); Chemical Abstracts, Vol. 53, p. 7906 (1959).

Cleaning of corroded metal to remove rust with an aqueous solution of superphosphate is an inexpensive method. The derusting is done by boiling in an aqueous solution containing 33 per cent common superphosphate for two hours. The parts to be degreased and cleaned of rust are submerged in the decanted acid solution. After 30 to 40 minutes a light-gray highly adherent film forms, as a result of parkerizing. This method is quite useful for cleaning tanks and other articles of unusual shape.

(893C) Laboratorio Albon's, "Polishing Material," Italian Patent No. 533,947, Oct. 4, 1955; Chemical Abstracts, Vol. 53, p. 1790 (1959).

A satisfactory oxide-removing detergent and polishing material, particularly for metallic ware, is prepared by addition of dodecylbenzene 0.1, trichloroethylene 0.1, water 0.2 and some essential oil to 1 kg. powdered rice husks.

(898A) "Cleaning Compound, Oxygen Systems," Military Specification, MIL-C-8638 (Aer), Amendment 1, Oct. 27, 1955.

The cleaning compound is intended for use as a safe, effective solvent for oxygen systems in aircraft. The composition is comprised of Freon 113, Freon 112 and isopropanol.

(907A) D. Novex, "Detergent Product," Italian Patent No. 520,448, March 22, 1955; Chemical Abstracts, Vol. 52, p. 15932 (1958).

A powerful degreaser, especially for machines, floors, etc., is produced by dissolving 4 kg potassium soap in 15 liters water, boiling for 15 min adding 16 kg trisodium phosphate dissolved in 16 l. water, and 1 kg sodium hydroxide dissolved in 5 l. water, mixing, adding 20 l. of a mixture of 16 parts sulfonated petroleum oil and 4 parts Alkil alkali powder, and 10 g. fluorescein, thoroughly mixing, and finally diluting to 200 l.

(909A) O. Pfrengle (to Chemische Fabrik Budenheim A.-G.), "Silicophosphoric Acids as Detergents and Rust Removers," German Patent No. 933,772, Oct. 6, 1955; Chemical Abstracts, Vol. 53, p. 745 (1959).

The compounds are prepared from phosphoric acid and silica or silica containing substances such as kaolin, by heating at greater than 100 C. Other combinations with other detergent materials may be used.

1956

(919A) S. I. Andreeva and V. O. Milyavskaya, "Spot Removal from Chromium-Plated Details without Disassembly," Peredovoĭ Proizvodstv.-Tekh. Opyt, Filial Vsesoyuz. Inst. Nauch. i Tekh. Inform. Ser. 21, Zaschita Metal. ot Korrozii No. T-56-576/20, pp. 15-16 (1956); Chemical Abstracts, Vol. 52, p. 19593 (1958).

Brown spots which formed in storage of chrome plated precision details were caused by traces of plating electrolyte which was trapped and slowly released from the pores in the plate. Pores did not penetrate the full thickness of the plate. To remove spots and prevent their occurrence, the parts were abraded with a rubber eraser, wiped with 10 per cent sodium hydroxide, wiped dry, wiped with 30 per cent sodium nitrite, and wiped dry again.

(921A) P. P. Belyaev and M. F. Fedorova, "Electrolytic Degreasing of Metals by Alternating Current in the Presence of Emulsifiers," Peredovoĭ Proizvodstv.-Tekh. Opyt, Filial Vsesoyuz. Inst. Nauch. i Tekh. Inform. Ser. 21, Zaschita Metal ot Korrozii No. T-56-576/20, pp. 3-14 (1956); Chemical Abstracts, Vol. 52, p. 19593 (1958).

Cold rolled steel strip lubricated with a mixture containing 74 per cent mineral oil is effectively and continuously degreased in an aqueous solution of sodium hydroxide 10, sodium carbonate 25, trisodium phosphate 25, and a polyethylene glycol ester-type commercial emulsifier, 1 to 2 g/l. at 65 to 75 C, simultaneously exposing to electric current cleaning. Faster cleaning occurred when the emulsifier was introduced also into the strip lubricant. Ultrasonic agitation accelerated the cleaning of complex shapes with deep cavities inaccessible to the current.

(921B) M. C. Bennett, F. H. Connolley, N. O. Schmidt, L. F. Wiggins and W. S. Wise, "Versene in Evaporator Cleaning," Proc. Brit. West Indies Sugar Technologists 1955, pp. 83-85 (published 1956); Chemical Abstracts, Vol. 53, p. 3740 (1959).

Hot 3.75 per cent Versene solution at pH 6 to 7 effectively cleaned tank evaporators in sugar-cane factories. Unchelated solution may be determined by a control method.

(926A) "Aircraft Maintenance Cleaning Handbook," Bureau of Aeronautics Publication, NAVAER 01-1A-506, 64 pages, Nov. 1, 1956.

A complete handbook for maintenance cleaning of aircraft, detailing cleaning materials or compositions with a table in which 19 soils on 12 surfaces are indicated, with the recommended cleaning compositions for each. Separate sections are given for equipment and their usage, and cleaning directions for a large variety of circumstances.

(937A) K. I. Frantsuzova and O. G. Zhendareva, "Determination of Silicon in a Degreasing Bath," U.S.S.R. Patent No. 102,703, May 25, 1956; Chemical Abstracts, Vol. 52, p. 4418 (1958).

In a bath containing trisodium phosphate, alkali, and silicon compounds, silicon is determined by converting the silicon into silicon tetrafluoride with sodium fluoride in hydrochloric acid taken in excess and titrating the excess hydrochloric acid with phenol red as indicator.

(937B) S. Fukui, S. Kawano and Y. Nagae (to Mitsubishi Shipbuilding Engineering Co.), "Cleaning Solution for Metals," Japanese Patent No. 6414, July 31, 1956; Chemical Abstracts, Vol. 52, p. 19889 (1958).

To an acid cleaning solution for metals, a reducing agent such as stannous chloride is added together with an etching inhibitor, such as hydroquinone. Deterioration of the etching inhibitor caused by ferric and cupric ions is prevented by the action of the reducing agent.

(937C) N. Fuschillo, "Improved Method for Cleaning Mercury," Review of Science Instr., Vol. 27, pp. 410-411 (1956); Chemical Abstracts, Vol. 51, p. 12557 (1957).

Simple apparatus described, which combines separation from surface contaminants, preferential oxidation of impurities and washing and extraction of metals from small mercury droplets in nitric acid solution.

(937D) M. Gottschalk (to Bozel-Maletra, Société industrielle de produits chimiques), "Rust-Removing Product," French Patent No. 1,111,943, March 6, 1956; Chemical Abstracts, Vol. 53, p. 6047 (1959).

Rust is removed from fixed large ferrous structures by coating the surfaces with a paste containing phosphoric acid, an alkyl or alkylaryl sulfonate previously mixed with sodium sulfate or sodium bisulfite, with a silicate, and a filler such as bentonite, kieselguhr or talcum. A typical composition is phosphoric acid 70, alkyl sulfonate 4 to 10, sodium sulfate 1 to 10, silicate 3 parts.

(946A) J. F. Kreml (to Armco Steel Corp.), "Electrolytic Cleaning of Stainless-Steel Welds," U. S. Patent No. 2,765,271, Oct. 2, 1956; Chemical Abstracts, Vol. 51, p. 7203 (1957).

A 4 to 24 volt a.c. current with an electrolyte of common phosphoric acid diluted according to the finish desired, is used. A shiny finish results with concentrated acid, and with dilute acid a dull etched finish. A copper electrode properly insulated is used, and slag is removed by wire brushing prior to cleaning. After cleaning the pieces are rinsed with water.

(948A) G. Miel, "Solvent Degreasing of Metal Parts," French Patent No. 1,119,809, June 26, 1956; Chemical Abstracts, Vol. 53, p. 17871 (1959).

Degreasing of metal parts carried out by use of mixed halogenated solvents. The preferred system is trichlorethylene or perchloroethylene to which 10 to 40 per cent 1,1,2-trichloro-1,2,2-trifluoroethylene (Freon 113) had heen added.

(951A) J. Nussbaum, "Passivated Acids for Cleaning and Descaling of Metals," French Patent No. 1,114,697, April 16, 1956; Chemical Abstracts, Vol. 53, p. 11179 (1959).

Acid scouring baths are improved hy the addition of a known passivator, preferably of the aldehyde type, of urea, of a polyalcohol capable of reacting with the nascent hydrogen in the bath as rapidly as it is formed. The addition of these substances prevents the metal from becoming brittle by absorption of hydrogen and formation of cavities.

(951B) A. Pollack, "New Processes for Degreasing Metals," Seifen-Öle-Fette-Wachse, Vol. 82, pp. 237-240 (1956); Chemical Abstracts, Vol. 51, p. 7272 (1957).

Review with 9 references.

(956A) W. S. Russell (to Parker Rust Proof Co.), "Amine Phosphate Coating Solutions and Method of Coating," U. S. Patent No. 2,769,737, Nov. 6, 1956; Chemical Abstracts, Vol. 51, p. 3429 (1957).

Method described for cleaning and producing a metallic coating on a metal, such as zinc or aluminum, and on mild steel. The surface of the metal is brought into contact with an acidic aqueous solution consisting of phosphoric acid, water, and a substituted amine. Such amine phosphates yield at least 0.01 per cent of a phosphate ion in the solution and a pH between 3 and 6. The coating produced may be further improved by treatment with a sexivalent chrome rinse. Isopropylamine, monoethanolamine, cyclohexylamine, diamylamine, tributylamine and triethanolamine are the amines used.

(961A) R. I. Somers (to Parker Rust Proof Co.), "Cleaning and Coating Metallic Surfaces," U. S. Patent No. 2,762,732, Sept. 11, 1956.

A solution consisting of 20 to 40 parts of hydrocarbon solvent, 80 to 60 parts tert-butanol, 1 to 30 parts water, and 0.1 to 4 per cent by weight of the solution of chromium trioxide, removes dirt, grease, salts, and finger prints and leaves a coating which is a good base for painting. The process is useful for iron, steel, aluminum, zinc, or their alloys.

(961B) S. Spring, et al, "Recommended Practices for Cleaning Prior to Electroplating. Symposium on Properties, Tests, and Performance of Electrodeposited Metallic Coatings," A. S. T. M. Special Technical Publication, No. 197, pp. 37-48 (1956).

Poor plating can be avoided by (1) precleaning to remove the hulk of the soil, (2) intermediate or alkaline cleaning to remove oily matter, (3) electrocleaning to remove last traces of solids and minor impurities, (4) acid treatment and surface conditioning to remove small amounts of acids and microetch the surface. Nature of soil, with 10 kinds, discussed. Physical properties, care in handling and fabrication of metal parts play role in cleaning. Discussed are cleaner and properties, rinses, equipment and criteria of cleanliness. Specific examples given under each heading with any necessary precautions to be observed.

(961C) R. Springer, "Removal of Scale from Iron and Steel by Electrolytic Treatment in an Alkaline Solution," German Patent No. 939,659, March 1, 1956; Chemical Abstracts, Vol. 52, p. 12623 (1958).

Very dense and hard scale layers cannot be removed by the current densities used (less than 50 amp/sq. dm.) and higher densities are required, of up to 300 amp/sq. dm. Reversed current is used, and an additional cathodic current passed for 3 seconds to reduce the oxygen adsorbed by the metal.

(961D) R. Springer, "Removal of Scale from Austenitic Steels," German Patent No. 941,706, April 19, 1956; Chemical Abstracts, Vol. 52, p. 12623 (1958).

Austenitic steels are prepared electrolytically during 9 minutes at 50 C in a bath containing potassium cyanide and potassium hydroxide. A current density of 15 amp/sq. dm., reversed periodically is used.

(962A) C. C. Thiel, L. F. L. Clegg, P. A. Clough, C. M. Cousins, D. N. Akam and M. Gruber, "Further Studies of Immersion Cleaning of Milking Equipment," Journal Dairy Research, Vol. 23, pp. 217-224 (1956); Chemical Abstracts, Vol. 51, p. 6030 (1957).

Immersion cleaning studies showed that no deposition of calcium soap or inorganic calcium salts occurred if the immersion solution contained ethylenediamine tetraacetic acid.

(962B) Truc (to État français), "Scouring, Particularly Removal of Scale," French Patent No. 1,107,489, Jan 3, 1956; Chemical Abstracts, Vol. 53, p. 4094 (1959).

Iron sheets are freed of scale by applying a paste of a colloidal gel, such as bentonite and an acid such as hydrochloric or phosphoric, addition of stannous chloride and an inhibitor such as 0.2 to 0.5 per cent antimony oxide. The addition of a resin makes it possible to peel the deposited layer from the surface, leaving it white and lustrous. As a resin, polyvinyl alcohol is used.

(963A) N. Wada, M. Shimada, N. Taketani and M. Sato, "Paste for Cleaning Pewter," Japanese Patent No. 10,058, Nov. 24, 1956; Chemical Abstracts, Vol. 53, p. 1790 (1959).

To 20 g. of dicylcohexylamine a solution of 10 g of concentrated hydrochloric acid in 25 cc of water is added with cooling. An antifoamant such as silicone oil, 2-ethylhexanol, or di(isobutyl)-carbinol may be added.

(963B) H. G. Webster (to Kolene Corp.), "Electrolytic Cleaning of Metals," U. S. Patent No. 2,760,927, Aug. 28, 1956; Chemical Abstracts, Vol. 51, p. 7203 (1957).

A fused-salt bath to remove sand and scale from castings works well with anodic or cathodic work pieces. It consists of 75 to 95 per cent sodium hydroxide and 5 to 15 per cent borax. Part of the borax can be replaced by sodium fluoride. Operating conditions are 800 to 850 F, at 1000 amps for each 4000 pounds of castings. The parts are made cathodic for 15 minutes, then anodic for 15 minutes, and again cathodic for 10 minutes, after which they are washed free of salts.