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U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
WASHINGTON

Letter
Circular
LC-532
(Replaces
LC-178)

(September 21, 1938)

Information Section
National Bureau of Standards
Washington, D. C.

RUBBER: LIST OF PUBLICATIONS

By Members of the Staff of the National Bureau of Standards.

C O N T E N T S

This Letter Circular gives a list of publications relating to rubber by members of the staff of the National Bureau of Standards. Some of these were printed in the regular series of publications of the Bureau and others in various scientific and technical journals. Copies can usually be consulted at leading libraries of the larger cities.

Unless specifically stated, the papers herein listed are not obtainable from the National Bureau of Standards. Those marked "OP" are out of print, but, in general, may be consulted at technical libraries.

Where the price is stated, the publication may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C. The prices quoted are for delivery to addresses in the United States and its possessions, and to Canada, Columbia, Cuba, Dominican Republic, Ecuador, Guatemala, Honduras, Mexico, Newfoundland (including Laborador), the Republic of Panama, and Venezuela. When remitting for delivery to other countries than these, add to the remittance one-third of the total prices of publications to cover postage. Remittances should be made payable to "Superintendent of Documents, Government Printing Office, Washington, D. C." and sent to him with the order.

Series letters with serial numbers are used to designate Bureau publications:

RP = "Research Paper". These are reprints of articles appearing in the "Bureau of Standards Journal of Research" (BS J. Research) and the "Journal of Research of the National Bureau of Standards" (J. Research NBS), the latter being the title of this periodical since July 1934 (volume 13, number 1).

S = "Scientific Paper" of the National Bureau of Standards. From numbers 1 to 329, inclusive, the separate papers of this series were known as reprints from the "Bulletin of the Bureau of Standards". Subsequently, from numbers 330 to 572, the separates were known as reprints from the "Scientific Papers of the Bureau of Standards". This series superseded by the "Bureau of Standards Journal of Research" in 1928.

T = "Technologic Paper" of the National Bureau of Standards. Numbers 1 to 202 were issued each independent of the other with individual pagination. Later they were assembled to make the first 15 volumes of this series, and subsequent separates were given volume pagination. This series was superseded by the "Bureau of Standards Journal of Research" in 1928.

C = "Circular" of the National Bureau of Standards.

M = "Miscellaneous Publication" of the National Bureau of Standards.

LC = "Letter Circular" of the National Bureau of Standards. These publications are in mimeograph form and are sent without charge. Requests for them should be sent directly to the National Bureau of Standards.

For papers in other scientific or technical journals, the name of the journal or of the organization publishing the article is given in abbreviated form, together with the volume number (underscored), page, and year of publication, in the order named. The Bureau cannot supply copies of these journals, or reprints from them, and it is unable to furnish information as to their availability or price.

I. GENERAL INFORMATION ON RUBBER

Series	Price	Title
LC501	Free NBS	A guide to the literature on rubber (1937). This Letter Circular has been prepared in response to inquiries about sources of information on rubber. It is intended to assist the reader who may be unfamiliar with rubber technology in obtaining recent and authentic information relative to the production, manufacture, and properties of rubber and rubber products. Concise information regarding the collection of crude rubber and the manufacture of various rubber articles is given in C38 which is listed in Section VII.

II. RUBBER LATEX AND CRUDE RUBBER

Measurement of the pH of latex by the antimony electrode. India Rubber World, 87, Oct. 1932.

Series	Price	Title
LC321	Free NBS	Rubber latex (1932). This Letter Circular is intended to give general information on rubber latex and to indicate sources from which special or detailed information may be obtained. Part I is a brief discussion of the production, composition, and properties of latex and its use in manufacture. Part II is a list of recent publications on latex, covering the period 1927-1931.

Series Price Title

T353 5¢ Some vulcanization tests of guayule rubber. C. E. Boone and D. Spence. (1927).

III. FORMS OF RUBBER, PURIFICATION OF RUBBER, ETC.

RP720 5¢ Vulcanization and stress strain behavior of sol, gel, and total rubber hydrocarbon. W. Harold Smith and W. L. Holt. J. Research NBS 13, 465-468 (1934). Rubber Chem. Tech. 8, 210 (April 1935).

RP719 5¢ Ether-insoluble or gel rubber hydrocarbon, its solution, crystallization, and properties. W. H. Smith, and C. P. Saylor. J. Research NBS 13, 453 (1934). Rubber Chem. Tech. 8, 214 (April 1935).

RP717 5¢ Forms of rubber as indicated by the temperature volume relationship. N. Bekkedahl. J. Research NBS 13, 411 (1934).

RP544 5¢ The preparation and crystallization of pure ether-soluble rubber hydrocarbon: Composition, melting point, and optical properties. W. H. Smith, C. P. Saylor, and H. J. Wing. BS J. Research 10, 479 (1933). Rubber Chem. Tech. 6, 351 (July 1933).

RP449 5¢ A method for the purification of rubber and properties of purified rubber. A. T. McPherson. BS J. Research 8, 751 (1932). Rubber Age 31, 477 (September 25, 1932).

Crystalline rubber hydrocarbon. E. W. Washburn. Physical Rev. 38, 1790 (November 1, 1931).

See also RP585, Section IV, 4.

RP1129 10¢ Optical and mechanical changes in Hevea rubber during freezing and melting. W. Harold Smith and Charles Proffer Saylor. J. Research NBS 21, 257 (September 1938).

IV. CONSTANTS AND PROPERTIES OF RUBBER

Values of the physical constants of rubber. L. A. Wood. Proc. Rubber Technology Confer. (Institution of the Rubber Industry, London), 1938.

1. Aging

Series Price Title

Accelerated aging tests for rubber, paper, and weighted silk. W. E. Emley. Int. Assn. Test. Materials, London Congress, 1937, 509.

RP795 5¢ Effect of antioxidants on the natural and the accelerated aging of rubber. R. F. Tener and W. L. Holt. J. Research NBS 14, 667 (1935).

T342 15¢ Aging of soft rubber goods. R. F. Tener, W. H. Smith, and W. L. Holt. Tech. Pap. BS 21, 353 (1926-27).

The aging properties of rubber bands in storage. C. E. Boone. India Rubber World 76, 317 (September 1927).

2. Density and Specific Gravity

(Refer to RP760, Section III; RP717 and RP449, Section IV, 7; and S560, Section IV, 4.)

3. Effect of Heat Upon Rubber

RP464 5¢ Influence of temperature on the evolution of hydrogen sulphide from vulcanized rubber. A. D. Cummings. BS J. Research 9, 163 (1932). Rubber Chem. Tech. 6, 46 (1933).

RP162 5¢ Evolution of hydrogen sulphide from vulcanized rubber. Edward Wolesensky. BS J. Research 4, 501 (1930). Rubber Chem. Tech. 3, 386 (1930).

T364 10¢ Tensile properties of soft rubber compounds at temperatures ranging from -70° C. to plus 147° C. R. F. Tener, S. S. Kingsbury, and W. L. Holt. Tech. Pap. BS 22, 367 (1927-28).

See also RP760, Section III; RP717, Section IV, 7; and RP585, Section IV, 4.

4. Electrical Properties

The electrical behavior of rubber. Archibald T. McPherson. Chapter XV of Chemistry and Technology of Rubber, edited by Davis and Blake, Reinhold Publishing Corporation, New York. (1937).

Series	Price	Title
RP806	5¢	Effect of pressure on the dielectric constant, power factor and conductivity of rubber-sulphur compounds. Arnold H. Scott. J. Research NBS 15, 13 (1934).
RP585	5¢	Effect of temperature and frequency on the dielectric constant, power factor, and conductivity of compounds of purified rubber and sulphur. A. H. Scott, A. T. McPherson, and H. L. Curtis. BS J. Research 11, 173 (1933).
RP213	10¢	Change of electrical properties of rubber and gutta-percha during storage under water. Harvey L. Curtis and Arnold H. Scott. BS J. Research 5, 539 (1930). Rubber Chem. Tech. 4, 39 (1931).
S560	15¢	Density and electrical properties of the system, rubber-sulphur. H. L. Curtis, A. T. McPherson, and A. H. Scott. BS Sci. Pap. 22, 383 (1927-28).

Carbon black in rubber insulating compounds. H. L. Curtis and A. T. McPherson. Ind. Eng. Chem. 22, 1259 (November 1930).

T299	20¢	Dielectric constant, power factor and resistivity of rubber and gutta-percha. H. L. Curtis and A. T. McPherson. Tech. Pap. BS 19, 669 (1924-25).

5. Mechanical Properties

(See also Sections VI and VIII)

Secondary increase of length of stretched, chilled rubber. W. Harold Smith and Charles Proffer Saylor. Science 85, 204 (1937).

RP936	5¢	Change of volume of rubber on stretching. Effects of time, elongation and temperature. William L. Holt and Archibald T. McPherson. J. Research NBS 17, 657 (1936).

Series Price Title

Behavior of rubber under repeated stresses. W. L. Holt. Ind. Eng. Chem. 23, 1471 (December 1931); Rubber Chem. Tech. V, 79 (January 1932).

This paper describes a simple and convenient apparatus for obtaining a graphical record of the tensile properties of rubber under a variety of conditions of stressing. Data are given showing the effect of repeated stretching and the speed of stretching on the stress-strain properties of typical rubber compounds.

RP204 10¢ A method of measuring frictional coefficients of walkway materials. R. S. Hunter. BS J. Research 5, 329 (1930).

The alternating behavior of fatty acids in rubber. W. H. Smith and C. E. Boone. Ind. Eng. Chem. 18, 398 (March 1926).

Brake performance studies. W. S. James. J. Soc. Automotive Engrs. 14, 236 (1924).

6. Optical Properties

RP1039 5¢ X-Ray diffraction patterns of sol, gel, and total rubber when stretched and when crystallized by freezing and from solutions. George L. Clark, Enno Wolthuis, and W. Harold Smith. J. Research NBS 19, 479 (1937).

RP1083 5¢ Photoelastic determination of stresses around a circular inclusion in rubber. Wilfred E. Thibodeau and Lawrence A. Wood. J. Research NBS 20, 393 (1938).

RP830 5¢ Infrared absorption spectra of plant and animal tissue and various other substances. R. Stair and W. W. Coblenz. J. Research NBS 15, 295 (1935).

RP786 5¢ Refractive index of rubber. A. T. McPherson and A. D. Cummings. J. Research NBS 14, 553 (1935).

RP751 5¢ Photoelastic properties of soft vulcanized rubber. W. E. Thibodeau and A. T. McPherson. J. Research NBS 13, 887 (1934). Rubber Chem. Tech. 8, 183 (April 1935).

See also RP544 and RP449, Section III; and T299, Section IV, 4.

7. Thermal and Thermodynamic Properties

Series Price Title

Application of thermodynamics to the chemistry of rubber. Norman Bekkedahl. Proc. Rubber Technology Confer. Inst. Rubber Industry, London (1938).

RP844 5¢ Heat capacity entropy and free energy of rubber hydrocarbon. Norman Bekkedahl and Harry Matheson. J. Research NBS 15, 503 (1935).

RP791 5¢ Heats of reaction of the system: Rubber sulphur. A. T. McPherson and N. Bekkedahl. J. Research NBS 14, 601 (1935). Ind. Eng. Chem. 27, 597 (May 1935).

RP760 5¢ Specific volume, compressibility, and volume thermal expansivity of rubber-sulphur compounds. A. H. Scott. J. Research NBS 14, 99 (1935).

RP713 5¢ Heats of combustion of rubber and rubber sulphur compounds. R. S. Jessup and A. D. Cummings. J. Research NBS 13, 357 (1934).

Tentative method of test for comparing the thermal conductivity of solid electrical insulating materials. Proc. Am. Soc. Testing Materials 30, Part I, 1224 (1930).

V. CONSTANTS AND PROPERTIES OF ISOPRENE

RP1093 5¢ Heat of combustion of isoprene. Ralph S. Jessup. J. Research NBS 20, 589 (1938).

RP1044 5¢ Entropy of isoprene from heat-capacity measurements. Norman Bekkedahl and Lawrence A. Wood. J. Research NBS 19, 551 (1937).

RP951 5¢ Some physical properties of isoprene. Norman Bekkedahl, Lawrence A. Wood and Mieczyslaw Wojciechowski. J. Research NBS 17, 883 (1936).

VI. CHEMICAL ANALYSIS OF RUBBER

RP661 5¢ Errors in gas analysis arising from loss of gas by solution in rubber connections and stopcock lubricant. J. R. Branham. BS J. Research 12, 353 (1934)

Series Price Title

Decomposition of barium sulfate by solutions of sodium carbonate. E. Wolesensky. Ind. Eng. Chem. Anal. Ed. 1, 29 (January 15, 1929).

Determination of sulphur in rubber by the perchloric acid method. E. Wolesensky. Ind. Eng. Chem 20, 1234 (November 1928). Rubber Chem. Tech. 2, 45 (1929).

Determination of rubber and inorganic materials in soft rubber goods. R. T. Mease, and N. P. Hanna. Ind. Eng. Chem. 17, 161 (1925).

An improved method for the determination of total sulphur in rubber goods. M. Levin, and S. Collier. Rubber Age and Tire News 9, 47 (1921).

Determination of antimony in rubber goods. S. Collier, M. Levin, and J. S. Scherrer. Rubber Age and Tire News 8, 104 (1920). India Rubber J. 64, 580 (1921).

Detection of glue in rubber goods. S. W. Epstein and W. E. Lange. India Rubber World 61, 216 (1920).

T154 OP Determination of cellulose in rubber goods. S. W. Epstein and R. L. Moore. Tech. Pap. BS 13 (1920). Rubber Age and Tire News 6, 289 (1920).

T162 OP Extraction of rubber goods. S. W. Epstein and B. L. Gonyo. Tech. Pap. BS 13 (1919-20). Rubber Age and Tire News 6, 445 (1920).

T136 OP Determination of free carbon in rubber goods. A. H. Smith and S. W. Epstein. Tech. Pap. BS 12 (1919). J. Ind. Eng. Chem. 11, 33 (1919).

T145 5¢ Direct determination of India rubber by the nitrosite method. J. B. Tuttle and L. Yurow. Tech. Pap. BS 13 (1919-20).

T64 OP Determination of barium carbonate and barium sulphate in vulcanized rubber goods. J. B. Tuttle. Tech. Pap. BS 7 (1916-17). J. Ind. Eng. Chem. 8, 324 (1916).

T45 OP A study of some recent methods for the determination of total sulphur in rubber. J. B. Tuttle and A. Isaacs. Tech. Pap. BS 5 (1914-15). J. Wash. Acad. Sci. 5, 235 (1915). J. Ind. Eng. Chem. 7, 658 (1915).

Series Price Title

T35 OP Combustion method for the direct determination of rubber. L. G. Wesson. Tech. Pap. BS 4 (1913-14).

The sampling of rubber goods. J. B. Tuttle. J. Ind. Eng. Chem. 5, 618 (1913).

An improved extraction apparatus. T. B. Ford. J. Am. Chem. Soc. 34, 552 (1912).

S174 OP The determination of total sulphur in India rubber. C. E. Waters and J. B. Tuttle. Sci. Pap. BS 8, 445 (1912). J. Ind. Eng. Chem. 3, 734 (1911).

VII. DIMENSIONAL MEASUREMENTS ON RUBBER SPECIMENS

RP549 5¢ Screw micrometer gauges for rubber specimens. W. L. Holt. BS J. Research 10, 575 (1933).

Measuring microscope for rubber specimens. R. E. Lofton. Ind. Eng. Chem. Anal. Ed. 4, 439 (October 15, 1932). Rubber Chem. Tech. 6, 151 (1933).

Dimensional measurements on electrical test specimens are discussed in RP585, S560, and T299, Section IV, 4.

VIII. PHYSICAL TESTING OF RUBBER

RP674 5¢ Compression cutting test for rubber. W. L. Holt. BS J. Research 12, 489 (1934).

A water bath having submerged individual sample-containers for the accelerated aging of rubber in air. W. L. Holt and A. T. McPherson. Rubber Age 36, No. 3, 121 (Dec. 1934). Rubber Chem. Tech. 8, 302 (April 1935).

A simple abrasion test machine for rubber. P. A. Sigler and W. L. Holt. India Rubber World 82, 63 (Aug. 1, 1930). (A limited number of photostatic copies of this publication are available for distribution by the Bureau of Standards without charge.)

Outline of tentative standard laboratory procedure for the preparation and physical testing of rubber samples. Physical Testing Committee, Rubber Division, Am. Chem. Soc., and F. E. Rupert. Rubber Age (New York) 26, 429 (Jan. 25, 1930). Rubber Chem. Tech. 3, 179 (1930).

Series Price Title

Importance of temperature and humidity control in rubber testing: I. Stress-strain and tensile properties. Physical Testing Committee, Rubber Division, Am. Chem. Soc., and F. E. Rupert. Ind. Eng. Chem. 20, 1245 (Nov. 1928); II. Resistance to abrasion. Ind. Eng. Chem. Anal. Ed. 1, 174 (July 15, 1929). Rubber Chem. Tech. 1, 515 (1928) and 2, 680 (1929).

Importance of temperature and humidity control in rubber testing. Physical Testing Committee, Rubber Division, Am. Chem. Soc., and F. E. Rupert. Rubber Age 22, 245 (Dec. 10, 1927).

C38 30¢ The testing of rubber goods. Cir. BS, C38 [Ed. 5] (1927). This circular describes methods used in the testing of rubber goods. The physical tests commonly employed are described in detail and the machines used for this purpose are illustrated and described. Data are given showing the effect of different conditions on the tensile properties of rubber. The circular also contains a brief outline of the methods of collecting crude rubber and the processes used in the manufacture of various rubber articles.

Effect of heat generated during stressing upon the tensile properties of rubber. C. E. Boone and J. R. Newman. Ind. Eng. Chem. 18, 539 (May 1926).

IX. RUBBER PRODUCTS

1. Tires

RP2 5¢ Measurement of the tread movement of pneumatic tires and a discussion of the probable relation to tread wear. W. L. Holt and C. M. Cook. BS J. Research 1, 19 (1928).

C341 15¢ Use and care of automobile tires. Cir. BS C341 (1927).

C320 5¢ Puncture sealing compounds for pneumatic tires. Cir. BS C320 (1926).

T318 10¢ Endurance tests of tires. W. L. Holt and P. L. Wormeley. Tech. Pap. BS 20, 545 (1926).

T294 5¢ Wearing quality of tire treads as influenced by reclaimed rubber. W. L. Holt and P. L. Wormeley. Tech. Pap. BS 19, 579 (1925).

Series	Price	Title
T283	5¢	Effect of tire resistance on fuel consumption. W. L. Holt and P. L. Wormeley. Tech. Pap. BS 19, 213 (1925).
T240	10¢	Dynamometer tests of automobile tires. W. L. Holt and P. L. Wormeley. Tech. Pap. BS 17, 559 (1923).
T213	5¢	Power losses in automobile tires. W. L. Holt and P. L. Wormeley. Tech. Pap. BS 16, 451 (1922).

2. Hose

C327	10¢	Selection and care of garden hose. Cir. BS C327 (1926).

3. Flooring

RP1046	10¢	Test of floor coverings for post-office workrooms. Warren E. Emley and Carl E. Hofer. J. Research NBS 19, 567 (1937).
LC270	Free NBS	Rubber floor tile. (1929). This letter circular presents the conclusions reached as the result of various tests made on samples of rubber floor tile, together with general observations of floor tile in actual use.

4. Sponge Rubber

C377	5¢	Some properties of sponge rubber. Cir. BS C377 (1929).

5. Foundry Cores

LC252	Free NBS	Rubber binders for foundry cores. (1928).

6. Solutions of Rubber

LC411	Free NBS	Rubber cements. (April 30, 1934). This letter circular was prepared as an answer to inquiries about the composition, preparation, and uses of rubber cements. The information given is presented from the standpoint of individuals not expert in rubber technology.

Series Price Title

Consistency of rubber-benzene solutions. Winslow H. Hershel. Ind. Eng. Chem. 16, 927 (Sept. 1924).

Refer also to LC321, Section II.

7. Coated Fabrics

Rubber substitutes as coatings for balloon fabrics. Theron P. Sager. J. of the Aeron. Sci. 3, 63 (Nov. 1935).

RP750 5¢ Permeability of synthetic film forming materials to hydrogen. T. P. Sager. J. Research NBS 13, 879 (1934).

8. Dental Rubber

Preliminary tests of some of the newer denture materials. R. Barber. J. Am. Dental Assoc. 21, 1969 (Nov. 1934).

9. Reclaimed Rubber

C393 OP Reclaimed rubber. A. T. McPherson. Cir. BS C393 (1931). This circular has been prepared to meet requests for information about reclaimed rubber. The aim has been to give a description of processes for the reclaiming of rubber that are in current use in the United States, and to review some of the properties and applications of the material that may be of general interest.

X. SPECIFICATIONS FOR RUBBER GOODS

1. Directory of Specifications

M130 $1.75 National Directory of Commodity Specifications, prepared by Clarence W. Ingels under the direction of A. S. McAllister. Misc. Pub. BS M130 (1932). This directory lists all generally recognized specifications of the industry, and specifications of all branches of the United States Government except the War and Navy Departments. The directory includes the title of each specification, the name of the sponsoring organization, the date of promulgation, and a very brief statement of the nature and scope.

Series Price Title

2. Federal Specifications

Federal Specifications for rubber goods are prepared by technical committees on which all interested departments of the Government are represented. They are promulgated by the Director of Procurement, Treasury Department, and are for sale by the Superintendent of Documents. An index of Federal Specifications, including those for rubber products, is published as Section IV, Part I, of the Federal Standard Stock Catalog (Price 5 cents).

Since members of the staff of the National Bureau of Standards are directly interested in the preparation of Federal Specifications for rubber products, and since inquiries are received regarding such specifications, an alphabetical list is here given. Methods of test, applicable to all specifications for rubber products, are given in-

Specification ZZ-R-601, Rubber Goods; General Specifications (Methods of physical tests and chemical analyses), is published as Section IV, Part 5, of Federal Standard Stock Catalog (Price 10 cents).

Alphabetical List

(Unless otherwise noted the price is 5 cents)

Number	Subject	Date[1]
ZZ-A-611	Aprons; surgeons	May 27, 1930.
ZZ-B-71a	Bags; Politzer	June 23, 1931.
ZZ-B-101	Bandages; rubber	June 23, 1931.
ZZ-B-111	Bands; rubber	Aug. 18, 1931.
ZZ-B-206	Belting; conveyor (rubber)	May 2, 1933.
ZZ-B-551a	Boots; hip	May 6, 1936.
ZZ-B-556a	Boots; rubber, short, heavy	May 6, 1936.
ZZ-B-561	Boots; rubber, short, light	Jan. 13, 1933.
ZZ-B-581	Bottles; hot-water, cloth inserted	April 29, 1930.
ZZ-B-586a	Bottles; hot-water, rubber	Nov. 26, 1935.
J-C-71	Cable (armored and lead-covered) and cord (armored), (600 volt service and under).	July 6, 1935.
J-C-101a	Cable and wire; rubber insulated, building type, code-grade	May 7, 1935.
J-C-106	Cable wire; rubber-insulated super-aging-grade, building type, (0 to 5000 volt service)	May 23, 1935.

[1]Some of the specifications have been amended but the dates of amendment have not been noted here.

Number	Subject	Date
J-C-121	Cable wire; rubber insulated (for) other than building-purposes, superaging-grade (0 to 8,000 volt service)	Oct. 24, 1935.
FF-C-91a	Casters; wood-chair	Oct. 25, 1937.
ZZ-C-101	Catheters; plain, soft-rubber	Nov. 7, 1933.
ZZ-C-191	Cement; rubber, cold-patching, liquid	May 2, 1933.
ZZ-C-551	Combs; rubber, hard	Jan. 8, 1935.
ZZ-C-571	Cots; finger	June 23, 1931.
ZZ-C-791	Cushions; ring, cloth-inserted	April 29, 1930.
ZZ-C-796	Cushions; ring, rubber	Dec. 9, 1930.
ZZ-D-51	Dams; rubber	June 23, 1931.
DD-D-691	Droppers, medicine	April 1, 1936.
ZZ-E-661a	Erasers	Nov. 6, 1934.
ZZ-F-461	Floor covering; rubber sheet	April 28, 1936.
ZZ-F-566	Force cups; plumbers	May 7, 1935.
ZZ-G-401	Gloves; (for) electrical workers	May 1, 1934.
ZZ-G-421	Gloves; rubber surgeons'	Oct. 18, 1932.
ZZ-H-141	Heels; rubber	Sept. 4, 1934.
ZZ-H-421	Hose; chemical	March 1, 1932.
ZZ-H-451	Hose; fire	May 26, 1931.
ZZ-H-461a	Hose; gas (acetylene, air, hydrogen and oxygen)	Nov. 7, 1933.
ZZ-H-466b	Hose; gasoline, rubber-metal	Nov. 8, 1935.
ZZ-H-481a	Hose; oil-suction & discharge	Feb. 6, 1934.
ZZ-H-491	Hose; pneumatic	Jan. 6, 1931.
ZZ-H-496	Hose; pneumatic, braided	June 6, 1933.
ZZ-H-499	Hose; pneumatic, wrapped	Sept. 5, 1933.
ZZ-H-521	Hose; spray	Aug. 18, 1931.
ZZ-H-541	Hose; steam	July 21, 1931.
ZZ-H-561a	Hose; suction, water, smooth-bore	Feb. 6, 1934.
ZZ-H-581	Hose; tender, corrugated, locomotive	Nov. 6, 1934.
ZZ-H-601	Hose; water, braided	July 21, 1931.
ZZ-H-611	Hose; water, wrapped	Aug. 19, 1930.
ZZ-I-111	Icebags; helmet-shaped	Aug. 19, 1930.
ZZ-I-121	Icebags; rubber	June 23, 1931.
ZZ-M-71	Matting; rubber	Sept. 5, 1933.
ZZ-M-81	Matting; rubber (for use around electrical apparatus)	May 2, 1933.
ZZ-O-841	Overshoes; rubber	March 5, 1935.
HH-P-31	Packing; asbestos, metallic cloth, sheet	May 26, 1931.
HH-P-46	Packing; asbestos, sheet, compressed	May 27, 1928.
HH-P-51	Packing; asbestos, valve stem	Aug. 10, 1930.
HH-P-112	Packing; hydraulic	Dec. 17, 1936.
HH-P-156	Packing and gaskets; rubber, molded, sheet, and strip	Aug. 18, 1931.
HH-P-151	Packing; rubber, cloth-insertion	May 26, 1931.
HH-P-161a	Packing; rubber, wire-insertion	Dec. 17, 1936.
HH-P-61	Packing; diaphragm	May 26, 1931.

Number	Subject	Date
HH-P-166	Packing; semimetallic	Aug. 19, 1930.
HH-P-171	Packing; spiral, gland, low-pressure	May 26, 1931.
ZZ-P-41	Pads; finger, rubber, for office	Dec. 18, 1937.
ZZ-P-51	Pads; surgical-operating	May 2, 1933.
ZZ-P-351	Pillows; air, rubber	May 2, 1933.
ZZ-P-361	Pillowcases, rubber	May 2, 1933.
U-P-401	Plaster, adhesive, surgical	June 30, 1936.
ZZ-R-351	Rings; jar, rubber	Nov. 6, 1934.
ZZ-S-311	Sheeting; rubber	May 27, 1930.
ZZ-S-451	Sleeves; dredging	May 2, 1933.
ZZ-S-751	Stoppers, rubber	Nov. 15, 1932.
ZZ-S-901	Syringes; fountain, cloth inserted	Dec. 9, 1930.
ZZ-S-916	Syringes; fountain, rubber	Dec. 9, 1930.
HH-T-101	Tape; friction	March 4, 1930.
HH-T-111	Tape; rubber, insulating	June 6, 1933.
ZZ-T-91	Tanks; photographic, hard rubber, developing and fixing	April 2, 1935.
ZZ-T-351	Tips; rubber, (for) crutches, furniture, etc.	Jan. 8, 1935.
ZZ-T-381b	Tires; automobile and motorcycle, pneumatic	May 22, 1936.
ZZ-T-391	Tires; automobile solid	April 1, 1930.
ZZ-T-401	Tires and tubes (inner); bicycle	Aug. 1, 1933.
ZZ-T-606	Tourniquets; rubber, tubular	Dec. 4, 1934.
ZZ-T-636	Trays; photographic, hard-rubber	April 2, 1935.
ZZ-T-721b	Tubes; automobile & motorcycle, inner	May 22, 1936.
ZZ-T-751	Tubes; colon	May 27, 1930.
ZZ-T-766	Tubes; inner, puncture-sealing	Oct. 29, 1935.
ZZ-T-791	Tubes; lavage & stomach	May 2, 1933.
ZZ-T-831	Tubing; rubber	Dec. 9, 1930.
ZZ-V-51	Valves; rubber	Feb. 2, 1932.

3. Other Government Specifications

Products whic h are of interest to only one department of the Government are covered by the specifications of that department. Copies of Army Specifications can be obtained from the Quartermaster's Corps, Washington, D. C., and copies of Navy Specifications from the Bureau of Supplies and Accounts, Navy Department, Washington, D. C. Similarly, specifications of other agencies can be obtained by addressing the agency concerned.

XI. COMMERCIAL STANDARDS

Three Commercial Standards prepared by the rubber industry have been published by the National Bureau of Standards. These are,

Series	Price	Title
CS41-32	5¢	Surgeons' latex gloves. Com. Std. BS CS41 (1932).
CS40-32	5¢	Surgeons' rubber gloves. Com. Std. BS CS40 (1932).
CS38-32	5¢	Hospital rubber sheeting. Com. Std. BS CS38 (1932).