LEATHER:

Publications by Members of the Staff of the National Bureau of Standards.

GENERAL INFORMATION

Some of these publications were printed in the regular series of publications of the Bureau and others in the various scientific and technical journals. Copies can usually be consulted at the leading libraries of the larger cities.

For ready reference and convenience in ordering the separate papers of the Bureau, these have been listed with the serial letter and number in one column and the price in the last column. Those marked "OP" are out of print, but may be consulted in libraries as stated in the first paragraph. A complete list of our publications (Circular No. 24 and Supplements) is also generally available at such libraries.

Where the price is stated, the publication can 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 territories and possessions and in certain foreign countries which extend the franking privilege. In the case of all other countries, one-third the cost of the publication should be added to cover postage. Remittances should be made either by coupons (obtainable from the Superintendent of Documents in sets of 20 for $1.00 and good until used), or by check or money order payable to the "Superintendent of Documents, Government Printing Office" and sent to him with order.

Serial letters 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).

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

T = "Technologic Paper" of the National Bureau of Standards. Nos. T1 to T370. This series was superseded by the "Bureau of Standards Journal of Research" in 1928.
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, with address in parenthesis, 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.

**RESEARCH PAPERS**

<table>
<thead>
<tr>
<th>Title</th>
<th>Series</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>A comparison of the quinhydrone and hydrogen electrodes in solutions containing tannin. E. L. Wallace and John Beek, Jr. BS J. Research 4, 737 (1930)</td>
<td>RP176</td>
<td>0c</td>
</tr>
<tr>
<td>A study of the adsorption of sulphuric acid by leather. John Beek, Jr. BS J. Research 5, 1109 (1930)</td>
<td>RP249</td>
<td>0c</td>
</tr>
<tr>
<td>The hydrolysis of chestnut and quebracho tanned leathers by sulphuric acid. E. L. Wallace. BS J. Research 7, 621 (1931)</td>
<td>RP362</td>
<td>5c</td>
</tr>
<tr>
<td>A contribution relative to the structure of collagen. John Beek, Jr. BS J. Research 2, 549 (1932)</td>
<td>RP434</td>
<td>5c</td>
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<tr>
<td>The influence of pH on the deterioration of vegetable-tanned leather by sulphuric acid. R. C. Bowker and E. L. Wallace. BS J. Research 10, 559 (1933)</td>
<td>RP548</td>
<td>5c</td>
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<tr>
<td>The effects of atmospheric moisture on the physical properties of vegetable and chrome tanned calf leathers. W. D. Evans and C. L. Critchfield. BS J. Research 11, 147 (1933)</td>
<td>RP583</td>
<td>5c</td>
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<tr>
<td>Influence of magnesium-sulphate on the deterioration of vegetable-tanned leather by sulphuric acid. R. C. Bowker and E. L. Wallace. J. Research NBS 14, 121 (1935)</td>
<td>RP761</td>
<td>5c</td>
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<tr>
<td>Combining weight of collagen. John Beek, Jr. J. Research NBS 14, 217 (1935)</td>
<td>RP765</td>
<td>5c</td>
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<td>Effect of sulphuric acid on chrome-tanned leather. Everett L. Wallace, John Beek, Jr., and Charles L. Critchfield. J. Research NBS 14, 771 (1935)</td>
<td>--------</td>
<td>RP802 5c</td>
</tr>
<tr>
<td>Influence of sulphonated cod-liver oil on the deterioration of vegetable-tanned leathers by sulphuric acid. Everett L. Wallace, Charles L. Critchfield and John Beek, Jr. J. Research NBS 15, 73 (1935)</td>
<td>--------</td>
<td>RP811 5c</td>
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<tr>
<td>Comparative wear of chrome-tanned, vegetable-tanned, and retanned sole leather. Roy C. Bowker and Warren E. Emley. J. Research NBS 15, 363 (1935)</td>
<td>--------</td>
<td>RP834 5c</td>
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<tr>
<td>Deterioration of vegetable-tanned leathers containing sulphuric acid and glucose. Everett L. Wallace and Joseph R. Kanagy. J. Research NBS 15, 523 (1935)</td>
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<td>RP846 5c</td>
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<tr>
<td>The soluble decomposition products in aged vegetable-tanned leathers. Joseph R. Kanagy. J. Research NBS 17, 247 (1936)</td>
<td>--------</td>
<td>RP909 5c</td>
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<td>Behavior of leather in the oxygen bomb. Joseph R. Kanagy. J. Research NBS 18, 713 (1937)</td>
<td>--------</td>
<td>RP1004 5c</td>
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<td>Influence of copper and iron salts on the behavior of leather in the oxygen bomb. Joseph R. Kanagy. J. Research NBS 20, 840 (1938)</td>
<td>--------</td>
<td>RP1109 5c</td>
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<td>Combination of hydrochloric acid and sodium hydroxide with hide, tendon, and bone collagen. John Beek, Jr. J. Research NBS 21, 117 (1939)</td>
<td>--------</td>
<td>RP1119 5c</td>
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Title

Accelerated aging of leather in the oxygen bomb at 100° C. Joseph R. Kanagy. J. Research NBS 21, 241 (1939) 5c

Electrophoresis of collagen. John Beek, Jr., and Arnold M. Sookne. J. Research NBS 23, 271 (1939) 5c

Effect of oxygen and moisture on the stability of leather at elevated temperatures. Joseph R. Kanagy. J. Research NBS 25, 149 (1940) 5c

Effect of speed of pulling jaws on the tensile strength and stretch of leather. Robert B. Hobbs. J. Research NBS 25, 207 (1940) 5c

Evolution of carbon dioxide and water from vegetable-tanned leathers at elevated temperatures. Joseph R. Kanagy. J. Research NBS 27, 257 (1941) 5c

The carbohydrate content of collagen. John Beek Jr. J. Research NBS 27 (1941) ----

CIRCULAR

Shoe Constructions. R. C. Bowker. (1938) 10c

TECHNOLOGIC PAPERS


An apparatus for measuring the relative wear of sole leathers, with results obtained with leather from different parts of a hide. R. W. Hart and R. C. Bowker. Tech. Pap. BS 13 (1919-20) 5c

Area measurement of leather. F. J. Schlink. Tech. Pap. BS 13 (1919-20) 0p
Effects of oils, greases, and degree of
tannage on the physical properties of
russet harness leather. R. C. Bowker
and J. B. Churchill. Tech. Pap. BS 13
(1919-20) ---------------------------------- T160 5c

Laboratory wearing test to determine the rela-
tive wear resistance of sole leather at
different depths throughout the thickness
of a hide. R. W. Hart. Tech. Pap. BS
13 (1919-20) ------------------------------- T166 0p

Durability of sole leather filled with sulphite
cellulose extract. R. C. Bowker. Tech.
Pap. BS 16, 495 (1921-22) ---------------------- T215 5c

Comparative durability of chrome and vegetable-
tanned sole leathers. R. C. Bowker and M.
N. V. Geib. Tech. Pap. BS 19, 267 (1924-
25) ---------------------------------------- T286 10c

Investigation of synthetic tanning materials.
E. Wolesensky. Tech. Pap. BS 20, 1 (1925-
26) ---------------------------------------- T302 15c

Behavior of synthetic tanning materials toward
BS 20, 275 (1925-26) ------------------------ T309 5c

Analysis of synthetic tanning materials. E.
Wolesensky. Tech. Pap. BS 20, 519 (1925-
26) ---------------------------------------- T316 5c

Action of sodium sulphate in synthetic tanning
materials. E. Wolesensky. Tech. Pap. BS
20, 529 (1925-26) -------------------------- T317 10c

Use of sulphite cellulose extract as a tanning
material. E. L. Wallace and R. C. Bowker.
Tech. Pap. BS 21, 309 (1926-27) ----------- T339 30c

Cleaning of fur and leather garments. M. H.
Goldman and C. C. Hubbard. Tech. Pap. BS
22, 183 (1927-28) -------------------------- T360 0p

OUTSIDE PUBLICATIONS

The following publications were printed in the Journal
of the American Leather Chemists Association, 143 West 20th
OUTSIDE PUBLICATIONS (Cont'd)

Street, New York, N. Y. Reprints of those marked with an asterisk may be secured without charge (until the supply is exhausted) by addressing the Leather Section, National Bureau of Standards, Washington, D. C.


Sampling of leather for chemical analysis. R. C. Bowker and E. L. Wallace. 17, 217 (1922).

Progress report on the effects of acids on leather. R. C. Bowker. 23, 82 (1928)*.

The influence of splitting on the strength and stretch of commercial leathers. R. C. Bowker and E. S. Olson. 25, 275 (1930)*.

Analysis of salt used for curing skins. R. C. Bowker and John Beek, Jr. 26, 312 (1931)*.

The deterioration of chestnut and quebracho tanned leathers by sulphuric acid. R. C. Bowker. 26, 441 (1931)*.

The hydrolysis of chestnut and quebracho tanned leathers by sulphuric acid. E. L. Wallace. 26, 545 (1931)*.

The influence of grease on the deterioration of chestnut and quebracho leathers by sulphuric acid. R. C. Bowker. 26, 667 (1931)*.

The effect of atmospheric moisture on the deterioration of commercial and quebracho tanned leathers containing sulphuric acid. R. C. Bowker and J. D. Evans. 27, 81 (1932)*.

The addition of a definite quantity of sulphuric acid to leather. John Beek, Jr. 27, 79 (1932)*.
The deterioration of leather by sulphuric acid as influenced by tanning with blends of chestnut and quebracho extracts. R. C. Bowker and C. L. Critchfield. 27, 153 (1932)*.

The influence of pH on the deterioration of vegetable-tanned leather by sulphuric acid. R. C. Bowker and E. L. Wallace. 26, 125 (1933)*.

The influence of sodium chloride and magnesium sulphate on the hydrolysis of leather by sulphuric acid. E. L. Wallace and J. R. Kanagy. 28, 186 (1933)*.

Report of the Committee on the determination of acid in leather, 1934. R. C. Bowker, Chairman. 29, 403 (1934).

Comments on the Procter and Searle method for determining the acidity of vegetable-tanned leather. R. C. Bowker and E. L. Wallace. 29, 421 (1934)*.

Effect of temperature on the deterioration of leather containing sulphuric acid. R. C. Bowker and E. L. Wallace. 29, 523 (1934)*.

The deterioration of vegetable-tanned leather by oxalic acid. R. C. Bowker and J. R. Kanagy. 30, 26 (1935)*.


The effect of sulphuric acid on chrome-tanned leather. Everett L. Wallace, John Beek, Jr., and Charles L. Critchfield. 30, 311 (1935)*.

Method of measuring the pH of leather using a simple glass electrode assembly. Everett L. Wallace. 30, 370 (1935)*.

Influence of sulphonated cod-liver oil on the deterioration of vegetable-tanned leathers by sulphuric acid. Everett L. Wallace. 30, 436 (1935)*.

Comparative wear of chrome-tanned, vegetable-tanned, and retanned sole leather. Roy C. Bowker and Warren E. Emley. 30, 572 (1935)*.

Deterioration of vegetable-tanned leather containing sulphuric acid and glucose. Everett L. Wallace and Joseph R. Kanagy. 32, 614 (1935)*.

Effect of acid on leather — a summary. Warren E. Emley. 30, 621 (1935)*.


The probable error in the measurement of the tensile strength of heavy leather. John Beek, Jr. 32, 4 (1937)*.

The soluble decomposition products in aged vegetable-tanned leather. J. R. Kanagy. 32, 12 (1937)*.

Behavior of leather in the oxygen bomb. J. R. Kanagy. 32, 314 (1937)*.

Laboratory apparatus and method for determining the resistance of sole leather to abrasion. E. L. Wallace. 32, 325 (1937).


Influence of copper and iron salts on the behavior of leather in the oxygen bomb. Joseph R. Kanagy. 33, 352 (1938)*.

Accelerated aging of leather in the oxygen bomb at 100° C. Joseph R. Kanagy. 33, 565 (1938)*.

Note on the evaluation of leather by means of the X-ray diffraction patterns. Roy C. Bowker and Harry J. McNicholas. 34, 101 (1939)*.

OUTSIDE PUBLICATIONS (Cont'd)

Stability of leather as indicated by different Procter and Searle values and by pH values. Roy C. Bowker and Everett L. Wallace. 34, 551 (1939)*.

Influence of natural non-tannins on the deterioration of chestnut and quebracho leathers by sulfuric acid. Roy C. Bowker and Robert B. Hobbs. 35, 5 (1940)*.

Shrinkage temperature of leather. Robert B. Hobbs. 35, 272 (1940)*.

Effect of oxygen and moisture on the stability of leather at elevated temperatures. Joseph R. Kanagy. 35, 632 (1940)*.

Effect of speed of pulling jaws on the tensile strength and stretch of leather. Robert B. Hobbs. 35, 715 (1940)*.

Some applications of statistical methods to sampling of leather. John Beek, Jr. and Robert B. Hobbs. 36, 190 (1941)*.

Note on the measurement of the permeability of leather to water vapor. Robert B. Hobbs. 36, 346 (1941)*.

OTHER OUTSIDE PUBLICATIONS


The supply of chestnut wood extract for tanning purposes. R. C. Bowker. Hide and Leather (300 W. Adams St., Chicago, Ill.) (Dec. 20, 1930).


OTHER OUTSIDE PUBLICATIONS (Cont'd)


COMMERCIAL STANDARDS

<table>
<thead>
<tr>
<th>Title</th>
<th>CS No.</th>
<th>Price</th>
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<tr>
<td>Bag, case, and strap leather. (Thickness)</td>
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SIMPLIFIED PRACTICE RECOMMENDATION

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<td>Braided shoe laces. (Lengths)</td>
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FEDERAL SPECIFICATIONS

Prepared by the Technical Committee on Leather Products of the Federal Specifications Executive Committee.

<table>
<thead>
<tr>
<th>Title</th>
<th>Designation</th>
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<tr>
<td>Leather; bag</td>
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<td>Leather; lace</td>
<td>KK-L-201</td>
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<tr>
<td>Leather; rigging</td>
<td>KK-L-241</td>
<td>5c</td>
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<tr>
<td>Leather; sole, vegetable-tanned.</td>
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<td>5c</td>
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<tr>
<td>Leather; upholstery.</td>
<td>KK-L-291</td>
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<tr>
<td>Cases; brief, leather.</td>
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<td>5c</td>
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OTHER OUTSIDE PUBLICATIONS (Cont'd)

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<td>Leather; case</td>
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<tr>
<td>Leather; strap, black and russet.</td>
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<tr>
<td>Envelopes; leather</td>
<td>KK-E-561 5c</td>
</tr>
<tr>
<td>Aprons; leather, blacksmiths'.</td>
<td>KK-A-606 5c</td>
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<tr>
<td>Skins; chamois</td>
<td>KK-S-416 5c</td>
</tr>
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<td>Holsters; pistol, leather.</td>
<td>KK-H-566 5c</td>
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<td>Leather; harness, black and russet.</td>
<td>KK-L-171 5c</td>
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<td>Bags; hand, leather.</td>
<td>KK-B-50 5c</td>
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<td>Belts: linemen's, safety, leather.</td>
<td>KK-B-151 10c</td>
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<td>Belting; flat, leather, vegetable-tanned.</td>
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