

Evaporate another portion of 10 cc. of the alcoholic filtrate on the steam-bath, dissolve the residue in 9 cc. of water, add 1 cc. of 25% hydrochloric acid (made by mixing 22 cc. of hydrochloric acid with 7 cc. of water) and 0.1 Gm. of resorcin. Transfer the mixture to a thin-walled test-tube of 16 to 19 mm. internal diameter and immerse the test-tube in boiling water or, preferably, in actively flowing steam, for 8 minutes. At the end of this time the liquid is colorless or not more than slightly yellow. A distinct yellow or reddish yellow color indicates sucrose.

Dextrin.—It is noted from the results in Table I, that the U. S. P. test failed to reveal 0.5% dextrin. At first we were surprised at this, but upon second thought we realized that, to the contrary, it would be surprising if it did work. Pure dextrin is quite insoluble in 95% alcohol, even in hot, and it could hardly be expected that it would dissolve under the condition of the test to any appreciable extent in 70% alcohol. In fact when one Gm. of the same dextrin that was used for mixing with lactose was shaken with 20 cc. of 70% alcohol, filtered, the filtrate evaporated, the residue when dissolved in water gave only a reddish yellow color with a drop of iodine T.S., showing that only a trace of dextrin dissolved in the alcohol.

Since iodine gives characteristic colors with aqueous solutions of dextrin, we applied it for the detection of dextrin in lactose and found it eminently satisfactory. One gram of the lactose was dissolved in 10 cc. of water, the solution heated for one minute, cooled and a drop of iodine T.S. added. Several U. S. P. grade samples examined in this manner gave no color other than the yellow due to iodine, while lactose mixed with 0.1% dextrin produced a decided violet to blue color.

Smaller proportions of dextrin, 0.5 to 0.3 mg., are also readily detectable by this method, provided the iodine solution is more dilute, otherwise the yellow color of the unconsumed iodine obscures the brilliancy of color given by the dextrin. One drop of an iodine solution, made by diluting 1 volume of iodine T.S. with 4 volumes of water, gives a distinct violet to blue color with 0.5 mg. dextrin in the presence of one Gm. of lactose. Starch will, of course, also give a blue color with the diluted iodine. The U. S. P. test for starch in lactose serves, therefore, for dextrin as well and to embody the foregoing observation of the obscurity of the dextrin-iodide color with small quantities of dextrin, it is recommended that the U. S. P. test for starch be rewritten as follows:

Dissolve one Gm. of lactose in 10 cc. of water, boil for one minute, cool to room temperature and add one drop of iodine solution made by diluting one volume of iodine T.S. with 4 volumes of water. No red, violet or blue is produced (dextrin, starch).

We are indebted to Dr. W. Schnellbach for valuable assistance in this work.

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THE RESISTANCE OF MINERAL OILS TO DECOMPOSITION BY SUNLIGHT.*

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Observations of the behavior of many samples of mineral oils, over a number of years, have given evidence that a variation exists in different samples in regard to susceptibility to spoiling, when bottled oil is exposed to sunlight, and lead to the belief that the geographical source of the oil has influenced its stability.

* Scientific Section, A. P. H. A., Toronto meeting, 1932.

In order to obtain more concrete evidence on this subject and, if possible, develop a test that might serve to measure light stability, we obtained sufficient quantities of the most widely sold, bottled mineral oils which, to the best of our knowledge, represented different geographical sources. We designated these as A, B and C.¹ For convenience, we re-subdivided the oil into 4-oz. screw-cap flint-sealed, flint bottles. A dozen of each variety was placed in a horizontal position in a large enameled tray. This was covered with $\frac{1}{4}$ " plate glass for protection against weather and then placed where it would be exposed to sunlight during the entire day. Periodically, bottles of each variety of oil were opened and the samples examined for odor and taste.

Sample B developed a definite off taste after exposure to sunlight for thirteen hours. Sample A was somewhat more resistant and developed a slightly disagreeable off taste in twenty-one hours. As periodic examinations were continued, samples A and B gradually became worse until both had an exceedingly disagreeable odor and taste. Sample C was much more resistant to light. Only after an exposure to 170 hours of sunshine, did it develop a detectable off taste.

In order to develop a test which would predict the resistance of mineral oil to decomposition by sunlight, we considered the effect of ultraviolet light.

Using a Cooper-Hewitt ultraviolet light machine, we placed 4-oz. samples of A, B and C, contained in flint bottles, in a horizontal position on a table whose surface was 36 cm. from the quartz mercury lamp. The samples were examined periodically for taste and odor with the following results:

| Exposure in Hours. | Observations. |
|--------------------|---|
| 3 | All tasteless and odorless. |
| 5 | All tasteless and odorless. |
| 13 | All tasteless and odorless. |
| 24 | Sample A—faint off odor and taste. Sample B—definite off odor and taste. Sample C—tasteless and odorless. |
| 40 | Samples A and B—strong off odor and taste. Sample C—faint off odor and taste. |
| 49 | Samples A and B—strong off odor and taste. Sample C—definite off odor and taste. |

The above exposures to ultraviolet light agree with actual exposures to sunlight. Sample B was found poorest by both treatments. Sample A was found more resistant by both treatments. Sample C was found much more resistant than A or B by both treatments.

CONCLUSIONS.

It has been shown that:

1. Heavy liquid petrolatum U. S. P., of varying geographical origin, differs considerably in resistance to spoiling by exposure to sunlight, in flint-glass bottles.
2. The light stability of liquid petrolatum can be measured by comparatively short exposures of the oil, in flint bottles, to ultraviolet light.

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E. R. SQUIBB & SONS.

¹ This product is labeled "Heavy Californian."