

## NOTES AND NEWS

### STABILITY ON STORAGE OF THE HIGH REFRACTIVE INDEX LIQUIDS OF C. D. WEST

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The set of high index liquids proposed by C. D. West\* consists of mixtures of yellow phosphorus, sulfur, and methylene iodide. They cover a range from 1.74 to 2.06, and have proved themselves decidedly superior to any other immersion substance for this index range. The optical properties (as well as some physico-chemical properties), and directions for preparing them have been given by West, together with remarks on the storage and stability relations as far as he could judge after only 9 months experience with the liquids.

At the Mineralogisk Institutt in Oslo these liquids were successfully prepared in December 1936, and have since greatly facilitated the determination of optical properties of various minerals. The liquids were stored under a layer of water in glass stoppered bottles as described by West.

TABLE 1. VARIATION WITH TIME OF REFRACTIVE INDEX OF PHOSPHORUS LIQUIDS

|                                  |        |        |        |        |        |        |        |        |        |         |
|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| Dec. 9, 1936;<br>initial value   | 1.801  | 1.811  | 1.824  | 1.830  | 1.845  | 1.852  | 1.864  | 1.875  | 1.906  | 1.933   |
| Apr. 17, 1939;<br>after 2½ years | 1.8018 | 1.8111 | 1.8144 | 1.8309 | 1.8417 | 1.8522 | 1.8548 | 1.8756 | 1.9060 | 1.9335  |
| Dec. 9, 1941;<br>after 5 years   | 1.8027 | 1.8113 | 1.8143 | 1.8310 | 1.8410 | 1.8521 | 1.8546 | 1.8762 | 1.9052 | 1.9336  |
| May 18, 1945;<br>after 8½ years  | 1.804  | 1.813  | 1.823  | 1.832  | 1.845  | 1.855  | 1.857  | 1.878  | 1.906  | 1.936   |
| Dec. 9, 1936;<br>initial value   | 1.945  | 1.975  | 1.980  | 1.986  | 2.002  | 2.004  | 2.036  | 2.047  | 2.049  | 2.059   |
| Apr. 17, 1939;<br>after 2½ years | 1.9455 | 1.9753 | 1.9800 | 1.9862 | 2.0021 | 2.0045 | 2.0264 | 2.0373 | 2.0500 | 2.0590  |
| Dec. 9, 1941;<br>after 5 years   | 1.9437 | 1.9766 | 1.9816 | 1.9864 | 2.0056 | 2.0086 | 2.0266 | 2.0409 | 2.0520 | 2.0619  |
| May 18, 1945;<br>after 8½ years  | 1.945  | 1.976  | 1.982  | 1.988  | 2.007  | 2.010  | 2.027  | 2.046  | 2.051  | spoiled |

The indices were measured in sodium light at 19° C. by minimum deviation using a hollow 51° prism. The figures are correct to the third decimal, but the fourth decimal is uncertain.

It should be of some interest to mineralogists that during all this time (a period of 5 years) the refractive indices of the several liquids have remained reasonably constant as demonstrated by Table 1. A closer inspection of the table shows the following:

\* West, C. D., Immersion liquids of high refractive index: *Am. Mineral.*, **21**, 245 (1936).

For liquids of the lower range, from 1.80 to 1.95, the variation of the index is almost negligible and frequently within the limits of measurement.

For liquids from 1.97 to 2.06 the index increases slowly but apparently systematically at a rate of about 0.0008 per year.

Thus the stability of the phosphorus liquids on storage is very satisfactory, and it can be concluded that in this respect also, these liquids are excellently suited as immersion media. For the index range covered they are, indeed, in every respect preferable to any other immersion substance thus far known.

*Postscript:*

Thus far we had gotten on December 9, 1941. Although Norway was occupied by Germany our idea was to send the manuscript to the U. S. with which we at that time still had postal connection.

Well—Pearl Harbor and the American-German war put a stop to all plans. In nazi occupied Norway conditions went from bad to worse; in November 1943 the university was raided by German Police Forces, everybody was jailed and the majority of the students deported to Germany's barbaric concentration camps.

The refractive index liquids, however, remained in their drawer until V-E-Day. In May 1945 they were remeasured by Mr. Chr. Oftedahl. Table 1 has been expanded so as to include his results too.

August 1945.

*Post Postscript:*

The M.S. sent from Norway to America in August 1945 apparently never reached its place of destination. The mail was at that time subject to censorship and often uncertain. Here it comes.

August 1946.