



Paper 68-64

Reflectivity and Vickers microhardness of ore minerals

CHART AND TABLES
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EXPLANATORY NOTES

The chart is intended as a laboratory aid in determining opaque minerals in polished sections. The reflectivity and Vickers microhardness data have been compiled from available literature, supplemented by a few determinations by the writers. Several relatively new minerals are included.

Some references cited are compilations that include results of earlier workers. The assistance and cooperation of Mr. I.K. Crain, of the Computer Science Division, Department of Energy, Mines and Resources, who prepared the program for computer handling and machine plotting of the data, and of Dr. E.H. Nickel, Mines Branch, are gratefully acknowledged.

Footnote 1: The Vickers microhardness values used in the tables and chart do not necessarily record the full range reported for a particular mineral. Instead, the mean and range used have been selected by the writers as "best values". Parramita (1963) and other workers have documented the multiplicity of factors that influence microhardness determinations, and it was impossible to properly evaluate many of the wide ranges reported in the literature. Extraordinary values have in some cases been ignored, especially where the weight used appeared to be incompatible with the microhardness value.

Footnote 2: Reflectivity mean and range values used in the tables and chart are "best values" as selected by the writers. Where possible, values are those obtained in white light with a variety of instruments; otherwise the reflectivity obtained at a wavelength of 546 mμ has been used, or recourse has been made to values obtained with green light. Minerals showing strong birefringence necessarily have large "ranges" of R, which, in some cases, may represent two sets of values rather than true ranges. Ranges used may also be due to variance in composition, polish, orientation, instruments used, or other factors, with points of intersection on the chart representing the mean reflectivity value for all apparently acceptable readings compiled from the references shown for that mineral. Although all values are shown as absolute, some of them, such as several taken from Schouren (1962) are based on estimation of reflectivity, and Schouren (p. 4) stated "reflectivities are always given in approximate figures".

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LEGEND

Vickers microhardness (horizontal) and reflectivity (vertical) ranges for mineral identified with intersection point

Mineral with no range of reflectivity reported

Mineral with no range of reflectivity or Vickers microhardness reported

