

General Materials Report

GM-5

Nickel and Vanadium in Residual Oil

Produced and analyzed under the sponsorship of the Western Oil and Gas Association and the American Petroleum Institute. This standard is being distributed by NBS as General Material GM-5.

Sample Size: Varies with method employed

Analysis: Seventeen analyses for nickel and seventeen analyses for vanadium were made to determine the elemental content. The assigned values were:

Nickel (Ni)	93.0 PPM \pm 1.2 (standard deviation)
Vanadium (V)	79.0 PPM \pm 1.2

Procedures: The residual oil was coked with sulfuric acid to form the metal sulfates. The nickel content was determined by a dimethylglyoxime procedure. The vanadium content was determined by a tungstic acid method. The methods are described in R. M. Bean, PhD dissertation, University of Utah, 1961, pp 83-87.

Investigators: The analyses were performed by J. F. Branthaver and W. K. Chae under supervision of Dr. J. M. Sugihara at North Dakota State University.

R. E. Kreider of Standard Oil Company of California represented the sponsors as project officer.

Background: The petroleum industry, through the Western Oil and Gas Association and the American Petroleum Institute, recognized the need for improved precision in the determination of nickel and vanadium in residual oils. The availability of a standard residual oil which could be used for reference purposes in various methods of analysis should improve that precision.

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