ARNETT

'ERIES

ount/ . by osition	Recovery on steel expressed as % of best pipetted value on platinum ($2\sigma \equiv 0{\cdot}6\%$)	α-activity remaining in spent electrolytes %
0	102·1	<0·1
5	101·5	<0·1
7	102·3	<0·1
0	101·5	<0·1
4	101·1	<0·2
	101·5	<0·2

make it possible to use stainless able material for the evaporation

ously been used in attempts to inum or steel with no apparent e present work are due in some being that the non-quantitative n adsorption losses. In addition, tely after rigorous purification, ce from extraneous active com- other ions, and any effects of

is interest and encouragement.

J. Inorg. Nucl. Chem., 1965, Vol. 27, pp. 979 to 987. Pergamon Press Ltd. Printed in Northern Ireland

THE REDUCED DYNAMIC (ABSOLUTE) AND KINEMATIC VISCOSITIES OF THE METALS—MERCURY, SODIUM AND POTASSIUM—OVER THEIR ENTIRE LIQUID RANGE, i.e., FROM THE MELTING POINT TO THE CRITICAL POINT, AND A COMPARISON WITH VAN DER WAALS' SUBSTANCES*

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(*Received* 26 *October* 1964)

Abstract—Recently it has been possible to estimate both the dynamic (absolute) and kinematic viscosities of three metals—mercury, potassium and sodium—over their entire liquid temperature range from experimental data and the use of da C. ANDRADE's II equation and the law of hyperbolic diameter. The reduced viscosities of the three metals, both dynamic and kinematic, v. $T_{red.}$ are derived and compared with the same functions for van der Waals's substances. It is demonstrated that the three liquid metals (and presumably other metals) behave quite differently from van der Waals substances. It is also shown that the behaviour of mercury, as described in the literature, is contrary to present day factual knowledge.

WE have recently been able, as part of our high temperature research program, to estimate the viscosities of the three metals—mercury,[1] sodium and potassium,[2] both dynamic and kinematic,[3] over their *entire liquid temperature range*—from the melting point to the critical point. In connection with our high temperature containment of liquids,[4,5] we are particularly interested in the porperties of liquid metals *and* their vapours *along the saturation line* all the way from the melting point to the critical point. Thus, in the references (1), (2) and (3), the viscosities of the *saturated vapours* of the three metals are included.

In order to apply the new knowledge gained with these three metals to other metals, it is advisable to apply to them the law of corresponding states and express these properties in terms of reduced variables, i.e., the reduced dynamic viscosity, $\eta_{red.}$,

$$\eta_{red.} = \eta/\eta_{crit.},$$

reduced kinematic viscosity, $\nu_{red.}$,

$$\nu_{red.} = \nu/\nu_{crit.}$$

* This work was supported by the U.S. Atomic Energy Commission under Contract No. AT(30-1)-2082.

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