

**EXTRACTION AND  
SPECTROPHOTOMETRIC  
DETERMINATION OF VANADIUM (V)  
WITH  
SALICYLIC ACID AND  
N – PHENYLBENZOXYHYDROXAMIC ACID**

**By**

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## ABSTRACT

Salicylic acid reacts with vanadium (V) in 40% ethanolic solution (extraction pH 2.3,  $\text{H}_2\text{SO}_4 + \text{NH}_3$ ) to give a colourless complex, that is completely extractable into N-Phenyl benzohydroxamic acid in dichloromethane. The dichloromethane extract of vanadium complex forms an intensely coloured species possessing an absorption maximum at 444 nm. The molar absorptivity of the complex under optimum conditions at 444 nm was  $5.5 \times 10^3 \text{ dm}^3 \text{ mol}^{-1} \text{ cm}^{-1}$ . The system obeys Beer's law for up to  $2.0 \text{ mg dm}^{-3}$  at 444 nm. The minimum detection limit lies in the region  $0.6 \text{ mg dm}^{-3}$  vanadium in the extract. Considerable amounts of many cations and anions including 6.4 fold excess of fluoride, a 1.7 fold excess of  $\text{TiO}^{2+}$ , a 1.6 fold excess of  $\text{Cu}^{2+}$ , a 1.5 fold excess of  $\text{Mn}^{2+}$  and a 2.2 fold excess of  $\text{Al}^{3+}$  could be tolerated. Interference from  $\text{Fe}^{3+}$  could be eliminated by reacting with  $\text{PO}_4^{3-}$ . However interference from Zirconium (IV) could not be eliminated.

The proposed method was successfully applied to determine the vanadium content in a standard sample of steel.