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The Chemistry of Protactinium. IX. A Study of the Solvent Extraction of Protactinium(V) from a Perchloric Acid Solution Using Di(2-ethylhexyl)phosphoric Acid as the Extractant\*

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## **Abstract**

Studies of the chemical behavior of protactinium(V) in a perchloric acid solution were carried out by the HDEHP-benzene extraction method. When the protactinium concentration was lower than 10<sup>-7</sup>m, the extraction reaction was considered to proceed as:

$$\begin{split} \text{PaO(OH)$^{2+}$}_{\text{aq.}} + 3(\text{HA})_{\text{2 org.}} = & \text{PaO}_{p}(\text{OH})_{q} \text{A}_{\text{5-2}p-q}(\text{HA})_{\text{2}p+q+1 \text{ org.}} \\ & + 2 \text{H+}_{\text{aq.}} + (2-p-q) \text{H}_{\text{2}} \text{O}_{\text{aq.}} \end{split}$$
 where  $p=1$ ,  $q=0$  or 1, and  $p=2$ ,  $q=0$  and 
$$\begin{aligned} \text{Pa(OH)$}_{\text{3}}^{2+}_{\text{aq.}} + 3(\text{HA})_{\text{2 org.}} = & \text{PaO}_{p}(\text{OH)}_{q} \text{A}_{\text{5-2}p-q}(\text{HA})_{\text{2}p+q+1 \text{ org.}} \\ & + 2 \text{H+}_{\text{aq.}} + (3-p-q) \text{H}_{\text{2}} \text{O}_{\text{aq.}} \end{aligned}$$
 where  $p=0$ ,  $q=0$ , 1, 2, or 3;  $p=1$ ,  $q=0$  or 1 and  $p=2$ ,  $q=0$ .

<sup>\*</sup> The 1572th report of the Research Institute for Iron, Steel and Other Metals. Published in the Bulletin of the Chemical Society of Japan, 44 (1971), 1305.