



PRODUCT SHEET

WBEC resin

Main Applications

- Separation of Pu(IV)
- Separation of Technetium

Packing

Order N°.	Form	Particle size
WB-B10-S, WB-B25-S, WB-B50-S	25g and 50g bottles WBEC resin	50-100 µm
WB-B25-A, WB-B50-A	25g and 50g bottles WBEC resin	100-150 µm
WB-B25-I, WB-B50-I	25g and 50g bottles WBEC resin	300-850 µm

Conditions of utilization

Recommended T of utilization : /

Flow rate : A grade: 0.6 – 0.8 mL/min, utilization with vacuum or with pressure for s grade resin.

Storage : Dry and dark, T<30°C

For additional information see enclosed literature study

LITERATURE STUDY

WBEC RESIN

WBEC (**W**ea**B**ase **E**xtrac**C**hromatographic) Resin is based on a mix of tertiary octyl and decylamines, also called Alamine® 336 (composition see table 1). It is mainly used for the separation of Technetium and Pu(IV).

Table 1 : Composition Alamine® 336 [1]

Amine	rel. content / %
(C ₈ H ₁₇) ₃ N	27
(C ₁₀ H ₂₁)(C ₈ H ₁₇) ₂ N	47
(C ₁₀ H ₂₁) ₂ (C ₈ H ₁₇)N	27
(C ₁₀ H ₂₁)N	2,4

The following extraction equilibria are assumed (example Tc extraction):

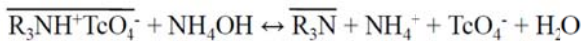
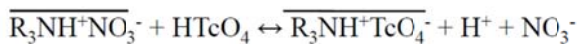


Figure 2 : Extraction equilibria WBEC resin [1]

Overall the WBEC resin shows interesting selectivity for Tc and Pu and to a certain extent for tetravalent actinides; its selectivity is thus similar to TEVA resin, however elution is facilitated. Pu can be eluted with 1M HCl (2) or even slightly higher HCl concentrations and Tc with 1M NH₄OH (2, 3).

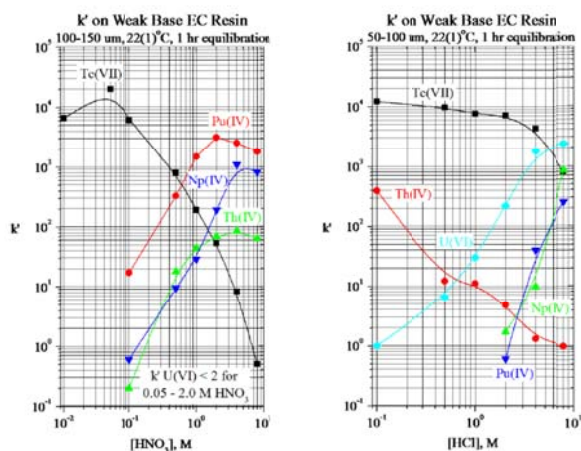


Figure 2 : k' values of selected elements on WBEC resin, HNO₃ and HCl [1]

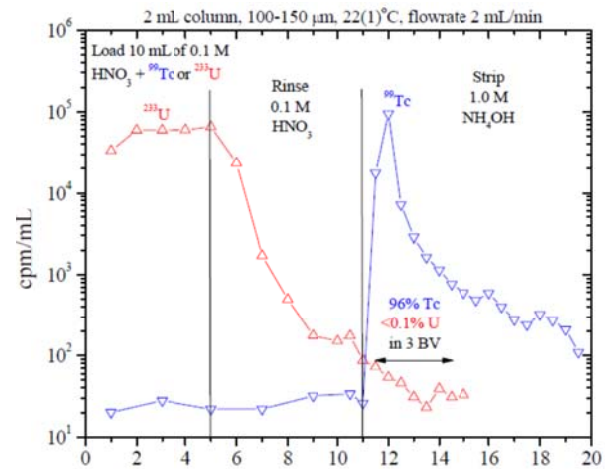


Figure 3 : Tc separation on WBEC resin [2]

Horwitz et al. compared WBEC with strong anion exchange [1X8] and TEVA resin; obtained results and selected elution studies are summarized in the following graphs.

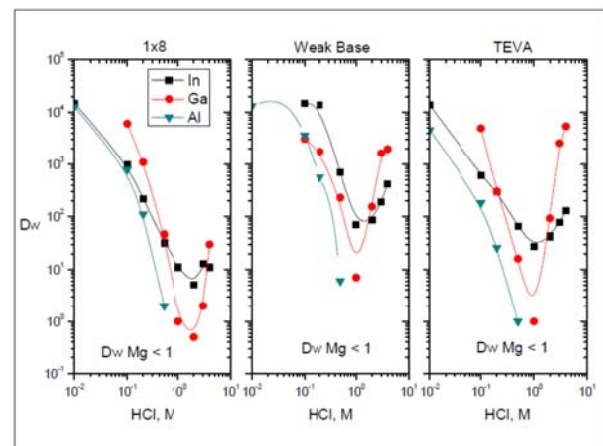


Figure 4 : D_w values of selected elements on 1X8, WBEC and TEVA resin, HCl [4]

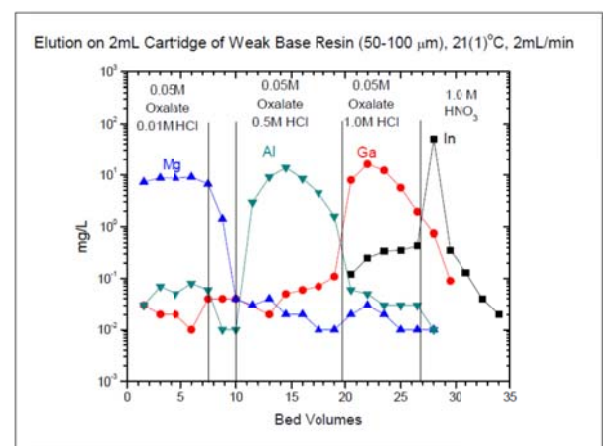


Figure 5 : Elution study: Mg, Al, Ga, In on WBEC in HCl [4]

LITERATURE STUDY

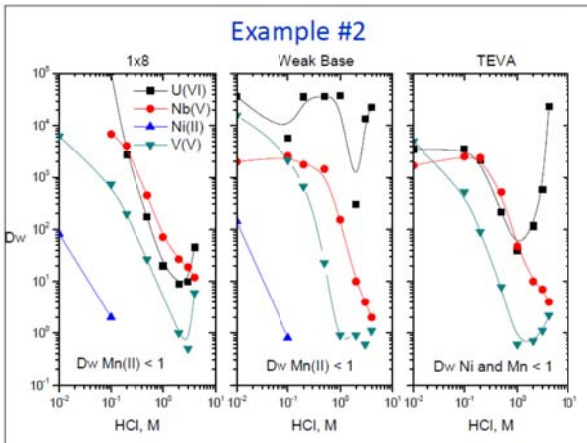


Figure 6 : D_w values of selected elements on 1X8, WBEC and TEVA resin, HCl [4]

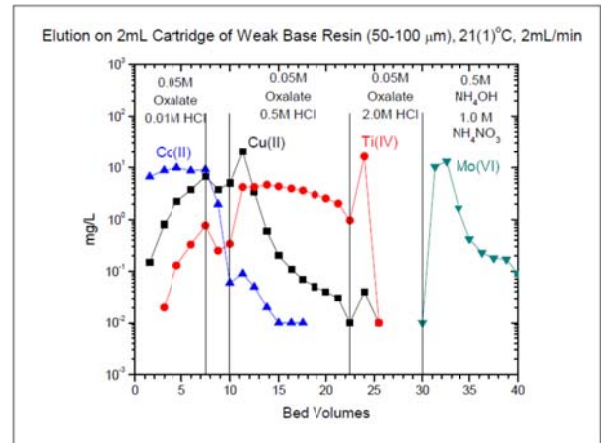


Figure 9 : Elution study: Co, Cu, Ti, Mo on WBEC in HCl [4]

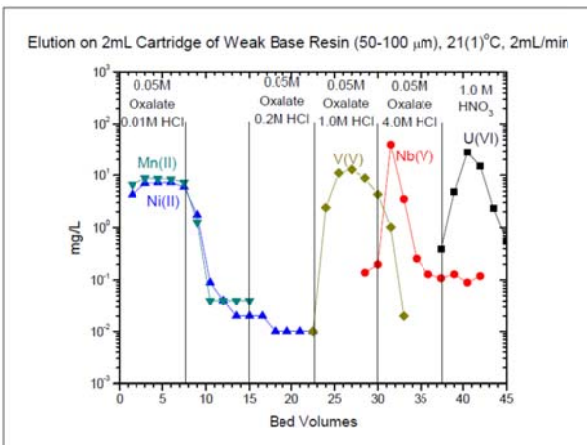


Figure 7 : Elution study: Mn, Ni, V, Nb, U on WBEC in HCl [4]

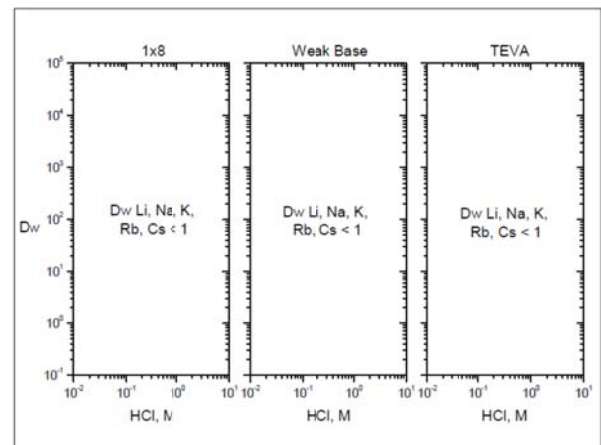


Figure 10 : D_w values of selected elements on 1X8, WBEC and TEVA resin, HCl [4]

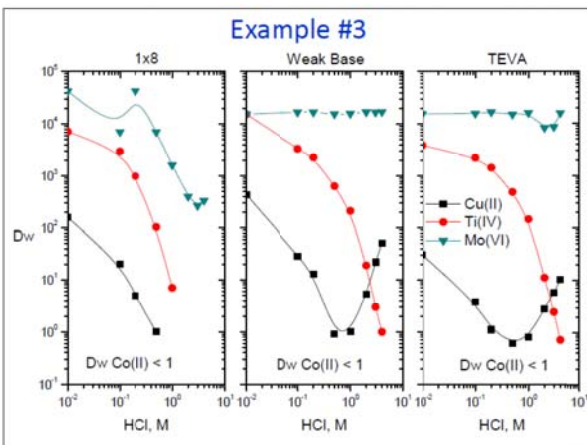


Figure 8 : D_w values of selected elements on 1X8, WBEC and TEVA resin, HCl [4]

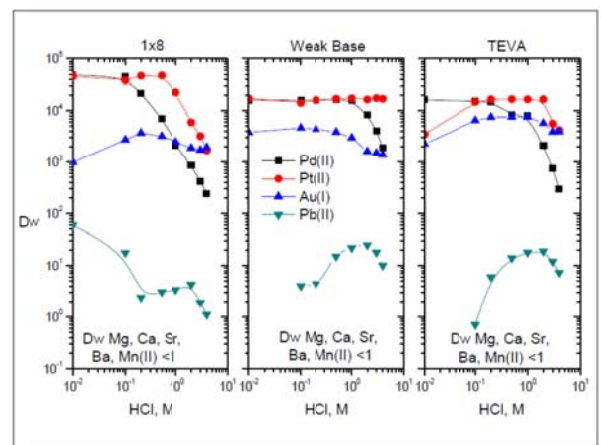


Figure 11 : D_w values of selected elements on 1X8, WBEC and TEVA resin, HCl [4]

LITERATURE STUDY

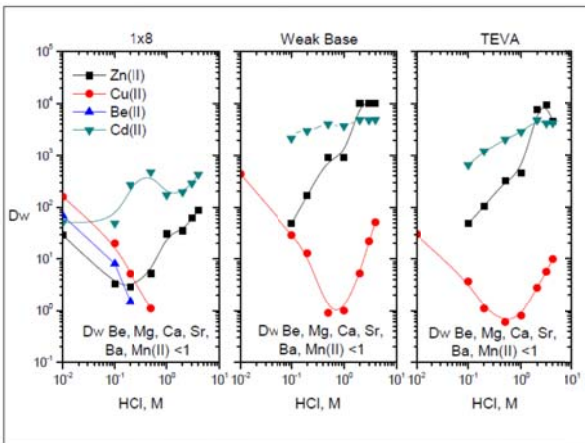


Figure 12 : D_w values of selected elements on 1X8, WBEC and TEVA resin, HCl [4]

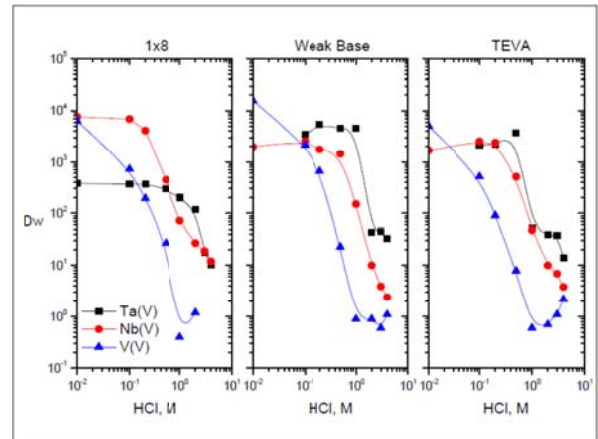


Figure 15 : D_w values of selected elements on 1X8, WBEC and TEVA resin, HCl [4]

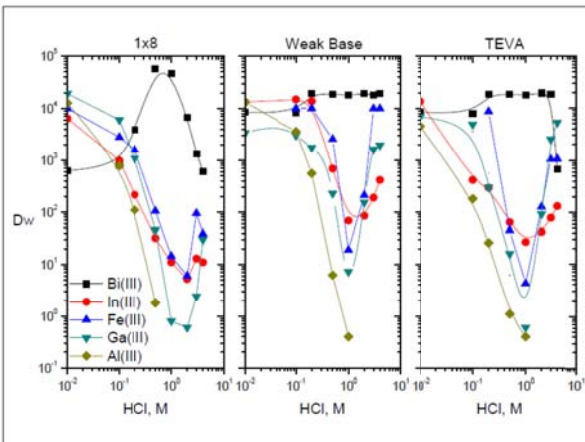


Figure 13 : D_w values of selected elements on 1X8, WBEC and TEVA resin, HCl [4]

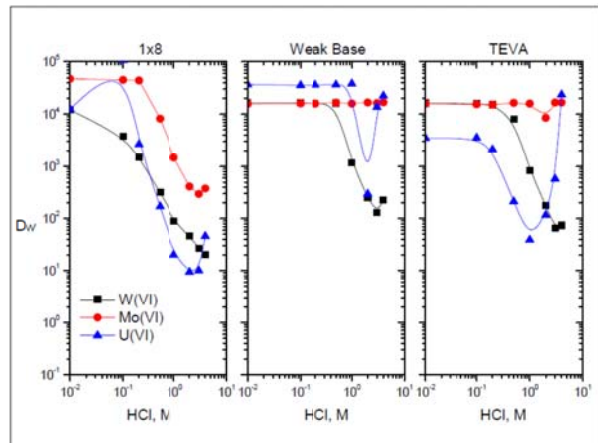


Figure 16 : D_w values of selected elements on 1X8, WBEC and TEVA resin, HCl [4]

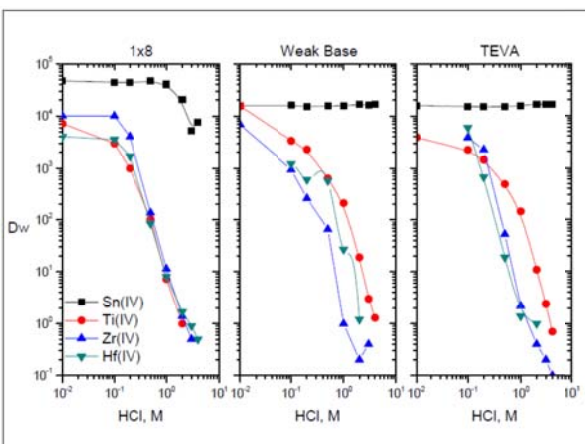


Figure 14 : D_w values of selected elements on 1X8, WBEC and TEVA resin, HCl [4]

Bibliography

- (1) Horwitz P, McAlister D. Old Separations on New Resins and New Separations on Old Resins. RRCM, Destin, FL 2008
- (2) Harvey J Origin of the ARSIIe System. NPL, Teddington (UK), 2010
- (3) Horwitz P, McAlister D. New tools from the Tool Box. Eichrom User Group Meeting, RRCM, Jackson Hole, WY, 2007
- (4) McAlister D, Horwitz P. Separation Methods Utilizing Oxalate-HCl on Anion Exchange Resins. Eichrom User Group Meeting, RRCM, Fort Collins, CO, 2012