

## Supplementary information

*Table S1. Measurement of the pH of the bitterns after sorption stage with polymeric sorbents (1 h in contact with the sorbents).*

Functional group	Sorbent	pH		
		Bittern 1 With Ca and Mg	Bittern 2 Without Ca and Mg	Bittern 3 Low concentration
Tertiary amine	IRA94	8.74 ± 0.33	9.02 ± 0.00	8.82 ± 0.08
	MP62	9.60 ± 0.21	9.73 ± 0.05	9.96 ± 0.03
	A100	9.19 ± 0.04	9.19 ± 0.03	9.17 ± 0.00
Quaternary amine	A500Plus	7.17 ± 0.00	7.22 ± 0.01	7.25 ± 0.04
	MP500	7.87 ± 0.03	7.88 ± 0.02	7.91 ± 0.02
	K6362	6.95 ± 0.07	7.00 ± 0.07	7.02 ± 0.01
	IRA904	6.61 ± 0.28	6.73 ± 0.04	6.08 ± 0.08
Tertiary and quaternary amine	MP64	9.79 ± 0.04	9.55 ± 0.47	10.04 ± 0.02
Carboxylic with amines	K3	4.34 ± 0.01	4.76 ± 0.46	4.41 ± 0.04
	K5	4.91 ± 0.03	5.11 ± 0.14	5.14 ± 0.04
Sulphonic	C150	7.07 ± 0.02	7.10 ± 0.01	7.05 ± 0.21
	C160	7.00 ± 0.04	7.06 ± 0.03	7.17 ± 0.07
	K2629	0.56 ± 0.01	0.59 ± 0.01	0.62 ± 0.01
	S100	3.19 ± 0.03	3.20 ± 0.01	3.19 ± 0.02
Phosphonic and sulphonic	S957	0.90 ± 0.02	0.87 ± 0.08	1.00 ± 0.01
Aminophosphonic	S940	7.24 ± 0.01	6.90 ± 0.67	7.59 ± 0.04
	IRC747	9.33 ± 0.00	9.73 ± 0.02	9.73 ± 0.37
Bis-(2,4,4- trimethylpentyl-) phosphinic	MTX8010	3.76 ± 0.00	4.14 ± 0.06	4.11 ± 0.02
Iminodiacetic	IRC748	9.05 ± 0.04	9.26 ± 0.01	9.27 ± 0.01
	TP207	9.29 ± 0.01	9.56 ± 0.04	9.86 ± 0.01
	S9320	9.46 ± 0.01	9.73 ± 0.02	9.62 ± 0.57
	TP208	9.59 ± 0.00	9.80 ± 0.01	10.20 ± 0.01
N- Methylglucamine	S108	9.22 ± 0.01	9.25 ± 0.02	9.29 ± 0.01
	CRB03	9.43 ± 0.03	9.45 ± 0.02	9.45 ± 0.01
	CRB05	9.46 ± 0.01	9.49 ± 0.01	9.58 ± 0.01
N-Methylpyridine	Sopolimer-8	7.55 ± 0.03	7.59 ± 0.08	7.38 ± 0.03

*Table S2. Na sorption removal from the bitters after sorption stage with polymeric sorbents (1 h in contact with the sorbents).*

Functional group	Sorbent	Na sorption (%)		
		Bittern 1 With Ca and Mg	Bittern 2 Without Ca and Mg	Bittern 3 Low concentration
Tertiary amine	IRA94	<1	<1	<1
	MP62	<1	<1	<1
	A100	<1	<1	<1
Quaternary amine	A500Plus	<1	<1	<1
	MP500	<1	<1	<1
	K6362	<1	<1	<1
	IRA904	<1	<1	<1
Tertiary and quaternary amine	MP64	<1	<1	<1
Carboxylic with amines	K3	<1	<1	<1
	K5	<1	<1	<1
Sulphonic	C150	<1	<1	<1
	C160	<1	<1	<1
	K2629	7.3 ± 0.7	7.6 ± 1.7	5.7 ± 0.7
	S100	<1	<1	<1
Phosphonic and sulphonic	S957	2.7 ± 1.5	5.0 ± 1.4	<1
Aminophosphonic	S940	<1	<1	<1
	IRC747	<1	<1	<1
Bis-(2,4,4- trimethylpentyl-) phosphinic	MTX8010	<1	<1	<1
Iminodiacetic	IRC748	<1	<1	<1
	TP207	<1	<1	<1
	S9320	<1	<1	<1
	TP208	<1	<1	<1
N- Methylglucamine	S108	<1	<1	<1
	CRB03	<1	<1	<1
	CRB05	<1	<1	<1
N-Methylpyridine	Sopolimer-8	<1	<1	<1