REGENERANT CHEMICALS

Recommended Purity

DESCRIPTION

To ensure optimum performance of ion exchange resins, the chemicals used for resin regeneration must contain low levels of impurities. Substances that cause precipitation during regeneration cannot be tolerated. Impurities that dissociate and produce ions competing with the regenerant ions, i.e. cations other than H^+ in the acids and anions other than OH^- in the alkalis, reduce regeneration efficiency and operating capacity, and increase ionic leakage.

The recommended regenerant purity values shown in this document are valid for industrial water treatment. Applications such as food or drinking water processing, or the production of ultrapure water, may require additional regenerant specifications.

HYDROCHLORIC ACID – HCl (CONTAMINANTS BASED ON 35% HCl)

Usually supplied as a colourless to yellow liquid containing 32 to 37% HCl (w/w)

	Measured as	Recommendation	DIN 19610
Iron	mg/kg as Fe	< 30	< 20
Sulphate	mg/kg as SO_4	< 2000	< 5000
Oxidants	mg/kg as Cl_2	< 3	< 100
Arsenic	mg/kg as As	< 5	
Lead	mg/kg as Pb	< 5	

SODIUM HYDROXIDE – NaOH (CONTAMINANTS BASED ON 100% NaOH)

Supplied as a colourless liquid containing 10 to 50% NaOH (w/w), or in solid flakes or pellets.

	Measured as	Recommendation	DIN 19618
Purity	% w/w		≥ 98
Chloride	mg/kg as NaCl	< 1000	
Carbonate	mg/kg as Na_2CO_3	< 3000	
Sulphate	mg/kg as Na_2SO_4	< 2000	
Chlorate	mg/kg as $NaClO_3$	< 500	
Iron	mg/kg as Fe	< 10	
Aluminium	mg/kg as Al	< 10	< 1000
Silica	mg/kg as SiO_2	< 100	
Mercury	mg/kg as Hg	< 1.5	
Hardness	mg/kg as Ca	< 100	

SULPHURIC ACID – H_2SO_4 (CONTAMINANTS BASED ON 96% H_2SO_4)

Usually supplied as a colourless to yellow-brown liquid containing 92 to 99 % H_2SO_4 (w/w)

	Measured as	Recommendation	DIN 19618
Purity	%		> 93
Iron	mg/kg as Fe	< 100	< 20
Insolubles	mg/kg	nil	nil
Arsenic	mg/kg as As	< 5	
Lead	mg/kg as Pb	< 5	
Oxidants	mg/kg as Cl_2	< 10	

SODIUM CHLORIDE – NaCl (CONTAMINANTS BASED ON 100% NaCl)

Supplied as a powder, granules or pellets.

	Measured as	Recommendation	DIN 19618
Purity	% w/w		≥ 97
Water	% H2O		< 2
Hardness	% as Ca	< 0.5	< 0.4
Sulphate	% as SO_4	< 1	< 1
Insolubles	%	nil	< 1
Soluble Iron	mg/kg as Fe	nil	nil

NITRIC ACID – HNO_3

Nitric acid is not recommended for the regeneration of cation exchange resins, because of the hazards incurred in handling the chemical. Nitric acid can react violently with organic compounds and cause explosive type reactions. Before contemplating the use of nitric acid, consult sources knowledgeable in the handling of this material.

Safety

Please note, that polymeric resins can swell significantly between the aqueous and pure solvent phases or when rewetted. Care should be taken. Glass columns and even steel columns can break. Wear glasses when using resin systems. To avoid high pressure build up, an operation in counter current or up-flow through the polymer bed shall be considered.

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