

Table 3: Overview of HCl applications and ES

ES Number	IU Number	Short description of Identified Use	Volume (tonnes)	Manufacture	Formulation	Identified uses			Resulting life cycle stage		SU	PC	PROC	ERC
						Industrial	Professional	Consumer use	Service life (for articles)	Waste stage				
Manufacture, Recycling & Distribution														
ES1	1	Manufacture of HCl in gaseous and liquid form (Manufacture of the substance including storage, maintenance, sampling and associated laboratory activities)		X		X					n.a.	n.a.	1,2,3,4,15	1
	2	Recycling of HCl				X					n.a.	n.a.	1,15	1
	3	Distribution of the substance (Industrial) (Un)loading of marine vessel/barge, rail/road car and IBC, and repacking including drums and small packs.				X					n.a.	n.a.	8a,8b, 9	1 (loading) 2 (repackaging)
Use as Intermediate by Industry														
ES2	4	Intermediate (for the production of bulk, large scale chemicals, fine chemicals, soaps & detergents; pharmaceuticals; food and feed; cosmetics; plant protection products etc.				X					0, 4, 8, 9, 11, 12, 13, 19	19	1, 2, 3, 4,9,15	6A
Formulation & Re-packing by Industry & by Professionals														
ES3a	5	Formulation & (re)packing of substances and mixtures (Industrial)			X	X					n.a.	20, 35, 37	1,2,3,4,5,8a,8b,9	2

ES Number	IU Number	Short description of Identified Use	Volume (tonnes)	Manufacture	Formulation	Identified uses			Resulting life cycle stage		SU	PC	PROC	ERC
						Industrial	Professional	Consumer use	Service life (for articles)	Waste stage				
ES3b	5	Formulation & (re)packing of substances and mixtures (Professional)			X		X				10	20, 35, 37	1,2,3,4,5,8a,8b,9	2 (modification)
Use by Industry														
ES4	6	Use as pH-regulator, flocculant, precipitant, neutralization agent (industrial) Use in the industrial production of - formulations like washing & cleaning products, metal working fluids, etc. - chemicals and articles, like base and precious metals, dyestuffs, plant protection products, etc. - food and feed Regeneration of ion-exchange resins, Treatment of waste and waste water, brine in the chlor-alkali electrolysis process, etc. Metal surface treatment (etching, pickling, descaling, etc.)				X					0, 4, 9	20	1,2,3,4,9,19	6B
	7	Use as pH regulator, flocculant, precipitant, neutralization agent, etc. (in the mining and offshore industries, acidification of wells / drilling muds for the extraction of crude petroleum and gas)				X					2a, 2b	20	1,2,3,4,9 <small>Error! Bookmark not defined.</small>	6B
	8	Use as washing and cleaning agent (in the manufacture of textiles, leather, fur, etc.)				X					5	34, 35	1,2,3,13	4
	9	Use as washing and cleaning product (etching, pickling, rust removal, descaling, etc.)				X					0, 14, 15, 16	35	10, 13	4, 6B
	10	Use as water treatment chemical by industry (treatment of fresh water, cooling water and waste water, intermediate for the generation of ClO ₂ for water disinfection)				X					0	37	1,2,3,4,13	4, 6B

ES Number	IU Number	Short description of Identified Use	Volume (tonnes)	Manufacture	Formulation	Identified uses			Resulting life cycle stage		SU	PC	PROC	ERC
						Industrial	Professional	Consumer use	Service life (for articles)	Waste stage				
	11	Use as laboratory chemical (industrial)				X					0	21	15	4
Use by Professionals														
ES5	12	Use as pH-regulator, flocculant, precipitant, neutralization agent, etc. by Health Services (washing and cleaning products, water and waste water treatment, etc.)					X				20	20	1,2,3,13	8b
	13	Use as cleaning agent (removal of lime, cement and rust stains from bricks, tiles, etc (descaling agent).					X				0	35	8a, 10, 11, 13,19	8b, 8e
	14	Use as cleaning agent (toilet cleaner, descaling agent).					X				0, 20,	35	10, 13, 19	8b, 8e
	15	Use for water treatment by professionals/public domain (treatment of fresh and swimming pool water, cooling water and waste water, intermediate for the generation of ClO2 for water disinfection)					X				0, 23,	37	1,2,3,4,13	8b, 8e
	16	Use as pH-regulator, flocculant, precipitant, neutralization agent, etc. (regeneration of ion-exchanges resins; back-washing of filter beds in water treatment units, waste treatment, etc.)					X				0, 23	20	1,2,3,13	8b, 8e
	17	Use as laboratory chemical (professional)					X				0, 23	21	15	8a
Use by Consumers														
ES6	18	Use for water treatment (for swimming pools)						X			n.a.	37	n.a.	8b, 8e
	19	Use as pH-regulator, flocculant, precipitant, neutralization agent, etc. (regeneration of ion-exchanges resins, back-washing of filter beds, etc. in domestic and mobile water treatment units)						X			n.a.	20	n.a.	8b, 8e

ES Number	IU Number	Short description of Identified Use	Volume (tonnes)	Manufacture	Formulation	Identified uses			Resulting life cycle stage		SU	PC	PROC	ERC
						Industrial	Professional	Consumer use	Service life (for articles)	Waste stage				
	20	Use as cleaning agent (removal of lime, cement and rust from bricks, tiles, etc.)						X			n.a.	35	n.a.	8b, 8e
	21	Use as cleaning agent (sanitary cleaner, etc.)						X			n.a.	35	n.a.	8b, 8e
	22	Use as reagent in experimental kits						X			n.a.	21	n.a.	8b
	23	Use in welding and soldering products						X			n.a.	38	n.a.	8b