

Table(4) Use during Service life of Long Life Articles

UC code (#)	Use Category (UC)	SUC code	Sub Use Category (SUC)	Emission Factors over service life		Service life (Year)
				Air	Water	
Intermediates						
01	Intermediates	a	Synthetic raw materials, polymerization raw materials, prepolymers			
		b	Polymerization initiators			
		z	Others			
Solvents						
02	Solvents for paints, varnishes, coatings, printing inks and biocidal products	a	Solvents for paints			
		b	Solvents for paint removers			
		c	Solvents for varnishes			
		d	Solvents for coatings, solvents for resist inks			
		e	Solvents for printing inks, solvents for devices			
		f	Solvents for biocidal products			
		z	Others			
03	Solvents for adhesives, pressure sensitive	a	Solvents for diluent of adhesives, solvents for pressure sensitive			
		b	Solvents for adhesive removers			
		c	Solvents for binding plastic resins, solvents for rubber resins			
		d	Solvents for sealants			
		z	Others			
04	Solvents for cleaning and degreasing metals	a	Solvents for cleaning, solvents for degreasing metals			
		z	Others			
05	Solvents for cleaning fabrics «laundry, dry cleaning industry»	a	Solvents for dry cleaning			
		b	Solvents for stain removals, solvents for extracting of dry cleaning			
		z	Others			
06	Solvents for cleaning others [excl. #04,05]	a	Photoresist developing solvents, resist removing solvents			
		z	Others			
07	Solvents for chemical manufacture and processing  [excl. #02-06]	a	Solvents for synthesis			
		b	Solvents for spinning, solvents for membranes			
		c	Solvents for extraction, purification and refinings			
		d	Solvents for diluents			
		z	Others			
08	Solvents for aerosol	a	Solvents for aerosol, aerosol propellants			
		z	Others			
09	Other solvents	z	Other solvents			
Not solvents						
10	Chemical process regulators	a	Catalysts, catalyst supports			
		b	Ion exchange resins, ion exchange membranes, separation membranes, diaphragms, dewaxing agents			
		c	Emulsifiers, dispersing agents			
		d	Polymerization regulators, polymerization inhibitors, stabilizers			
		e	Optical resolution agents			
		z	Others			
11	Colorants  [excl. #12,13,15,16,25,26,29]	a	Coloring agents (e.g. dyes, pigments)	0	0.0001	10
		b	Fluorescent brightening agents	*	*	10
		c	Color formers, color developers			
		z	Others	\$	\$	\$
12	Washing and cleaning products (I) «Industrial use»  [excl. #25,26]	a	Surface active agents			
		b	Inorganic alkalis, organic alkalis, inorganic acids, organic acids, bleaching agents			
		c	Builders and additives (e.g. chelating agents, anti-redeposition agents, anti-foaming agents)			
		d	Corrosion inhibitors			
		z	Others			
13	Washing and cleaning products (II) «Household use, Institutional use»	a	Surface active agents			
		b	Softening agents			
		c	Inorganic alkalis, organic alkalis, inorganic acids, organic acids, bleaching agents			
		d	Builders and additives (e.g. chelating agents, anti-redeposition agents, enzymes, fluorescent brighteners, UV absorbers)			
		z	Others			
14	Polishes and wax blends (e.g. for floors, cars, leathers)	a	Waxes			
		b	Emulsifiers, dispersing agents			
		z	Others			
15	Paints and coatings [incl. primers]	a	Resins for paints, resins for coatings			
		b	Colorants (e.g. dyes, pigments, bright agents)	*	*	10
		c	Monomers/oligomers for curing coating materials, binder components	*	*	10
		d	Crosslinking agents, curing agents, thickeners, polymerization initiators, photoacid generators, photobase generators			
		e	Plasticizers, fillers	*	*	5
		f	Stabilizers	*	*	10
		g	Anti-skinning agents, thickeners, anti-foaming agents, anti-blocking agents, levelling agents, conductive agents	*	*	10
		h	Emulsifiers, dispersing agents, wetting agents, penetrants, surface conditioners, film-forming agents	*	*	10
		i	Corrosion inhibitors, anti-corrosive agents, preservatives, antimicrobial agents (antifungal agents, antibacterial agents)	*	*	10
		j	Siccatives, wetting agents, flame retardants, water repellent agents	*	*	10
		z	Others	\$	\$	\$
16	Printing ink and toners [incl. ink for stationaries and resist inks]	a	Resins for printing inks, resins for toners			
		b	Colorants (e.g. dyes, pigments), thermosensitive dyes, pressure-sensitive dyes, fluorescent brighteners, developers			
		c	Monomers/oligomers for radiation curable inks, sensitizers, photo			
		d	Plasticizers, fillers			
		e	Stabilizers			
		f	Anti-skinning agents, thickeners, anti-foaming agents, anti-blocking			
		g	Emulsifiers, dispersing agents, wetting agents, penetrants, film-forming agents			
		h	Charge control agents, flow agents, rub resistant agents, slipping			
		i	Siccatives, pre-wetting agents			
		z	Others			

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UC code (#)	Use Category (UC)	SUC code	Sub Use Category (SUC)	Emission Factors over service life		Service life (Year)
				Air	Water	
17	Antifoulants for ship bottom paints, antifoulants for fish nets	a	Resins for antifoulants [incl. additives]	0	0.9	3
		b	Antifoulants for ship bottom paints	0	0.9	3
		c	Antifoulants for fish nets	0	0.9	1
		z	Others	0	0.9	1
18	Biocidal products (I) [On to/in to articles]	a	Antimicrobial agents (antifungal agents, antibacterial agents), insecticides, preservatives, anti-ant agents	0	0.0014	15
		b	Spreading agents, emulsifiers			
		z	Others	\$	\$	\$
19	Biocidal products (II) [Not onto/in to articles] 《Industrial use》	a	Biocides for nuisance (insect control agents, insect attractants, insecticide synergists)			
		b	Gas sterilants, fumigants			
		c	Antimicrobial agents (antifungal agents, antibacterial agents), disinfectants, preservatives			
		d	Spreading agents, emulsifiers			
		z	Others			
20	Biocidal products (III) 《Household use, Institutional use》	a	Biocides for nuisance			
		b	Biocides for fabric insect pest, moth repellent			
		c	Anti-ant agents			
		d	Antimicrobial agents (antifungal agents, antibacterial agents), disinfectants, preservatives			
		e	Non-crop land herbicides			
		f	Spreading agents, emulsifiers			
		z	Others			
21	Explosive products [incl. fireworks]	a	Low explosives, high explosives, explosive devices [excl. #21-b]			
		b	Gas generants for automotive safety devices			
		z	Others			
22	Air fresheners, deodorizers	a	Fragrances (for washing and cleaning products) [excl. #22-b,c]			
		b	Air fresheners			
		c	Deodorizers			
		d	Emulsifiers, dispersing agents			
		z	Others			
23	Adhesives and sealants	a	Resins for adhesives, resins for sealants			
		b	Binder components (e.g. monomers, prepolymers, curing agents, curing accelerators, initiators, coupling agents)			
		c	Plasticizers, fillers	*	*	20
		d	Stabilizers	*	*	20
		e	Anti-skinning agents, thickening agents, anti-foaming agents, anti-blocking agents, leveling agents			
		f	Surface control agents, dispersing agents			
		g	Preservatives, antimicrobial agents (antifungal agents, antibacterial agents)	*	*	10
		h	Flame retardants, electroconductive agents	*	*	20
		z	Others	\$	\$	\$
24	Photoresist materials, photographic materials and printing plate materials	a	Photo-, electron sensitive resins (e.g. photoresists, presensitized plates)			
		b	Monomer, oligomers of photo-, electron sensitive resins			
		c	Photoresists, photoreceptors for electrography, photopolymerization initiators, photoacid generators, photobase generators			
		d	Dye-forming couplers			
		e	Emulsifiers, dispersing agents			
		f	Fixing agents, stabilizers			
		g	Hardening agents, sensitizers, desensitizers, crosslinking density enhancers, polymerization initiators, resist additives			
		h	Developers, water-soluble processing agents, resist removers			
		z	Others			
25	Textile products [incl. nonwoven fabric processing]	a	Base materials for articles (synthetic fibers, nonwovens)			
		b	Coloring agents (e.g. dyes, pigments), fluorescent brightening agents	0	0.6	10
		c	Sizing agents			
		d	Anti-flaming agents, flame retardants	0	0.6	10
		e	Impregnated reinforcing agents, dye fixing agents			
		f	Anti-static agents, hydrophilic agents	0	0.6	10
		g	Softening agents			
		h	Form stabilizing agents			
		i	Water repellent agents, oil repellent agents, water proofing agents, soil resistant finishing agents	0	0.6	10
		j	Antimicrobial agents (antifungal agents, antibacterial agents), anti-discoloration agents, UV absorbers	0	0.3	5
		k	Spinning, knitting and weaving oils, spinning, knitting and weaving oil			
		l	Washing agents, scouring and washing agents, lubricants			
		m	Chelating agents			
		n	Bleaching agents, discharging agents			
		o	Levelling agents, penetrants, dyeing accelerators, mordanting assistants, printing pastes			
		p	Emulsifiers, dispersing agents, anti-forming agents			
		q	Mercerizing assistants			
		r	Desizing agents			
		z	Others	\$	\$	\$
26	Paper and board products	a	Colorants (e.g. dyes, pigments), fluorescent brightening agents			
		b	Sizing agents, fixing agents, fillers			
		c	Coating agents			
		d	Anti-flaming agents, flame retardants, anti-static agents			
		e	Paper strength additives, retention aids, fixing agents, corrosion			
		f	Water repellent agents, oil repellent agents, water proofing agents			
		g	Bulking promoters, softening agents			
		h	Cooking liquors, pH regulators			
		i	Slimeicides, pitch control agents			
		j	Bleaching agents, stabilizers for bleaching bath			
		k	Emulsifiers, dispersing agents, anti-forming agents, de-inking agents, detergents			
		z	Others			

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				Air	Water	
27	Plastic products	a	Base materials for molded products(e.g. plastics, artificial leathers,			
		b	Super water-absorbing materials			
		c	Plasticizers, dispersing agents	0.0005	0.016	10
		d	Stabilizers	0.0005	0.016	10
		e	Fillers, diluents, polymer decomposition accelerators	0	0.0001	10
		f	Nucleating agents			
		g	Internal lubricants, internal mold release agents	0	0.0001	10
		h	Anti-clouding agents, anti-fogging agents	*	*	10
		i	Flame retardants, anti-static agents, wavelength conversion agents	0.0005	0.016	10
		j	External lubricants, external mold release agents			
		k	Foaming agents, radical generators	0	0	10
		l	Casting, foam casting materials(e.g. monomers, prepolymers)			
		m	Curing agents, crosslinking agents, crosslinking aids, sensitizers, polymerization initiators			
		n	Curing accelerators			
		v	Other additives (e.g. reforming agents)	*	*	10
		z	Others	\$	\$	\$
28	Rubber products	a	Base materials for molded products (e.g. elastomers, synthetic rubbers)			
		b	Vulcanization accelerators, vulcanization accelerator activators	0.01	0.11	5
		c	Vulcanizing agents, crosslinking agents, crosslinking coagents			
		d	Plasticizers, reinforcing materials, fillers	0.01	0.11	5
		e	Stabilizers(e.g. anti-degradants, anti-oxidants)	0.01	0.11	5
		f	Anti-scorch agents, masticating accelerators (peptizing agents), internal lubricants, internal release agents	0.01	0.11	5
		g	Latex coagulants, emulsifying, dispersing agents, anti-settling agents	0.01	0.11	5
		h	Flame retardants, anti-static agents	0.01	0.11	5
		i	External lubricants, external mold release agents			
		j	Blowing agents	0.01	0.11	5
		k	Rubber reclaiming agents			
		v	Other additives	0.01	0.11	5
		z	Others	\$	\$	\$
29	Leather products	a	Tanning agents	*	*	10
		b	Tanning finishing agents(e.g. bleaching agents, colorants and auxiliaries, water repellent agents, leather oils, defatting agents, fatliquoring	*	*	10
		c	Pretanning agents(e.g. defatting agents, deliming agents)			
		z	Others	\$	\$	\$
30	Glass, enamel and cement products	a	Glass raw materials	*	*	30
		b	Glass additives(e.g. tempering agents, sizing agents, anti-clouding agents, UV cutting agents)	*	*	30
		c	Glass processing aids(e.g. mold release agents, pH regulators)			
		d	Enamel raw materials	*	*	30
		e	Enamel additives(e.g. transfer printing agents, materials for frit	*	*	30
		f	Enamel processing aids(e.g. neutralizing agents, nickel-treatment			
		g	Cement raw materials	*	*	30
		h	Cement additives(e.g. additives for blended cements, expansive agents, hardening agents)	*	*	30
		z	Others	\$	\$	\$
31	Ceramics and porcelain, refractory and fine ceramics products	a	Raw materials of ceramics, raw materials of porcelain, refractory raw materials, fine ceramics raw materials	*	*	30
		b	Ceramics additives, porcelain additives, refractories additives, fine ceramics additives(e.g. sintering aids)	*	*	30
		c	Molding aids(e.g. binders, thickeners, plasticizers, lubricants, dispersing agents)			
		d	Lubricants, mold release agents	\$	\$	\$
32	Grinding wheel, abrasive compound, friction material and solid lubricant products	a	Raw materials of grinding wheel, raw materials of abrasive compound, raw materials of friction material, raw materials of solid lubricant	*	*	5
		b	Grinding wheel additives, abrasive compound additives, friction material additives, solid lubricant additives	*	*	5
		c	Lubricants, mold release agents			
		z	Others	\$	\$	\$
33	Metal products [Raw materials of metal and alloy : #1, colorants : #11, surface treatment products : #34, welding and soldering products : #35, metal working fluids : #37]	a	Metal additives (e.g. inoculation agents)			
		b	Metalworking aids(e.g. fluxes)			
		c	Molding sand binders, curing agents for binders, molding sand additives			
		d	Release agents			
		z	Others			
34	Surface treatment chemicals [Defatting and/or cleaning agents used for pre- or post-treatment of plating : #04 (non-aqueous, semi-aqueous) or #12 (aqueous)] [excl. #4-6,12-15,17,25-27,30-32,38,44]	a	Plating agents			
		b	Plating bath additives			
		c	Chemical conversion coating agents			
		d	Vacuum plating agents (for e.g. chemical vapor deposition), thermal spraying agents			
		e	Surface-hardening treatment agents (for e.g. carburizing, nitriding)			
		f	Fluorinating agents, silvating agents			
		g	Etching agents, sputter etching agents, abrasive blasting materials			
35	Welding and soldering products	a	Welding fluxes			
		b	Brazing and soldering fluxes (e.g. anti-oxidant materials for solder			
		c	Welding gas, gas for fusion cutting			
		z	Others			
36	Hydraulic fluids, insulating oils, process oils, lubricating oils (e.g. engine oils, bearing oils, compressor oils, greases) [excl. #37]	a	Base oils for hydraulic fluids, lubricating oils			
		b	Base oils for insulating oils			
		c	Base oils for process oils	0.01	0.11	5
		d	Thickeners			
		e	Additives for hydraulic fluids, lubricating oils			
		f	Additives for insulating oils			
		g	Additives for process oils	0.01	0.11	5
37	Metalworking fluids (e.g. cutting oils, rolling oils, press oils, quenching oils), rust preventive oils	a	Base oils for water-soluble metalworking fluids	\$	\$	\$
		b	Base oils for water-insoluble metalworking fluids, rust preventive oils			
		c	Additives for water-soluble metalworking fluids			
		d	Additives for water-insoluble metalworking fluids, rust preventive oils			
		z	Others			

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				Air	Water	
38	Electrical and electronic products  [incl. chemicals used for production of subject materials]     [Insulating oils: #36]	a	Magnetic materials[excl. #38-f], electrical conductive materials, superconductive materials, fluorescent materials	*	*	20
		b	Semiconductor materials, organic semiconductor materials, liquid crystal materials	*	*	10
		c	Dielectric materials, electrical resistance materials, solid electrolyte materials, electrolytic solution materials, separator materials for fuel	*	*	20
		d	Optical waveguide materials[incl. optical fibers], optical film materials, optical materials for electronic devices	*	*	20
		e	Encapsulation materials, insulating materials, shielding materials	*	*	20
		f	Electronic storage media materials	*	*	10
		z	Others	\$	\$	\$
39	Electrical batteries	a	Solid electrolytes, electrolytic solution materials, electrical insulators, battery separators			
		b	Electrode materials (e.g. cathode and anode active materials, current collectors, current collectors, binders), depolarizers			
		z	Others			
40	Water treatment chemicals	a	Corrosion and rust preventive agents, scale inhibitors, algicides			
		b	Metal ion scavengers, sequestering agents, water softeners			
		c	Ion exchangers, separation membranes			
		d	Oxidants, reductants, pH regulators			
		e	Anti-foaming agents, flocculants, filter aids , dewatering aids, ion exchange resin regeneration agents			
		z	Others			
41	Desiccants and absorbents	a	Desiccants			
		b	Absorbents (e.g. deodorizers, denitration agents, gas absorbents)			
		c	Absorbents (e.g. oxygen scavengers)			
		z	Others			
42	Heat transfer fluids	a	Refrigerants, coolants			
		b	Heating mediums			
		z	Others			
43	Anti-freeze and de-icing products	a	Anti-freezing agents			
		b	Anti-corrosive agents, corrosive inhibitors			
		z	Others			
44	Additives for building materials and constructional articles (e.g. concrete admixtures, Wood impregnating)	a	Surface hardening agents	*	*	30
		b	Concrete admixtures(e.g. air entraining agents, water-reducing agents)	*	*	30
		c	Release agents, anti-foaming agents	*	*	30
		d	Wood impregnating agents, additives to wooden plates	*	*	30
		e	Antifoulants[excl. #17-b, c], water proofing agents, water repellent	*	*	30
		z	Others	\$	\$	\$
45	Additives for building materials and constructional articles (e.g. snow melting agents, soil conditioners, fire)	a	Anti-freezing agents (e.g. snow melting agents)			
		b	Soil conditioners (for e.g. soil improvements, soil stabilizations)			
		c	Fire extinguisher agents			
		d	Nucleating agents			
		e	Dispersants for oil spill			
		f	Dust binding agents			
		z	Others			
46	Flotation reagents, collectors  《Mining industry, manufacture of fabricated metal products 》 [Solvents for extraction, purification and refining : #07]	a	Flotation reagents(collectors, frothers, conditioning agents), metal leaching agents			
		b	Flocculants, dispersing agents, metal-capturing agents			
		z	Others			
47	Fuels and fuel additives	a	Fuels			
		b	Fuel additives (e.g. detergents, anti-oxidants, viscosity index improvers, friction modifiers, corrosion inhibitors)			
		c	Combustion improvers (e.g. combustion accelerators, cetane improvers, antiknock agents)			
		d	Anti-freezing agents, odorants			
		z	Others			
excl. #01-#47						
98	Others	z	Other raw materials, other additives			
99	For export	a	For export			

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