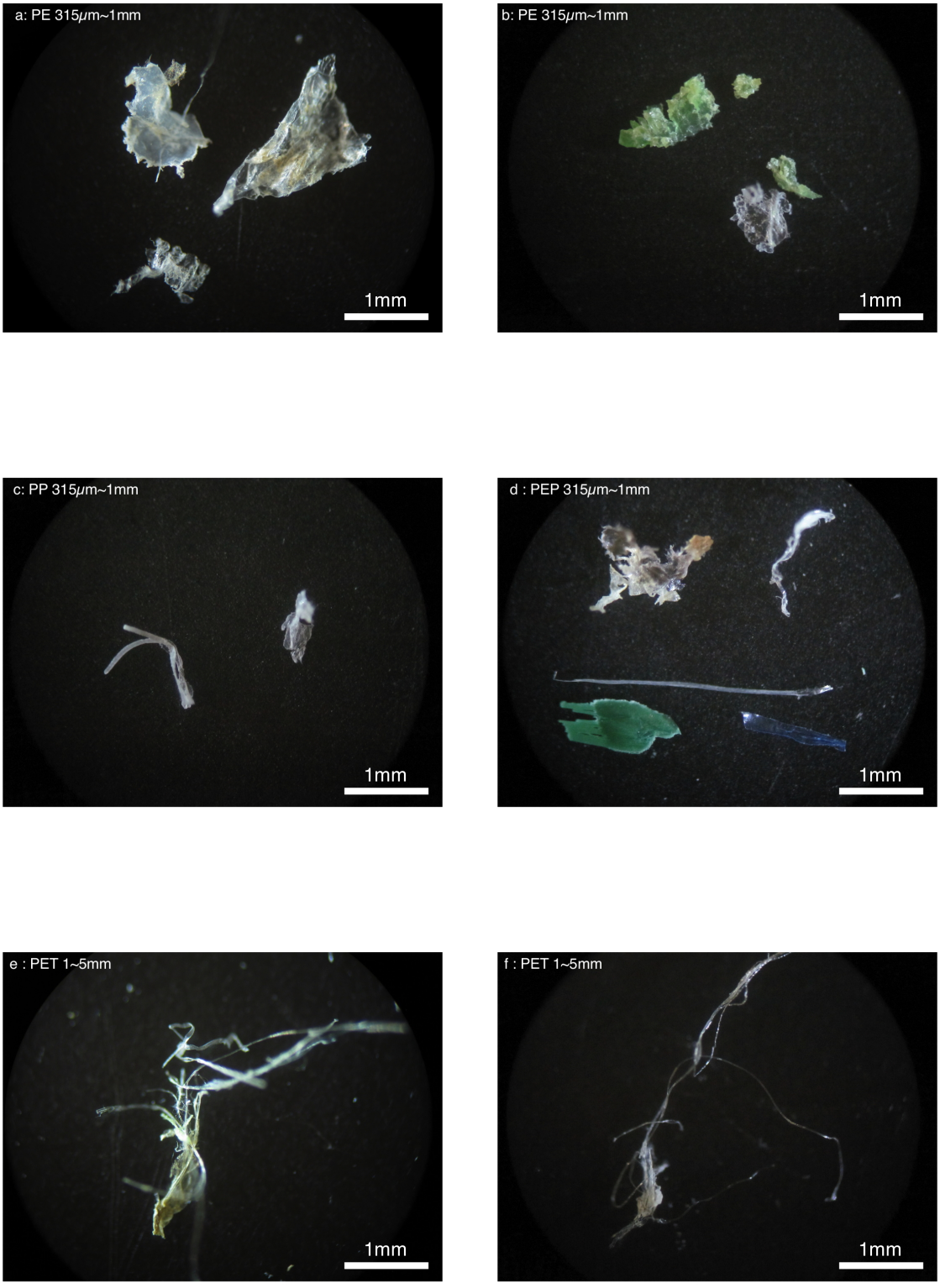
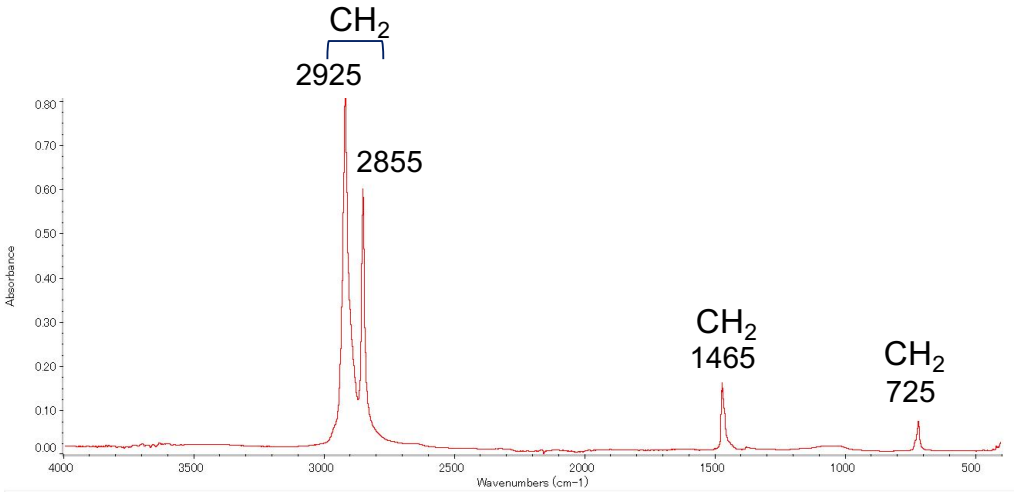


Fig.S1. Some examples of photos of microplastics in sediments. All microplastics were from a canal in Tokyo Bay (Cn.21). The photos were taken after ATR-FTIR analysis and, therefore, they were compressed and flatten.



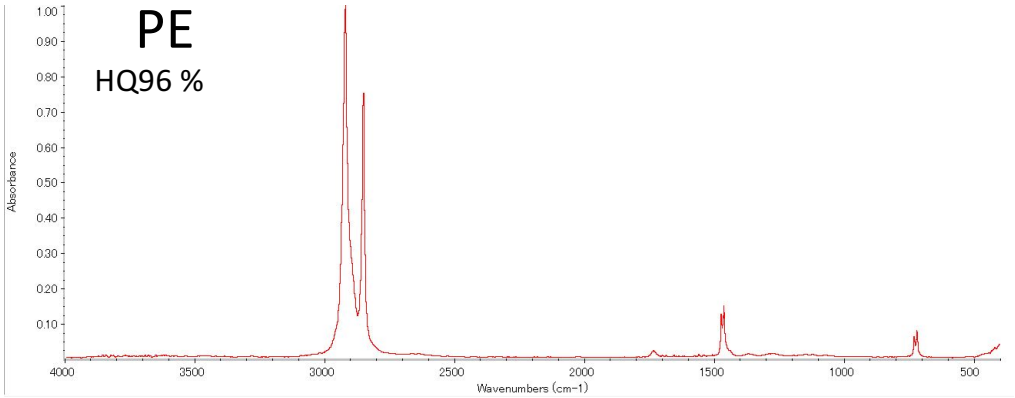
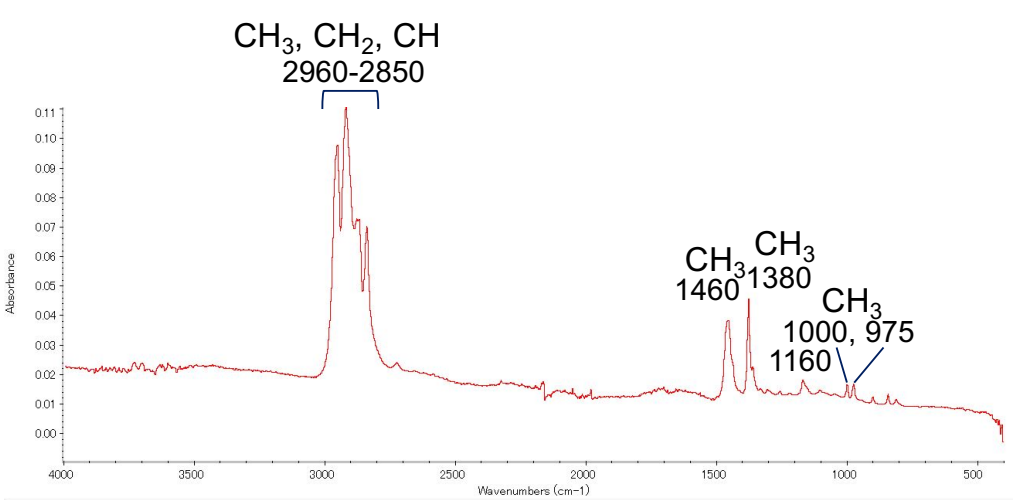


Figure S2. IR spectrum of microplastics in bottom sediment (upper) and standard polymer (bottom) a: PE



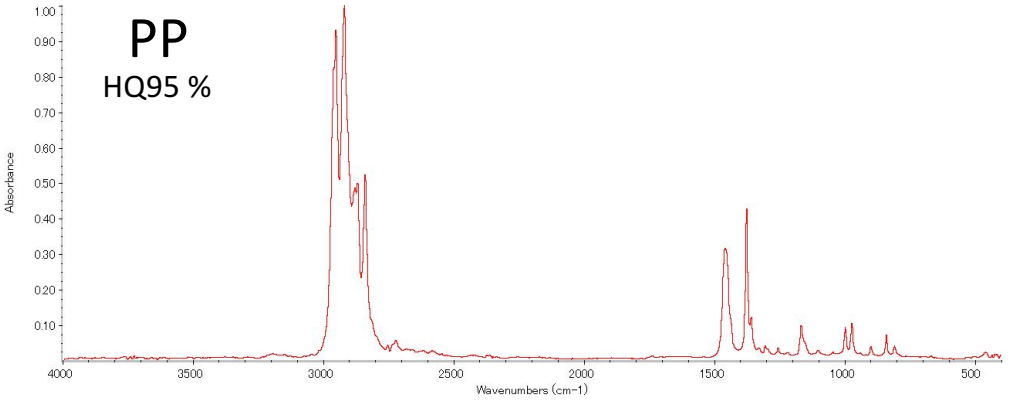


Figure S2. IR spectrum of microplastics in bottom sediment (upper) and standard polymer (bottom) b: PP

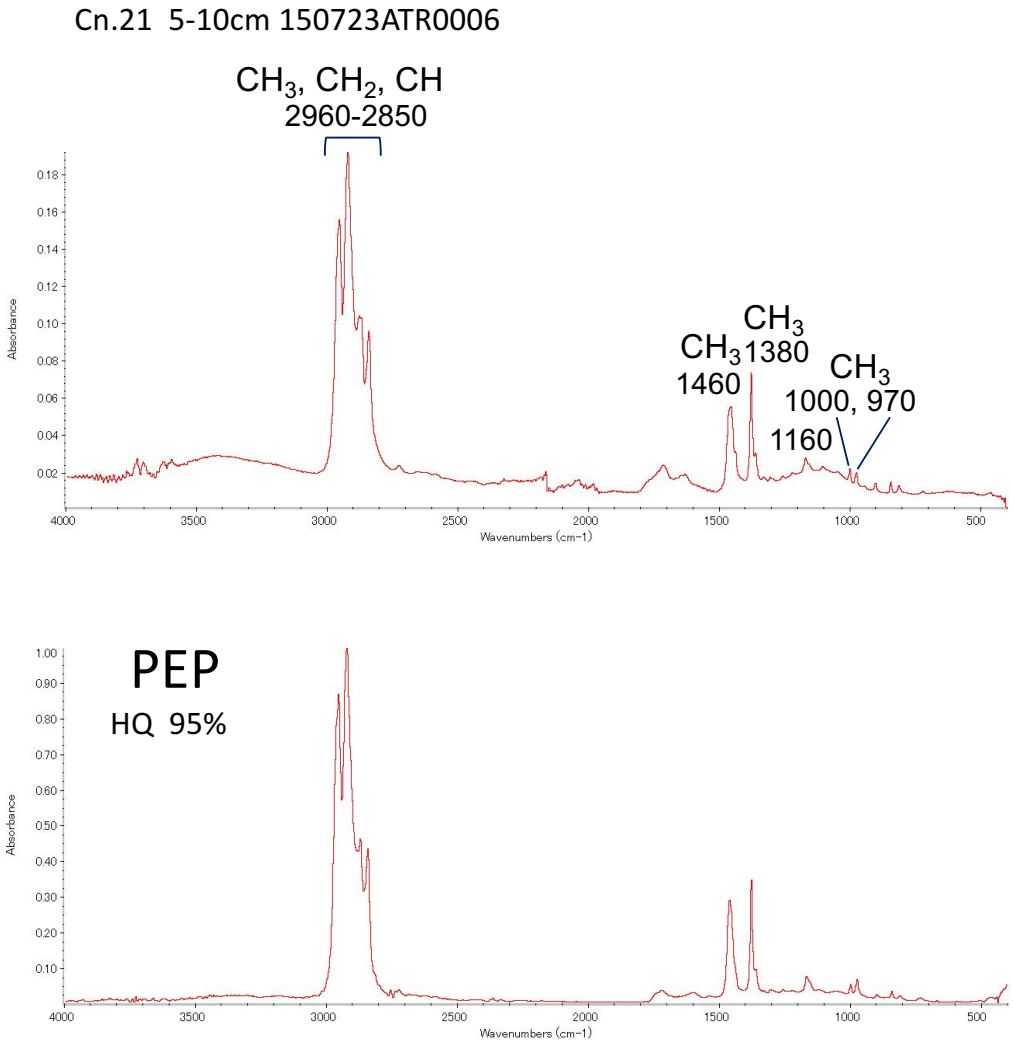


Figure S2. IR spectrum of microplastics in bottom sediment (upper) and standard polymer (bottom) c: PEP

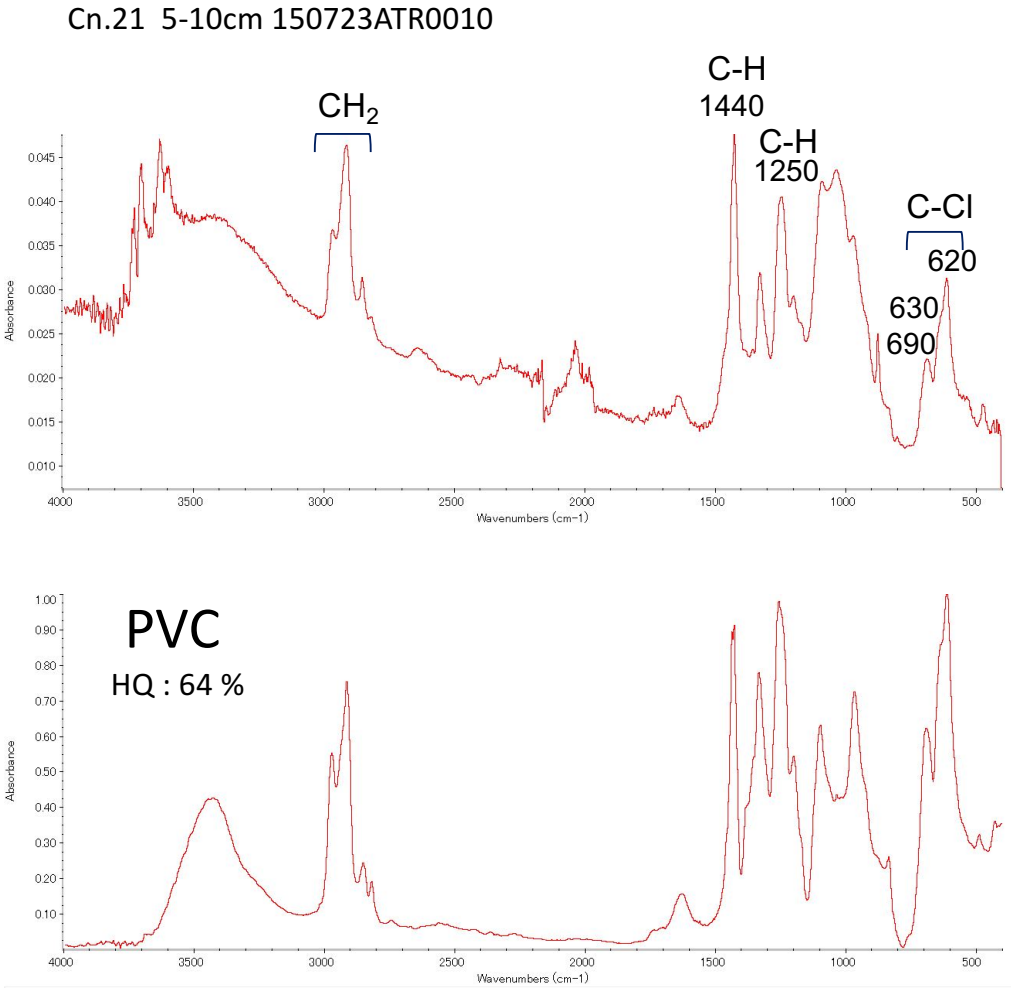


Figure S2. IR spectrum of microplastics in bottom sediment (upper) and standard polymer (bottom) d: PVC

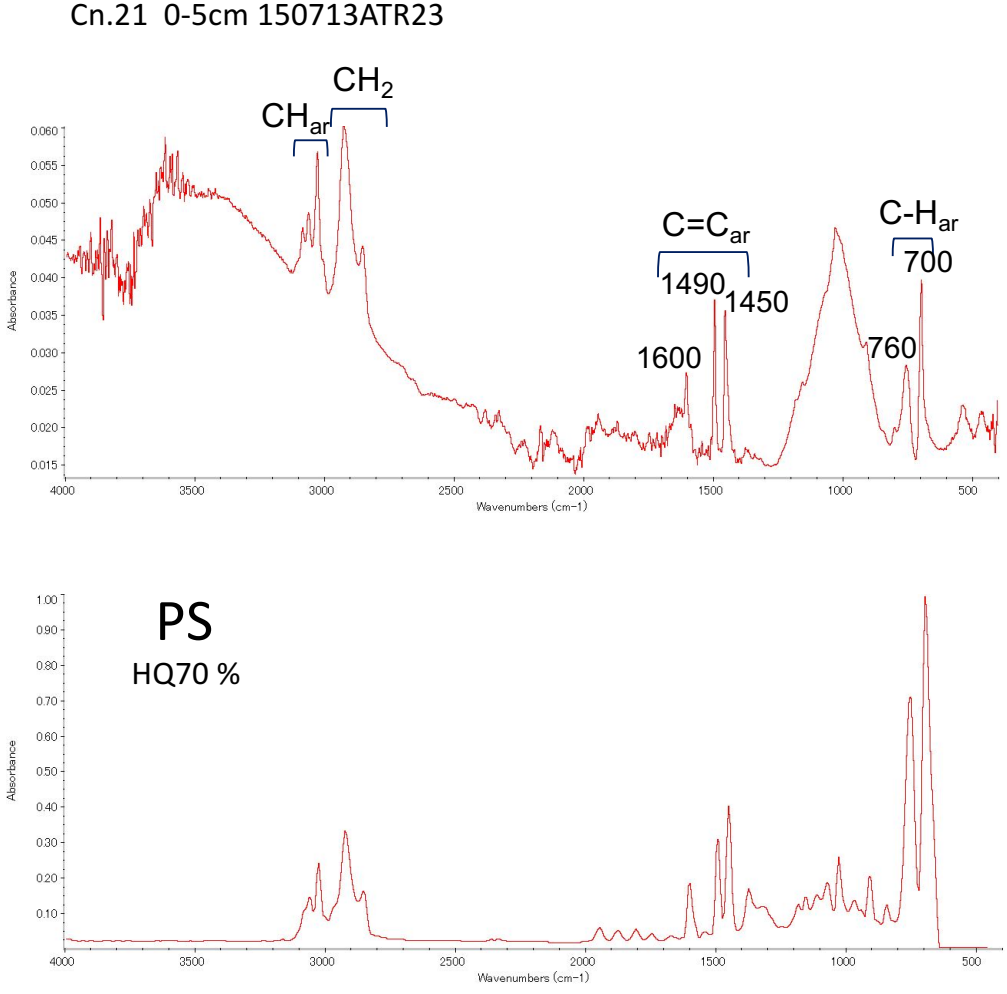


Figure S2. IR spectrum of microplastics in bottom sediment (upper) and standard polymer (bottom) e: PS

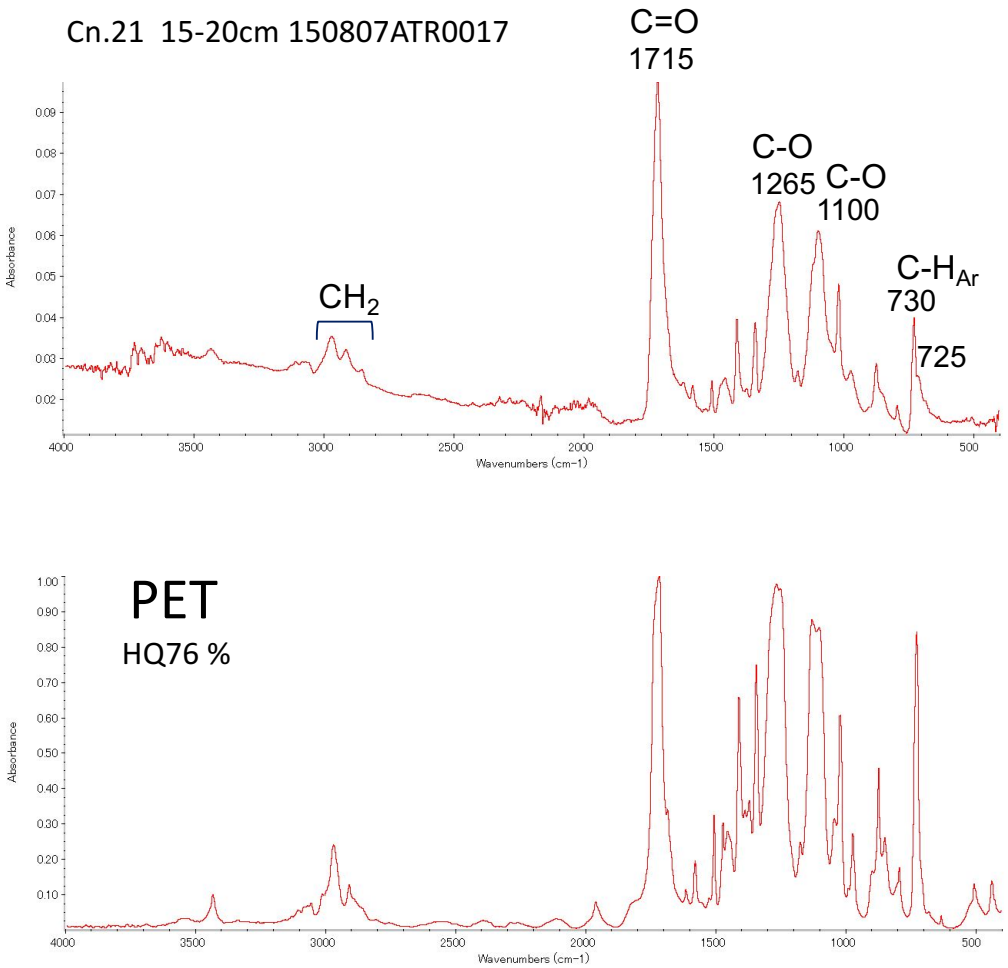


Figure S2. IR spectrum of microplastics in bottom sediment (upper) and standard polymer (bottom) f: PET

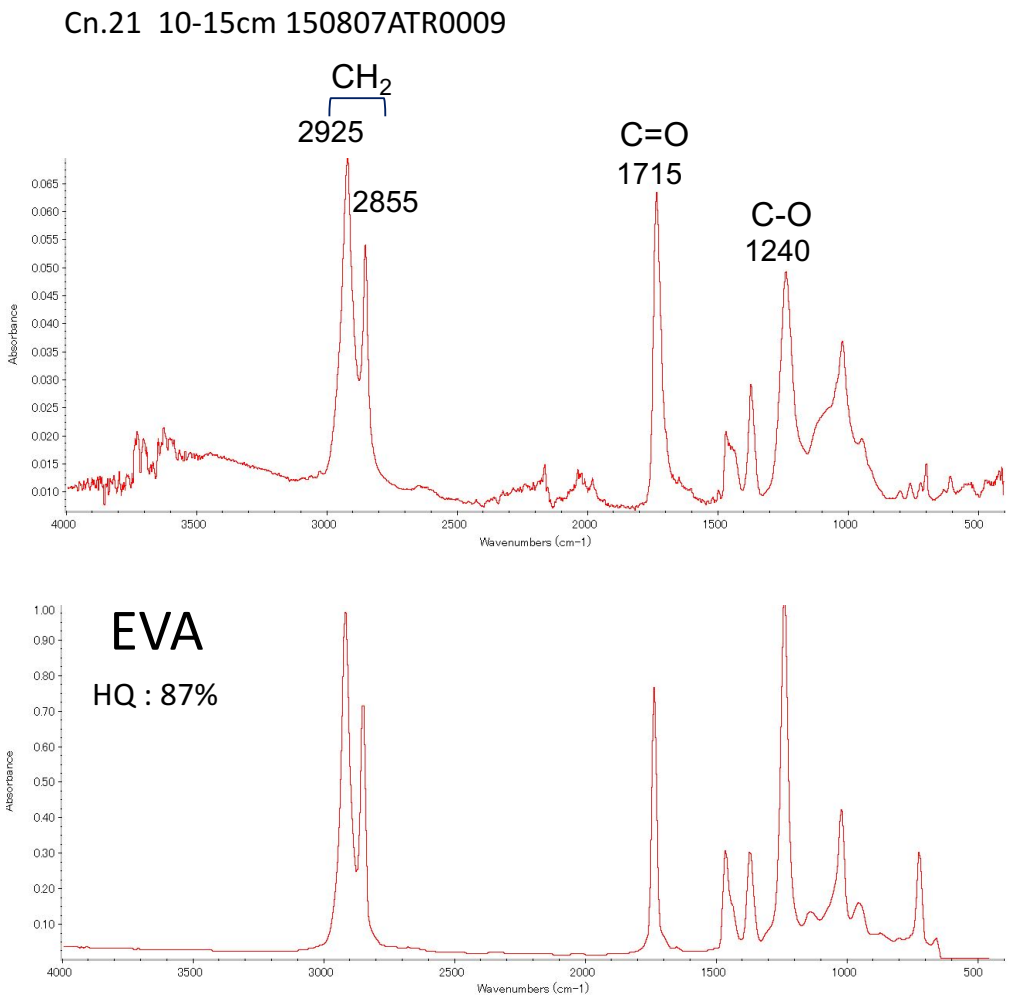


Figure S2. IR spectrum of microplastics in bottom sediment (upper) and standard polymer (bottom) g: EVA

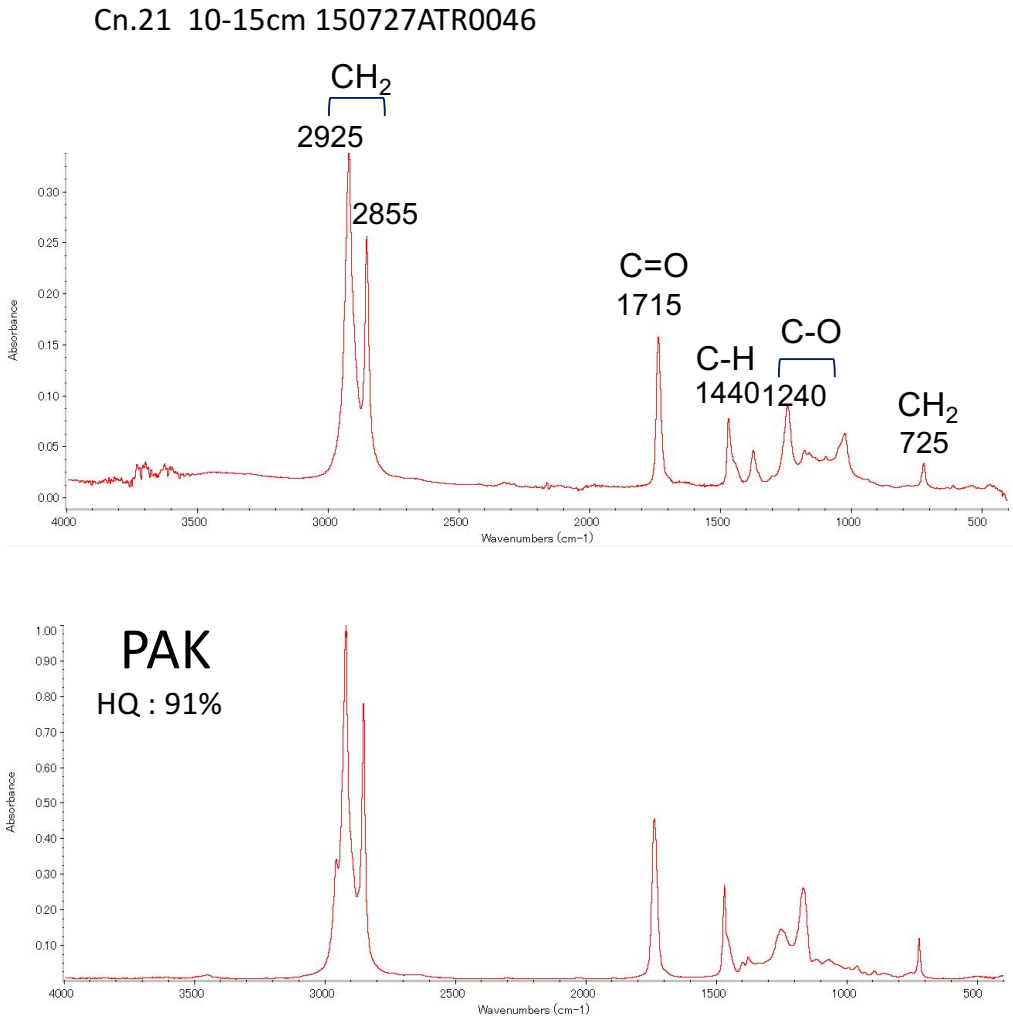


Figure S2. IR spectrum of microplastics in bottom sediment (upper) and standard polymer (bottom) h: PAK (Polyacrylics)

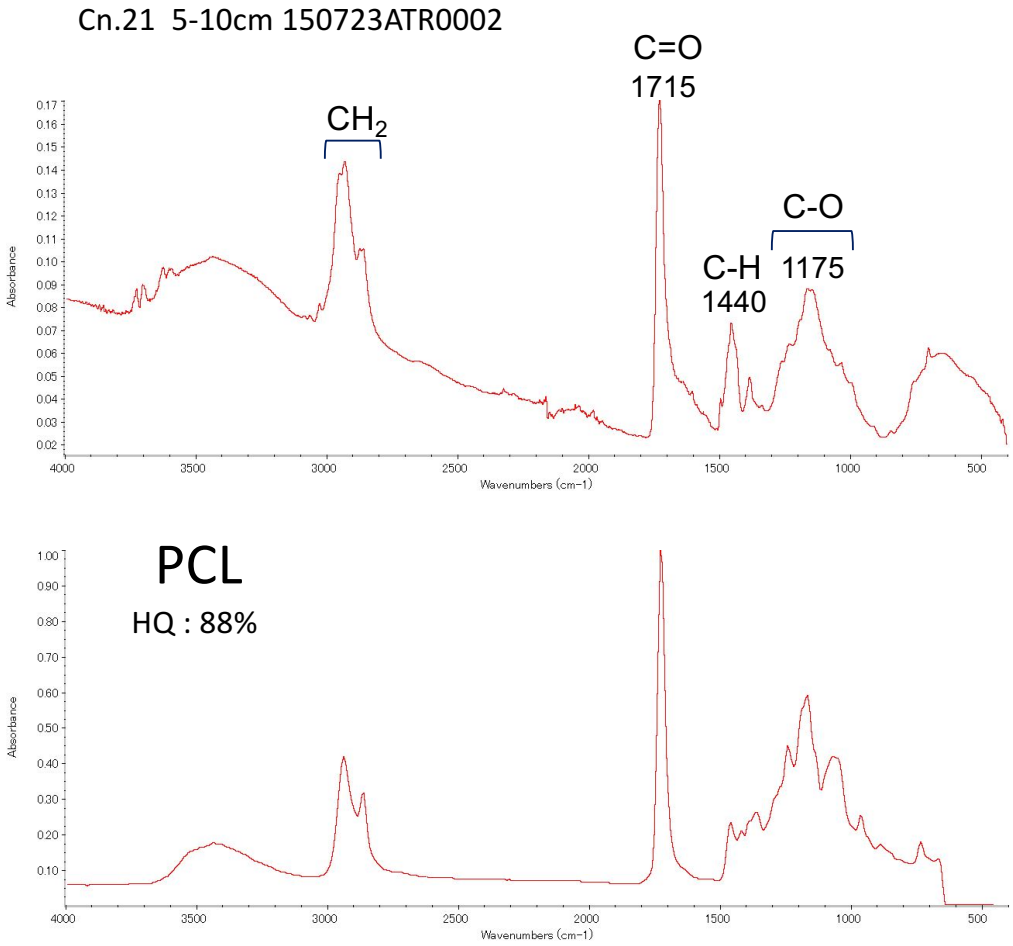


Figure S2. IR spectrum of microplastics in bottom sediment (upper) and standard polymer (bottom) i: PCL

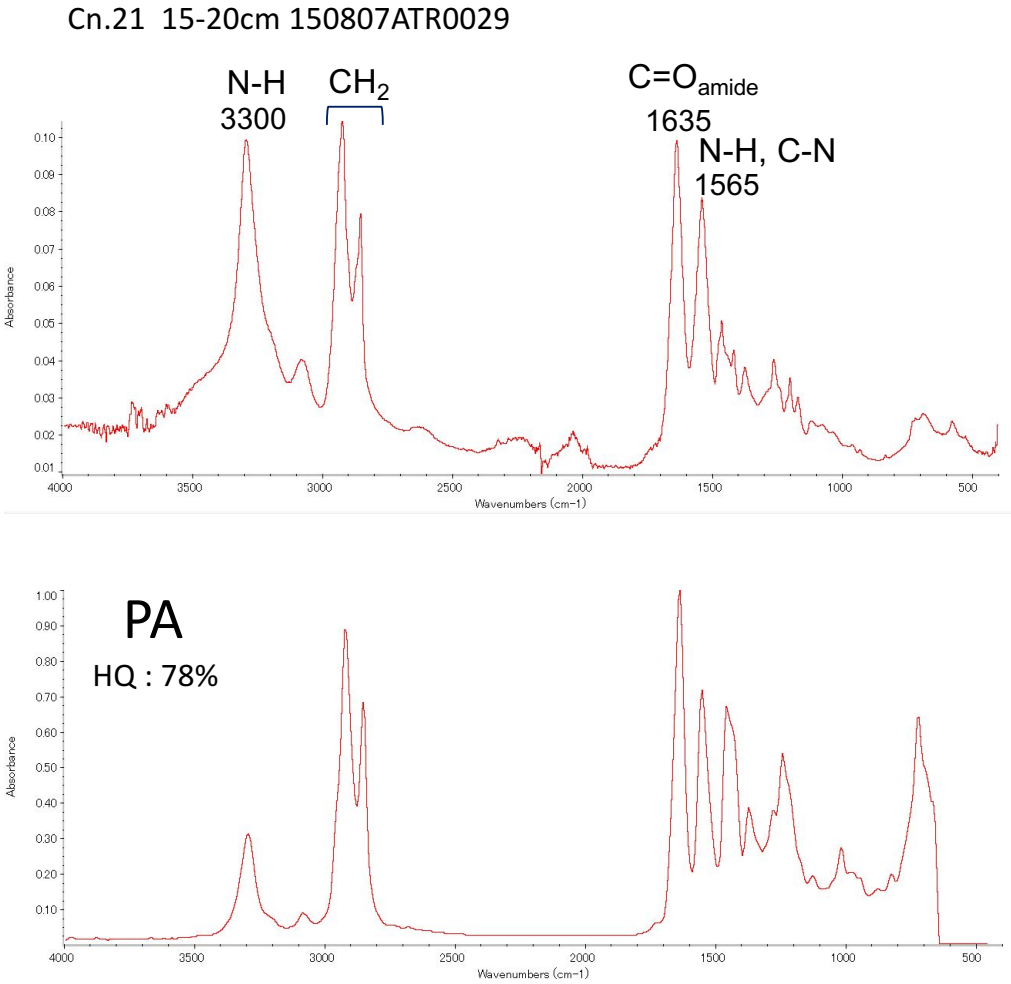


Figure S2. IR spectrum of microplastics in bottom sediment (upper) and standard polymer (bottom) j: PA

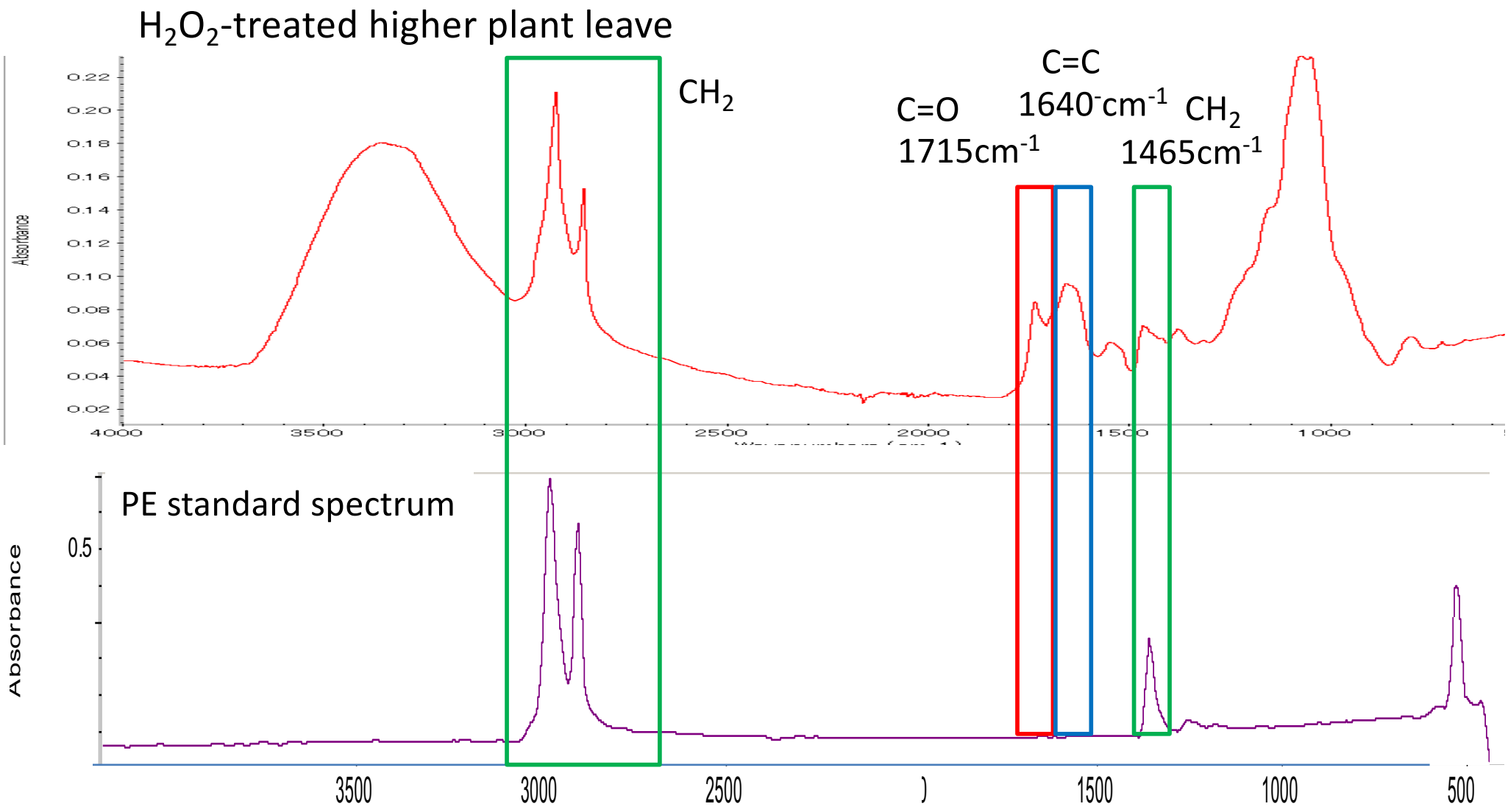


Fig.S3. IR spectrum of H_2O_2-treated leaf and that of polyethylene

Table SI-1-1. Microplastics identified in sediment (0 – 5 cm layer) from the core collected in a canal in Tokyo Bay (Cn.21)

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
0.3m㎜ - 1mm						
150713ATR0009	PE	94%	0.93	0.00	Green	Bead
150713ATR0011	PEP	72%	0.53	0.84	Brown	Fragment
150713ATR0012	PE	96%	0.00	0.00	White	Fragment
150713ATR0013	PE	94%	0.00	0.02	White	Fragment
150713ATR0019	PEP	93%	0.00	0.05	White	Fragment
150713ATR0021	Poly(butyl acrylate)*	98%			White	Fragment
150713ATR0023	PS	71%			White	Fragment
150713ATR0024	PP	76%			White	Fragment
150713ATR0025	PE	91%	0.00	0.00	Blue	Fragment
150713ATR0036	PEP	87%	0.32	0.09	White	Fragment
150713ATR0039	PE	90%	0.25	0.00	White	Fragment
150713ATR0042	PEP	89%	0.00	0.00	White	Fragment
150713ATR0044	PEP	90%	0.00	0.00	White	Fragment
150717ATR0004	PEP	94%	0.00	0.00	White	Fragment
150717ATR0008	Poly(1,4-cyclohexane-dimethylene terephthalate)	62%			White	Fragment
150717ATR0011	Poly(octadecyl methacrylate)*	81%			White	Film
150717ATR0019	PET	68%			White	Fiber
150717ATR0023	Poly(caprolactone)diol***	61%			White	Fragment
150717ATR0026	PET	68%			White	Fragment
150717ATR0027	Poly(ethylene:ethyl acrylate)*	63%			White	Fragment
	Total number of plastics	19				
Weight of sediment (g-dry)		10.3				

Summary

	pieces/sample	pieces/kg-dry sediment
PE	5	485
PP	1	97
PS	1	97
PET	2	194
PVC	0	0
PAK*	3	291
PA**	0	0
PCL***	1	97
PEP	5	485
EVA****	0	0
Others	1	97
total	19	1845

*PAK : polyacrylates

**PA : polyamide

***PCL : polycaprolactanes

****EVA : polyethylenevinylacetates

Symbols corresond to individual items in the left table.

Carbonyl Index : a ratio of absorbance at 1715 cm^{-1} to that at 1465 cm^{-1}

Vinyl Index : a ratio of absorbance at 1640 cm^{-1} to that at 1465 cm^{-1}

Items in gray cells are not classified as plastics based on the carbony index and/or vinyl index.

Table SI-1-2. Microplastics identified in sediment (5 – 10 cm layer) from the core collected in a canal in Tokyo Bay (Cn.21)

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
0.3m㎜ - 1mm						
150723ATR0002	Poly(caprolactone)diol***	88%			Blue	Fragment
150723ATR0004	PS	70%			White	Fragment
150723ATR0005	Poly(octadecyl acrylate)*	84%			Black	Bead
150723ATR0006	PEP	94%	0.17	0.02	Green	Fragment
150723ATR0008	PS	75%			White	Fragment
150723ATR0009	Poly(ethylene:vinyl acetate)****	86%			White	Film
150723ATR0010	PVC	64%			White	Fragment
150723ATR0017	PE	92%	1.48	0.52	Brown	Film
150724ATR0001	PE	83%	0.80	0.10	Black	Fragment
150724ATR0007	PEP	91%	1.00	0.04	White	Fragment
150724ATR0009	PEP	93%	0.00	0.00	White	Fragment
150724ATR0012	PE	92%	0.00	0.00	White	Fragment
150724ATR0019	PEP	89%	0.00	0.00	White	Fragment
150724ATR0025	Poly(octadecyl methacrylate)*	84%			Brown	Film
150724ATR0026	PEP	90%	0.00	0.00	White	Bead
150724ATR0027	Poly(ester urethane)	73%			Black	Fragment
150724ATR0033	Poly(ethylene:ethyl acrylate)*	80%			Brown	Fragment
150724ATR0034	PEP	91%	0.14	0.04	White	Fragment
150724ATR0039	PEP	89%	0.36	0.24	Brown	Fragment
150724ATR0042	Poly(caprolactone)diol***	66%			White	Fragment
150724ATR0043	Poly(caprolactone)diol***	69%			White	Fiber
150724ATR0046	Poly(octadecyl methacrylate)***	78%			White	Fragment
150724ATR0047	Poly(ethylene:ethyl acrylate)***	77%			Brown	Fragment
150724ATR0049	PE	85%	0.16	0.32	White	Fragment
150724ATR0051	Poly(ethylene:vinyl acetate)****	71%			Brown	Fiber
150724ATR0054	PS	67%			White	Fragment
150724ATR0055	PEP	84%	0.00	0.00	White	Fragment
150724ATR0056	Decylamine	86%			Brown	Fragment
150724ATR0059	PEP	81%	1.00	0.14	Brown	Fragment
150724ATR0063	PEP	90%	0.32	0.00	White	Fragment
150724ATR0065	PEP	92%	0.13	0.03	White	Fragment
150724ATR0066	PEP	75%	0.99	0.23	White	Fragment
150724ATR0074	Poly(1,4-cyclohexane-dimethylene terephthalate)	65%			Brown	Fragment
150724ATR0075	PS	60%			White	Fragment
150724ATR0076	PEP	89%	0.00	0.09	White	Fragment
150724ATR0096	PET	66%			Yellow	Fiber
150724ATR0098	PEP	89%	0.54	0.10	White	Fiber
150727ATR0005	PEP	92%	0.00	0.00	Black	Fragment
	Total number of plastics	32				

Summary

	pieces/sample	pieces/kg-dry sediment
PE	2	206
PP	0	0
PS	4	412
PET	1	103
PVC	1	103
PAK*	5	515
PA**	0	0
PCL***	3	309
PEP	11	1134
EVA****	2	206
Others	3	309
total	32	3299

*PAK : polyacrylates
**PA : polyamide
***PCL : polycaprolactanes
****EVA : polyethylenevinylacetates

Symbols corresond to individual items in the left table.

Carbonyl Index : a ratio of absorbance at 1715 cm^{-1} to that at 1465 cm^{-1}
Vinyl Index : a ratio of absorbance at 1640 cm^{-1} to that at 1465 cm^{-1}
Items in gray cells are not classified as plastics based on the carbony index and/or vinyl index.

Table SI-1-3. Microplastics identified in sediment (10 – 15 cm layer) from the core collected in a canal in Tokyo Bay (Cn.21)

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
150724ATR0006	Poly(11-bromoindecyl acrylate)*	84%			Brown	Film
150727ATR0007	Poly(octadecyl acrylate)*	87%			Brown	Film
150727ATR0009	PP	82%			White	Fiber
150727ATR0010	Poly(octadecyl acrylate)*	78%			Brown	Film
150727ATR0011	PE	94%	0.00	0.00	Black	Fragment
150727ATR0014	PE	87%	3.67	1.33	Brown	Fragment
0.3m㎜ - 1mm						
150727ATR0017	PE	95%	0.24	0.00	White	Fragment
150727ATR0018	Poly(2-decyne)	87%			Black	Fragment
150727ATR0019	PP	91%			White	Fragment
150727ATR0021	PE	93%	0.00	0.00	White	Fragment
150727ATR0022	Poly(isodecyl methacrylate)*	76%			White	Sheet
150727ATR0023	PE	91%	0.00	0.00	White	Fiber
150727ATR0024	PS	67%			White	Fiber
150727ATR0027	PE	83%	1.65	0.00	white	Film
150727ATR0028	PE	92%	0.38	0.00	Black	Fragment
150727ATR0029	PVC	62%			White	Fragment
150727ATR0031	PE	94%	0.07	0.00	Blue	Fragment
150727ATR0036	PE	94%	0.00	0.10	White	Fragment
150727ATR0039	PEP	93%	0.00	0.05	Pink	Fragment
150727ATR0044	Poly(octadecyl acrylate)*	86%			Brown	Film
150727ATR0046	Poly(octadecyl acrylate)*	91%			White	Fragment
150727ATR0047	Polyester	67%			White	Fragment
150727ATR0049	PE	89%	0.00	0.00	White	Fragment
150727ATR0055	PE	95%	0.00	0.00	Gray	Fragment
150727ATR0056	Poly(octadecyl acrylate)*	87%			Brown	Fragment
150727ATR0057	Poly(caprolactone)diol***	70%			Brown	Fragment
150727ATR0064	PEP	92%	0.04	0.00	white	Fragment
150727ATR0068	Poly(ethylene:vinyl acetate)****	80%			Brown	Fragment
150727ATR0069	Poly(ethylene:vinyl acetate)****	65%			Brown	Fragment
150727ATR0070	PP	77%			White	Fragment
150729ATR0001	PE	64%	0.36	0.05	White	Fragment
150729ATR0002	Poly(vinyl alcohol:vinyl acetate)****	74%			Green	Fragment
150729ATR0004	Poly(hexadecyl methacrylate)*	83%			Brown	Fragment

Summary

	pieces/sample	pieces/kg-dry sediment
PE	9	769
PP	4	342
PS	1	85
PET	2	171
PVC	2	171
PAK*	14	1197
PA**	5	427
PCL***	2	171
PEP	6	513
EVA****	5	427
Others	13	1111
total	63	5385

*PAK : polyacrylates

**PA : polyamide

***PCL : polycaprolactanes

****EVA : polyethylenevinylacetates

Symbols corresond to individual items in the left table.

150729ATR0007	Poly(ester urethane)	92%			Black	Fragment
150729ATR0008	PP	85%			White	Fiber
150729ATR0014	Poly(ethylene:vinyl acetate)****	87%			Black	Fragment
150729ATR0015	Poly(hexadecyl methacrylate)*	80%			Brown	Fragment
150729ATR0018	Poly(1-tetradecene)	90%			Brown	Fragment
150729ATR0019	Poly(urethane)	70%			Black	Fragment
150729ATR0021	Poly(styrene:ethylene-butylene)ABA Block	60%			White	Fragment
150729ATR0022	PEP	73%	0.18	0.41	White	Fragment
150729ATR0024	PET	65%			Black	Fiber
150729ATR0027	Poly(vinyl alcohol:vinyl acetate)****	68%			Black	Bead
150729ATR0028	Poly(octadecyl methacrylate)*	62%			White	Fragment
150729ATR0030	Polyester	64%			White	Fragment
150729ATR0041	PEP	91%	0.10	0.13	White	Fragment
150729ATR0042	PEP	87%	0.26	0.29	White	Fragment
150729ATR0047	Poly(vinyl acetate)	84%			Brown	Fragment
150729ATR0050	Polyamide**	61%			Brown	Film
150729ATR0051	Poly(vinyl acetate)	71%			White	Fragment
150729ATR0054	Polyester	77%			White	Fragment
150730ATR0002	PP	95%			White	Fragment
150730ATR0006	Poly(octadecyl acrylate)*	84%			White	Fragment
150730ATR0010	PE	85%	1.76	0.06	Brown	Film
150730ATR0013	Poly(caprolactone)triol***	78%			White	Fragment
150730ATR0014	Poly(styrene:ethylene-butylene)ABA Block	72%			White	Fragment
150730ATR0021	Poly(ethylene:aclylic acid)*	81%			White	Fragment
150730ATR0027	PEP	93%	0.05	0.08	Brown	Fragment
150730ATR0033	PE	90%	1.70	0.05	Brown	Fragment
150730ATR0041	PE	88%	1.63	0.05	Brown	Film
150730ATR0042	PEP	85%	0.85	0.15	White	Fragment
140730ATR0045	Poly(ethylene:ethyl acrylate)*	78%			Brown	Film
150731ATR0007	Poly(lauryl methaceylate)*	72%			Brown	Fragment
150731ATR0010	PE	83%	3.30	0.20	Brown	Fragment
150731ATR0012	PVC	65%			White	Bead
150731ATR0019	Poly(styrene:butadiene)	61%			Brown	Bead
150731ATR0020	Poly(vinyl alcohol:vinyl acetate)****	79%			Brown	Fragment
150731ATR0023	PEP	89%	0.14	0.05	White	Fiber
150731ATR0024	Poly(octadecyl methacrylate)*	79%			Red	Fiber
150731ATR0025	Poly(lauryl methacrylate)*	75%			Yellow	Fiber

150731ATR0028	Polyamide**	72%	Brown	Fragment
150731ATR0029	Polyamide**	69%	Brown	Fragment
150731ATR0036	Poly(1,3-butanedily adipate)	72%	Black	Fiber
150731ATR0040	Polyamide**	64%	White	Fiber
150731ATR0041	PET	68%	White	Fiber
150731ATR0042	Nyron6**	60%	White	Fragment
	Total number	63		
Weight of sediment (g-dry)		11.7		

Carbonyl Index : a ratio of absorbance at 1715 cm^{-1} to that at 1465 cm^{-1}

Vinyl Index : a ratio of absorbance at 1640 cm^{-1} to that at 1465 cm^{-1}

Items in gray cells are not classified as plastics based on the carbony index and/or vinyl index.

Table SI-1-4. Microplastics identified in sediment (15 – 20 cm layer) from the core collected in a canal in Tokyo Bay (Cn.21)

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
150731ATR0048	PE	90%	1.54	0.04	Brown	Fragment
150731ATR0050	Poly(octadecyl acrylate)	84%			White	Fragment
0.3m㎜ - 1mm						
150806ATR0001	PE	94%	0.25	0.00	Blue	Fiber
150806ATR0013	Poly(hexadecyl methacrylate)*	76%			White	Film
150806ATR0021	Poly(isodecyl methacrylate)*	85%			White	Film
150806ATR0022	PET	61%			Black	Fiber
150806ATR0023	PEP	86%	0.00	0.04	White	Fragment
150806ATR0024	Poly(hexadecyl methacrylate)*	81%			White	Fragment
150806ATR0028	PE	92%	1.16	0.48	Brown	Film
150806ATR0031	Poly(octadecyl acrylate)*	86%			White	Film
150806ATR0034	Poly(caprolactone)diol***	85%			Gray	Fragment
150806ATR0039	Poly(ethylene:vinyl acetate)****	71%			Brown	Fragment
150806ATR0040	Poly(ethylene:vinyl acetate)****	69%			Black	Fiber
150806ATR0041	PEP	89%	0.00	0.00	White	Fragment
150806ATR0044	Poly(octadecyl acrylate)*	87%			White	Fragment
150806ATR0047	PE	91%	1.05	0.05	Brown	Film
150806ATR0049	Poly(caprolactone)triol***	71%			Brown	Fragment
150806ATR0052	PS	60%			White	Fragment
150807ATR0002	Poly(caprolactone)diol***	71%			Black	Fragment
150807ATR0006	Poly(urethane)	72%			Black	Fragment
150807ATR0007	PET	74%			Cream	Fragment
150807ATR0009	Poly(ethylene:vinyl acetate)****	87%			White	Fragment
150807ATR0015	PS	67%			White	Fragment
150807ATR0016	PE	87%	1.71	0.18	White	Film
150807ATR0017	PET	76%			Red	Fiber
150807ATR0022	PE	92%	0.00	0.06	White	Fiber
150807ATR0029	Polyamide**	78%			Green	Fiber
150807ATR0030	Poly(2-octyl acrylate)*	93%			White	Fragment
150807ATR0033	PEP	93%	0.00	0.18	White	Fragment
150807ATR0047	PEP	90%	0.00	0.00	Black	Fragment
	Total number of plastics	24				

Summary

	pieces/sample	pieces/kg-dry sediment
PE	2	163
PP	0	0
PS	1	81
PET	3	244
PVC	0	0
PAK*	6	488
PA**	1	81
PCL***	3	244
PEP	4	325
EVA****	3	244
Others	1	81
total	24	1951

*PAK : polyacrylates

**PA : polyamide

***PCL : polycaprolactanes

****EVA : polyethylenevinylacetates

Symbols corresond to individual items in the left table.

Weight of sediment (g-dry)	12.3

Carbonyl Index : a ratio of absorbance at 1715 cm^{-1} to that at 1465 cm^{-1}

Vinyl Index : a ratio of absorbance at 1640 cm^{-1} to that at 1465 cm^{-1}

Items in gray cells are not classified as plastics based on the carbony index and/or vinyl index.

Table SI-1-5. Microplastics identified in sediment (20 – 25 cm layer) from the core collected in a canal in Tokyo Bay (Cn.21)

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
150810ATR0001	Poly(octadecyl acrylate)	89%			Brown	Fragment
150810ATR0002	PE	94%	1.24	0.01	White	Fragment
0.3m㎜ - 1mm						
150810ATR0004	PE	95%	0.45	0.00	Green	Fragment
150810ATR0005	PE	96%	0.00	0.00	White	Fragment
150810ATR0006	PEP	91%	0.07	0.03	White	Fragment
150810ATR0007	PE	93%	0.05	0.00	White	Fragment
150810ATR0015	PE	93%	0.90	0.68	Brown	Fragment
150810ATR0016	PE	93%	0.00	0.00	Black	Bead
150810ATR0017	Poly(caprolactone)diol***	83%			Gray	Fragment
150810ATR0018	PS	71%			White	Fragment
150810ATR0019	Poly(hexadecyl methacrylate)*	68%			White	Fragment
150810ATR0021	PE	91%	1.12	0.58	Brown	Fragment
150810ATR0023	PE	94%	0.00	0.02	White	Fragment
150810ATR0025	PE	94%	0.00	0.01	White	Fragment
150810ATR0027	Poly(1-butene)	63%	0.83	0.32	White	Fragment
150810ATR0028	PP	87%			White	Fragment
150810ATR0029	PEP	94%	0.00	0.00	White	Fragment
150810ATR0031	PEP	76%	0.13	0.11	White	Fiber
150810ATR0036	PS	65%			White	Fragment
150810ATR0039	Poly(styrene::ethylene-butyleneABA Block	72%			White	Fragment
150810ATR0043	Polyamide**	66%			Black	Fiber
150810ATR0044	Poly(caprolactone)diol***	81%			White	Fragment
150810ATR0045	PEP	76%	1.34	0.11	White	Fiber
150810ART0046	PEP	85%	0.03	0.03	White	Fragment
150810ATR0047	PEP	89%	0.09	0.06	Black	Fragment
150810ATR0051	PE	91%	0.24	0.03	Blue	Fragment
150811ATR0003	PP	69%			Black	Fiber
150811ATR0004	PET	60%			Black	Fiber
150811ATR0005	PET	66%			Black	Fiber
150811ATR0009	Polyester	69%			Brown	Fragment
150811ATR0011	Polyester	72%			Black	Fragment
150811ATR0013	Polyester urethane	80%			Brown	Fiber
140811ATR0018	Poly(vinyl acetate)	88%			Brown	Fragment
150811ATR0026	PE	91%	0.00	0.00	White	Fragment

Summary

	pieces/sample	pieces/kg-dry sediment
PE	9	783
PP	2	174
PS	2	174
PET	2	174
PVC	0	0
PAK*	1	87
PA**	1	87
PCL***	2	174
PEP	6	522
EVA****	0	0
Others	5	435
total	30	2609

*PAK : polyacrylates

**PA : polyamide

***PCL : polycaprolactanes

****EVA : polyethylenevinylacetates

Symbols corresond to individual items in the left table.

150811ATR0027	PEP	85%	0.53	0.06	White	Fragment
150811ATR0028	PE	90%	0.09	0.00	White	Fragment
	Total number of plastics	30				

Weight of sediment (g-dry)	11.5

Carbonyl Index : a ratio of absorbance at 1715 cm^{-1} to that at 1465 cm^{-1}

Vinyl Index : a ratio of absorbance at 1640 cm^{-1} to that at 1465 cm^{-1}

Items in gray cells are not classified as plastics based on the carbony index and/or vinyl index.

Table SI-1-6. Microplastics identified in sediment (25 – 30 cm layer) from the core collected in a canal in Tokyo Bay (Cn.21)

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
150812ATR0001	PET	66%			White	Fiber
150812ATR0002	PE	93%	0.20	0.00	Blue	Fragment
0.3m㎜ - 1mm						
150812ATR0003	Poly(caprolactone)diol***	67%			Blue	Fragment
150812ATR0004	Polyester	70%			Brown	Fragment
150812ATR0005	PEP	89%	0.29	0.04	Blue	Fiber
150812ATR0008	Poly(octadecyl methacrylate)*	83%			Black	Fragment
150812ATR0013	Poly(1-butene)	71%	0.15	0.23	White	Fragment
150812ATR0016	PEP	83%	2.36	0.18	Brown	Film
150812ATR0018	PS	62%			White	Fragment
150812ATR0020	PP	68%			White	Fiber
150812ATR0021	PE	94%	0.00	0.02	White	Fragment
150812ATR0022	Poly(caprolactone)diol***	63%			Blue	Fragment
150812ATR0023	Poly(2-ethylhexyl acrylate)*	84%			Black	Fragment
150812ATR0024	Poly(caprolactone)diol***	65%			Brown	Fragment
150812ATR0027	PEP	70%	0.18	0.04	Green	Fragment
150812ATR0029	PS	68%			White	Fragment
150812ATR0031	Poly(caprolactone)diol***	68%			Blue	Fragment
150812ATR0032	PEP	92%	0.19	0.03	White	Fragment
150812ATR0035	PE	94%	0.03	0.02	White	Fragment
150812ATR0036	PEP	90%	0.13	0.04	White	Fragment
150812ATR0040	Poly(1-butene)	67%	0.17	0.00	Black	Fiber
150812ATR0041	PEP	91%	0.14	0.05	Brown	Fragment
150812ATR0049	Poly(1-butene)	72%	0.13	0.03	White	Fragment
150812ATR0050	PE	83%	0.18	0.06	White	Fragment
150812ATR0053	Poly(hexadecyl methacrylate)*	75%			White	Film
150813ATR0001	PP	88%			White	Fragment
150813ATR0009	PE	93%	0.00	0.02	White	Fragment
150813ATR0014	PEP	64%	0.57	0.03	White	Fragment
150813ATR0017	PVC	62%			Black	Fragment
150813ATR0021	PEP	92%	0.07	0.00	White	Fiber
150813ATR0023	PEP	92%	0.00	0.00	Brown	Fragment
150813ATR0024	PET	65%			Black	Fiber
	Total number of plastics	28				
Weight of sediment (g-dry)		11.5				

Summary

	pieces/sample	pieces/kg-dry sediment
PE	4	348
PP	2	174
PS	2	174
PET	1	87
PVC	1	87
PAK*	3	261
PA**	0	0
PCL***	4	348
PEP	8	696
EVA****	0	0
Others	3	261
total	28	2435

*PAK : polyacrylates
**PA : polyamide
***PCL : polycaprolactanes
****EVA : polyethylenevinylacetates

Symbols corresond to individual items in the left table.

Carbonyl Index : a ratio of absorbance at 1715 cm^{-1} to that at 1465 cm^{-1}
Vinyl Index : a ratio of absorbance at 1640 cm^{-1} to that at 1465 cm^{-1}
Items in gray cells are not classified as plastics based on the carbony index and/or vinyl index.

Table SI-1-7. Microplastics identified in sediment (surface layer) from the core collected in Sakurada-bori Moat at the Imperial Palace in Tokyo, Japan

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
151022ATR0002	Alkyd	89%			White	Fragment
151022ATR0004	PE	94%	1.27	0.0	White	Film
151022ATR0012	PEP	93%	0.2	0.0	Black	Fragment
151022ATR0013	Alkyd	85%			White	Fragment
151022ATR0014	Polyester	74%			Black	Fragment
0.3m㎜ - 1mm						
151022ATR0020	PEP	88%	0.14	0.31	Green	Fragment
151022ATR0021	Poly(hexadecyl methacrylate)*	80%			White	Film
151022ATR0025	Polyester	88%			White	Fragment
151022ATR0028	Epoxy	84%			Green	Fragment
151022ATR0030	PE	89%	1.00	0.00	White	Film
151022ATR0032	Poly(caprolactone)triol***	83%			White	Fragment
151022ATR0033	PS	67%			White	Fragment
151027ATR0007	PE	89%	1.75	0.55	Brown	Film
151027ATR0008	PE	91%	1.29	1.24	Brown	Fragment
151027ATR0012	PS	69%			Brown	Fragment
151027ATR0013	PE	91%	1.34	0.55	Brown	Fragment
151027ATR0019	Poly(hexadecyl methacrylate)*	76%			White	Fragment
151027ATR0023	Poly(lauryl methacrylate)*	84%			White	Fragment
151027ATR0025	Poly(hexadecyl methacrylate)*	87%			White	Sheet
151027ATR0028	PE	91%	1.89	0.60	Brown	Film
151027ATR0031	Polyamide**	72%			Black	Fiber
151027ATR32	Polyamide**	66%			White	Fiber
151027ATR0041	Polyamide**	72%			Black	Fiber
151027ATR0056	Poly(caprolactone)diol***	83%			White	Sheet
151028ATR0002	Poly(1-decene)	91%			Black	Fragment
151028ATR0007	PE	92%	0.45	0.02	Brown	Fragment
151028ATR0014	Poly(caprplactone)diol***	83%			Yellow	Bead
151028ATR0016	PEP	85%	1.16	0.00	White	Fragment
151028ATR0020	PE	91%	0.32	0.74	White	Fragment
151028ATR0032	PP	86%			Brown	Fragment
151028ATR0034	Polyamide**	66%			Black	Fiber
151028ATR0041	Poly(caprolactone)diol***	80%			黒	Fragment
151028ATR0044	Poly(caprolactone)diol***	82%			White	Fiber
151028ATR0052	Poly(hexadecyl methacrylate)*	84%			White	Sheet
151028ATR0052	PE	90%	0.00	0.00	White	Fragment
151028ATR0054	PE	88%	0.50	0.72	White	Fragment
151028ATR0079	Poly(hexadecyl methacrylate)*	83%			White	Fragment
151028ATR0080	Poly(lauryl acrylate)*	65%			White	Fragment
151028ATR0081	PE	80%	2.00	0.00	Black	Fragment
151028ATR0088	Poly(ethylene:vinyl acetate)****	81%			Brown	Fragment
151028ATR0089	Poly(ethylene:vinyl acetate)****	66%			Black	Fragment
151028ATR0090	PEP	89%	0.23	0.09	White	Fragment
151028ATR0097	Poly(hexadecyl methacrylate)*	86%			White	Fragment
151028ATR0100	Poly(octadecyl acrylate)*	89%			Brown	Film
151028ATR0106	Poly(1-decene)	92%			Black	Fragment
151028ATR0110	Poly(ethylene:acrylic acid)*	86%			White	Fragment
151028ATR0121	Poly(caprolactone)diol***	70%			White	Fragment
151028ATR0123	Poly(1-butene)	67%	0.13	0.09	Black	Fragment
151028ATR0124	Polyamide**	67%			Black	Fiber

Summary

	pieces/sample	pieces/kg-dry sediment
PE	9	891
PP	2	198
PS	6	594
PET	1	99
PVC	1	99
PAK*	18	1782
PA**	8	792
PCL***	8	792
PEP	4	396
EVA****	4	396
Others	12	1188
total	73	7228

*PAK : polyacrylates
**PA : polyamide
***PCL : polycaprolactanes
****EVA : polyethylenevinylacetates

151028ATR0134	Poly(ethylene:ethyl acrylate)*	77%			White	Fragment
151028ATR0137	PE	88%	0.03	0.03	White	Fragment
151028ATR0141	PEP	86%	0.56	0.06	White	Fragment
151028ATR0142	Polyester	72%			White	Fragment
151028ATR0146	Poly(octadecyl methacrylate)*	84%			Brown	Film
151029ATR0002	Poly(1-decene)	93%			Black	Fragment
151029ATR0006	PE	82%	2.76	0.06	Brown	Fragment
151029ATR0016	PE	92%	0.26	0.05	Blue	Fragment
151029ATR0022	Poly(ethylene:vinyl acetate)****	69%			White	Fragment
151029ATR0024	PVC	62%			White	Fragment
151029ATR0029	PE	87%	3.46	0.00	White	Fragment
151029ATR0044	Poly(caprolactone)diol***	67%			White	Fragment
151029ATR0047	PS	70%			White	Fragment
151029ATR0049	Polyamide**	66%			Green	Fragment
151029ATR0055	Poly(hexadecyl methacrylate)*	84%			Transparent	Film
151029ATR0068	Poly(vinyl acetate)	86%			Brown	Fragment
151029ATR0069	PEP	82%	1.33	0.30	茶	Fragment
151029ATR0074	PEPD	86%	0.11	0.00	Black	Fragment
151030ATR0001	PEP	80%	0.12	0.14	White	Fragment
151030ATR0002	PE	89%	0.78	0.00	Brown	Fragment
151030ATR0003	PP	85%			White	Fragment
151030ATR0005	Polyamide**	65%			White	Fragment
151030ATR0009	Poly(hexadecyl methacrylate)*	80%			White	Fragment
151030ATR0012	PE	85%	1.44	0.72	White	Fragment
151030ATR0013	PE	93%	n.a.	0.05	White	Fragment
151030ATR0024	Poly(hexadecyl methacrylate)*	83%			White	Fragment
151102ATR0007	PE	90%	0.94	0.50	Brown	Film
151102ATR0016	PS	67%			White	Fragment
151102ATR0022	PE	91%	0.00	0.00	White	Fragment
151102ATR0025	PE	86%	1.80	1.00	Brown	Fragment
151102ATR0031	PS	75%			White	Fragment
151102ATR0042	Poly(hexadecyl methacrylate)*	77%			White	Fragment
151102ATR0054	PEP	89%	0.04	0.00	White	Fragment
151102ATR0055	PE	87%	0.01	0.00	White	Fragment
151102ATR0057	Polyester	84%			White	Fragment
151102ATR0061	Poly(hexadecyl methacrylate)*	79%			White	Fragment
151102ATR0063	PEP	62%	1.22	0.04	White	Fiber
151102ATR0078	Poly(ester urethane)	73%			Black	Fragment
151102ATR0084	Polyamide**	62%			Green	Fragment
151102ATR0089	Poly(vinyl acetate)	78%			Black	Fragment
151102ATR0090	PET	65%			Black	Fiber
151102ATR0094	Poly(ethylene:vinyl acetate)****	83%			Black	Fragment
151102ATR0108	Poly(caprolactone)diol***	70%			White	Fragment
151103ATR0003	Poly(ethylene:ethyl acrylate)*	84%			White	Fragment
151103ATR0004	PS	76%			White	Fragment
	Total number of plastics	73				
Weight of sediment (g-dry)		10.1				

Carbonyl Index : a ratio of absorbance at 1715 cm^{-1} to that at 1465 cm^{-1}

Vinyl Index : a ratio of absorbance at 1640 cm^{-1} to that at 1465 cm^{-1}

Items in gray cells are not classified as plastics based on the carbony index and/or vinyl index.

Table SI-1-8. Microplastics identified in sediment (middle layer) from the core collected in Sakurada-bori Moat at the Imperial Palace in Tokyo, Japan

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
151210ATR0005	PE	83%	0.76	0.21	Brown	Fragment
0.3m㎜ - 1mm						
151210ATR0055	PVC	76%			White	Fragment
151210ATR0080	Poly(octadecyl acrylate)*	88%			Brown	Sheet
151214ATR0018	PE	94%	2.25	0.47	White	Film
151214ATR0021	PE	90%	1.79	0.43	White	Film
151216ATR0009	Poly(octadecyl acrylate)*	84%			White	Film
151216ATR0012	Poly(ethylene:1-butene)	89%	1.91	0.48	Brown	Fragment
151216ATR0031	Poly(ethylene:ethyl acrylate)*	88%			White	Fragment
151216ATR0047	Poly(1-pentyltetramethylene)	73%			Black	Fragment
151216ATR0048	Poly(1-decene)	93%			Black	Fragment
151216ATR0050	Poly(ethylene:ethyl acrylate)*	87%			White	Fragment
151216ATR0087	Poly(ethylene:ethyl acrylate)*	85%			White	Fragment
151218ATR0030	Polyester	84%			Black	Fragment
151221ATR0009	Poly(1-methyltetra,ethylene)	64%			White	Fragment
151221ATR0012	PE	92%	1.52	0.20	Brown	Film
151221ATR0016	PE	87%	1.42	0.54	Brown	Film
151221ATR0021	Poly(octadecyl acrylate)*	90%			White	Film
151221ATR0035	PE	86%	0.87	0.70	White	Fragment
	Total number of plastics	11				
Weight of sediment (g-dry)		10.0				

Summary

	pieces/sample	pieces/kg-dry sediment
PE	0	0
PP	0	0
PS	0	0
PET	0	0
PVC	1	100
PAK*	6	600
PA**	0	0
PCL***	0	0
PEP	0	0
EVA****	0	0
Others	4	400
total	11	1100

*PAK : polyacrylates
**PA : polyamide
***PCL : polycaprolactanes
****EVA : polyethylenevinylacetates

Carbonyl Index : a ratio of absorbance at 1715 cm^{-1} to that at 1465 cm^{-1}
Vinyl Index : a ratio of absorbance at 1640 cm^{-1} to that at 1465 cm^{-1}
Items in gray cells are not classified as plastics based on the carbony index and/or vinyl index.

Table SI-1-9. Microplastics identified in sediment (deep layer) from the core collected in Sakurada-bori Moat at the Imperial Palace in Tokyo, Japan

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
0.3m㎜ - 1mm						
151221ATR0044	PE	93%	1.00	0.94	Brown	Fragment
151221ATR0051	PE	89%	0.35	2.61	White	Fragment
151221ATR0053	Poly(ethylene:1-butene)	83%	0.44	2.68	Brown	Fragment
151221ATR0055	Poly(ethylene:1-butene)	67%	0.00	6.18	White	Fragment
151221ATR0057	Poly(ethylene:1-butene)	84%	1.27	1.87	Brown	Fragment
151221ATR0064	Poly(ethylene:1-butene)	62%	0.00	7.09	Brown	Fragment
151222ATR0009	PE	77%	1.27	1.57	White	Fragment
	Total number of plastics	0				
Weight of sediment (g-dry)		10.0				

Carbonyl Index : a ratio of absorbance at 1715 cm^{-1} to that at 1465 cm^{-1}

Vinyl Index : a ratio of absorbance at 1640 cm^{-1} to that at 1465 cm^{-1}

Items in gray cells are not classified as plastics based on the carbony index and/or vinyl index.

Summary

	pieces/sample	pieces/kg-dry sediment
PE	0	0
PP	0	0
PS	0	0
PET	0	0
PVC	0	0
PAK*	0	0
PA**	0	0
PCL***	0	0
PEP	0	0
EVA****	0	0
Others	0	0
total	0	0

*PAK : polyacrylates

**PA : polyamide

***PCL : polycaprolactanes

****EVA : polyethylenevinylacetates

Table SI-1-10. Microplastics identified in sediment (2.5 – 5 cm layer) of Durban Bay (South Africa) First of duplicate analyses

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
0.3m㎜ - 1mm						
160104ATR0001	PE	90%	n.a.	0.58	Blue	Fragment
160104ATR0002	PE	92%	0.03	0.08	White	Fragment
160104ATR0007	PE	91%	0.19	0.00	Black	Fragment
160104ATR0011	PET	67%			Black	Fragment
160104ATR0014	PE	90%	0.23	0.29	Black	Fragment
160104ATR0017	Poly(caprolactone)diol***	83%			Brown	Fragment
160104ATR0018	PE	87%	0.00	0.35	White	Film
160104ATR0023	Poly(11-bromoundecyl methacrylate)	81%			Brown	Film
160104ATR0024	PS	84%			White	Fluff
160104ATR0029	Poly(11-bromoundecyl methacrylate)	77%			White	Film
160104ATR0030	PEP	71%	0.00	0.11	White	Fiber
160104ATR0031	PP	80%			White	Fiber
160104ATR0038	PE	92%	0.00	0.00	White	Fragment
160104ATR0040	PEP	88%	0.64	0.05	White	Fragment
160104ATR0041	PEP	92%	0.06	0.01	White	Fragment
160104ATR0042	PE	91%	0.04	0.00	Transparent	Film
160104ATR0053	PEP	92%	0.21	0.03	White	Fragment
160104ATR0056	PEP	91%	0.03	0.03	White	Fragment
160104ATR0057	PE	94%	0.00	0.00	White	Fragment
	Total number of plastics	16				
Weight of sediment (g-dry)		10.0				

Summary

	pieces/sample	pieces/kg-dry sediment
PE	5	500
PP	1	100
PS	1	100
PET	1	100
PVC	0	0
PAK*	0	0
PA**	0	0
PCL***	1	100
PEP	5	500
EVA****	0	0
Others	2	200
total	16	1600

*PAK : polyacrylates
**PA : polyamide
***PCL : polycaprolactanes
****EVA : polyethylenevinylacetates

Symbols corresond to individual items in the left table.

Carbonyl Index : a ratio of absorbance at 1715 cm^{-1} to that at 1465 cm^{-1}
Vinyl Index : a ratio of absorbance at 1640 cm^{-1} to that at 1465 cm^{-1}
Items in gray cells are not classified as plastics based on the carbony index and/or vinyl index.

Table SI-1-11. Microplastics identified in sediment (2.5 – 5 cm layer) of Durban Bay (South Africa) Second of duplicate analyses

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
0.3m㎜ - 1mm						
160105ATR0001	PE	95%	0.00	0.06	Green	Fragment
160105ATR0002	PE	93%	0.00	0.00	Blue	Fragment
160105ATR0004	PE	93%	0.00	0.00	Green	Fragment
160105ATR0008	PET	70%			White	Fiber
160105ATR0010	PET	76%			White	Fiber
160105ATR0011	Polyester	77%			Black	Fragment
160105ATR0013	PE	90%	0.00	0.00	Black	Fragment
160105ATR0014	PEP	94%	0.00	0.00	Gray	Fragment
160105ATR0016	Poly(octadecyl acrylate)*	88%			Brown	Bead
160105ATR0022	PE	91%	0.02	0.00	White	Fragment
160105ATR0024	PE	93%	0.11	0.00	White	Fragment
160105ATR0025	PEP	84%	0.02	0.03	White	Fragment
160105ATR0026	PE	94%	0.00	0.00	White	Fragment
160105ATR0027	PE	94%	0.04	0.00	White	Fragment
160105ATR0031	PEP	92%	0.45	0.00	White	Fragment
160105ATR0054	Poly(11-bromoundecyl methacrylate)	81%			White	Film
160105ATR0057	PE	91%	0.03	0.03	White	Fragment
160105ATR0058	PE	94%	0.03	0.00	White	Fragment
160105ATR0060	PEP	91%	0.36	0.02	White	Fragment
	Total number of plastics	19				
Weight of sediment (g-dry)		10.0				

Summary

	pieces/sample	pieces/kg-dry sediment
PE	10	1000
PP	0	0
PS	0	0
PET	2	200
PVC	0	0
PAK*	1	100
PA**	0	0
PCL***	0	0
PEP	4	400
EVA****	0	0
Others	2	200
total	19	1900

*PAK : polyacrylates
**PA : polyamide
***PCL : polycaprolactanes
****EVA : polyethylenevinylacetates

Symbols corresond to individual items in the left table.

Carbonyl Index : a ratio of absorbance at 1715 cm^{-1} to that at 1465 cm^{-1}
Vinyl Index : a ratio of absorbance at 1640 cm^{-1} to that at 1465 cm^{-1}
Items in gray cells are not classified as plastics based on the carbony index and/or vinyl index.

Table SI-1-12. Microplastics identified in sediment (20 – 22.5 cm layer) of Durban Bay (South Africa)

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
0.3m㎜ - 1mm						
160105ATR0069	Polyamide-6,9**	72%			Brown	Fiber
160105ATR0071	Poly(t-butyl acrylate)*	89%			Black	Fragment
160105ATR0076	PE	92%	1.11	0.02	White	Film
160105ATR0083	PEP	89%	0.85	0.00	Brown	Fragment
160105ATR0085	PET	61%			Brown	Fragment
	Total number of plastics	4				
Weight of sediment (g-dry)		10.0				

Carbonyl Index : a ratio of absorbance at 1715 cm^{-1} to that at 1465 cm^{-1}

Vinyl Index : a ratio of absorbance at 1640 cm^{-1} to that at 1465 cm^{-1}

Items in gray cells are not classified as plastics based on the carbony index and/or vinyl index.

Summary

	pieces/sample	pieces/kg-dry sediment
PE	0	0
PP	0	0
PS	0	0
PET	1	100
PVC	0	0
PAK*	1	100
PA**	1	100
PCL***	0	0
PEP	1	100
EVA****	0	0
Others	0	0
total	4	400

*PAK : polyacrylates
**PA : polyamide
***PCL : polycaprolactanes
****EVA : polyethylenevinylacetates

Symbols corresond to individual items in the left table.

Table SI-1-13. Microplastics identified in sediment (0 – 6 cm layer) from a core collected in the Gulf of Thailand (GT14)

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
0.3m㎜ - 1mm						
151005ATR0001	Poly(caprolactone)diol***	75%			Black	Fragment
151005ATR0005	PE	91%	0.00	0.02	White	Fragment
151005ATR0006	Poly(ethylene:acrylic acid)*	86%			Yellow	Fragment
151005ATR0009	PE	81%	2.1	0.0	Brown	Fragment
	Total number of plastics	3				
Weight of sediment (g-dry)		12.1				

Summary

	pieces/sample	pieces/kg-dry sediment
PE	1	83
PP	0	0
PS	0	0
PET	0	0
PVC	0	0
PAK*	1	83
PA**	0	0
PCL***	1	83
PEP	0	0
EVA****	0	0
Others	0	0
total	3	248

Table SI-1-14. Microplastics identified in sediment (8 – 10 cm layer) from a core collected in the Gulf of Thailand (GT14)

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
0.3m㎜ - 1mm						
151103ATR0019	PE	92%	0.00	0.02	White	Fragment
151103ATR0021	PE	90%	0.68	0.00	Yellow	Fragment
	Total number of plastics	2				
Weight of sediment (g-dry)		10.0				

Summary

	pieces/sample	ces/kg-dry sediment
PE	2	165
PP	0	0
PS	0	0
PET	0	0
PVC	0	0
PAK*	0	0
PA**	0	0
PCL***	0	0
PEP	0	0
EVA****	0	0
Others	0	0
total	2	165

Table SI-1-15. Microplastics identified in sediment (78 – 79 cm layer) from a core collected in the Gulf of Thailand (GT14)

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
151117ATR0001	PEP	92%	0.00	0.00%	White	Film
0.3m㎜ - 1mm						
	Total number of plastics	0				
Weight of sediment (g-dry)		10.0				

Summary

	pieces/sample	ces/kg-dry sediment
PE	0	0
PP	0	0
PS	0	0
PET	0	0
PVC	0	0
PAK*	0	0
PA**	0	0
PCL***	0	0
PEP	0	0
EVA****	0	0
Others	0	0
total	0	0

*PAK : polyacrylates

Carbonyl Index : a ratio of absorbance at 1715 cm^{-1} to that at 1465 cm^{-1}

**PA : polyamide

Vinyl Index : a ratio of absorbance at 1640 cm^{-1} to that at 1465 cm^{-1}

***PCL : polycaprolactanes

Items in gray cells are not classified as plastics based on the carbony index and/or vinyl ind

****EVA : polyethylenevinylacetates

Symbols corresond to individual items in above table.

Table SI-1-16. Microplastics identified in sediment (0 – 6 cm layer) from a core collected in the Gulf of Thailand (GT15)

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
0.3m㎜ - 1mm						
151013ATR0001	Poly(ethylene:vinyl acetate)****	86%			Cream	Fragment
151013ATR0003	PS	81%			White	Fragment
151013ATR0004	PE	88%	0.75	0.00	Brown	Sheet
151013ATR0005	PE	94%	0.00	0.04	White	Fragment
	Total number of plastics	4				
Weight of sediment (g-dry)		12.2				

Summary

	pieces/sample	pieces/kg-dry sediment
PE	2	164
PP	0	0
PS	1	82
PET	0	0
PVC	0	0
PAK*	0	0
PA**	0	0
PCL***	0	0
PEP	0	0
EVA****	1	82
Others	0	0
total	4	328

Table SI-1-17. Microplastics identified in sediment (6 – 12 cm layer) from a core collected in the Gulf of Thailand (GT15)

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
0.3m㎜ - 1mm						
151103ATR0042	Poly(octadecyl acrylate)*	87%			White	Fragment
	Total number of plastics	1				
Weight of sediment (g-dry)		10.0				

Summary

	pieces/sample	pieces/kg-dry sediment
PE	0	0
PP	0	0
PS	0	0
PET	0	0
PVC	0	0
PAK*	1	82
PA**	0	0
PCL***	0	0
PEP	0	0
EVA****	0	0
Others	0	0
total	1	82

Table SI-1-18. Microplastics identified in sediment (44 – 46 cm layer) from a core collected in the Gulf of Thailand (GT15)

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
0.3m㎜ - 1mm						
	Total number of plastics	0				
Weight of sediment (g-dry)		10.1				

Summary

	pieces/sample	pieces/kg-dry sediment
PE	0	0
PP	0	0
PS	0	0
PET	0	0
PVC	0	0
PAK*	0	0
PA**	0	0
PCL***	0	0
PEP	0	0
EVA****	0	0
Others	0	0
total	0	0

*PAK : polyacrylates

Carbonyl Index : a ratio of absorbance at 1715 cm^{-1} to that at 1465 cm^{-1}

**PA : polyamide

Vinyl Index : a ratio of absorbance at 1640 cm^{-1} to that at 1465 cm^{-1}

***PCL : polycaprolactanes

Items in gray cells are not classified as plastics based on the carbony index and/or vinyl index.

****EVA : polyethylenevinylacetates

Symbols corresond to individual items in above table.

Table SI-1-19. Microplastics identified in sediment (0 – 6 cm layer) from a core collected in the Gulf of Thailand (GT16)

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5mm						
0.3mm - 1mm						
151013ATR0017	PEP	88%	0.60	0.07	White	Fragment
151013ATR0018	PE	88%	0.00	0.00	Brown	Film
	Total number of plastics	2				
Weight of sediment (g-dry)		12.1				

Summary

	pieces/sample	pieces/kg-dry sediment
PE	1	83
PP	0	0
PS	0	0
PET	0	0
PVC	0	0
PAK*	0	0
PA**	0	0
PCL***	0	0
PEP	1	83
EVA****	0	0
Others	0	0
total	2	165

Table SI-1-20. Microplastics identified in sediment (8 – 10 cm layer) from a core collected in the Gulf of Thailand (GT16)

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5mm						
0.3mm - 1mm						
	Total number of plastics	0				
Weight of sediment (g-dry)		10.0				

Summary

	pieces/sample	ces/kg-dry sediment
PE	0	0
PP	0	0
PS	0	0
PET	0	0
PVC	0	0
PAK*	0	0
PA**	0	0
PCL***	0	0
PEP	0	0
EVA****	0	0
Others	0	0
total	0	0

Carbonyl Index : a ratio of absorbance at 1715 cm^{-1} to that at 1465 cm^{-1}

Vinyl Index : a ratio of absorbance at 1640 cm^{-1} to that at 1465 cm^{-1}

Items in gray cells are not classified as plastics based on the carbony index and/or vinyl index.

*PAK : polyacrylates

**PA : polyamide

***PCL : polycaprolactanes

****EVA : polyethylenevinylacetates

Table SI-1-21. Microplastics identified in sediment (0 – 6 cm layer) from a core collected in the Gulf of Thailand (GT18)

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
0.3m㎜ - 1mm						
151013ATR0019	PE	82%	n.a.	n.a.	Brown	Film
	Total number of plastics	1				
Weight of sediment (g-dry)		12.1				

Summary

	pieces/sample	pieces/kg-dry sediment
PE	1	83
PP	0	0
PS	0	0
PET	0	0
PVC	0	0
PAK*	0	0
PA**	0	0
PCL***	0	0
PEP	0	0
EVA****	0	0
Others	0	0
total	1	83

Table SI-1-22. Microplastics identified in sediment (8 – 10 cm layer) from a core collected in the Gulf of Thailand (GT18)

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
0.3m㎜ - 1mm						
	Total number of plastics	0				
Weight of sediment (g-dry)		10.1				

Summary

	pieces/sample	pieces/kg-dry sediment
PE	0	0
PP	0	0
PS	0	0
PET	0	0
PVC	0	0
PAK*	0	0
PA**	0	0
PCL***	0	0
PEP	0	0
EVA****	0	0
Others	0	0
total	0	0

Carbonyl Index : a ratio of absorbance at 1715 cm^{-1} to that at 1465 cm^{-1}

Vinyl Index : a ratio of absorbance at 1640 cm^{-1} to that at 1465 cm^{-1}

Items in gray cells are not classified as plastics based on the carbony index and/or vinyl index.

*PAK : polyacrylates

**PA : polyamide

***PCL : polycaprolactanes

****EVA : polyethylenevinylacetates

Table SI-1-23. Microplastics identified in sediment (2 – 4 cm layer) from the core collected in the Straights of Johor in Malaysia (JBEC3)

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
151228ATR0027	PP	94%			White	Fiber
0.3m㎜ - 1mm						
151228ATR0028	PS	85%			White	Fragment
151228ATR0029	PP	88%			White	Fragment
151228ATR0031	PP	92%			White	Fragment
151228ATR0032	Poly(ethylene:1-butene)	72%	1.40	0.00	White	Fragment
	Total number of plastics	3				
Weight of sediment (g-dry)		10.0				

Summary

	pieces/sample	pieces/kg-dry sediment
PE	0	0
PP	2	200
PS	1	100
PET	0	0
PVC	0	0
PAK*	0	0
PA**	0	0
PCL***	0	0
PEP	0	0
EVA****	0	0
Others	0	0
total	3	300

Table SI-1-24. Microplastics identified in sediment (48 – 50 cm layer) from the core collected in the Straights of Johor in Malaysia (JBEC3)

Item number	Polymer type	Hit Quality	Carbonyl Index	Vinyl Index	Color	Shape
1mm - 5㎜						
0.3m㎜ - 1mm						
151228ATR0036	PE	92%	0.00	0.10	Brown	Fragment
	Total number of plastics	1				
Weight of sediment (g-dry)		10.0				

Summary

	pieces/sample	pieces/kg-dry sediment
PE	1	100
PP	0	0
PS	0	0
PET	0	0
PVC	0	0
PAK*	0	0
PA**	0	0
PCL***	0	0
PEP	0	0
EVA****	0	0
Others	0	0
total	1	100

Carbonyl Index : a ratio of absorbance at 1715 cm^{-1} to that at 1465 cm^{-1}

Vinyl Index : a ratio of absorbance at 1640 cm^{-1} to that at 1465 cm^{-1}

Items in gray cells are not classified as plastics based on the carbony index and/or vinyl index.

*PAK : polyacrylates

**PA : polyamide

***PCL : polycaprolactanes

****EVA : polyethylenevinylacetates

Table SI-2. Number of microplastics in supernatants and residual deposits after density separation

	Number of microplastics*		% Residual
	1st + 2nd Supernatants**	Residual Deposit***	
PE	47	1	2%
PP	18	0	0%
PS	5	0	0%
PET	17	0	0%
PVC	3	0	0%
PAK****	55	2	4%
PA*****	1	0	0%
PCL******	13	5	38%
PEP	40	4	10%
EVA*******	8	2	25%
Others	36	4	11%
Total microplastics	243	18	7%
Number of examined particles	568	517	

*in 10g(dry) of surface sediment from Cn.22 of canal of Tokyo Bay

**Fraction used for the normal procedure

***Fraction not used for the normal procedure

****PAK : polyacrylates

*****PA : polyamide

******PCL : polycaprolactanes

*******EVA : polyethylenevinylacetates