물성표 | Physical properties

항 목	시험방법 ISO/(IEC)	단 위	HDPE	PP	UPE	PC		PET		PEEK1000
						PC	PC GF20	PET100	PET200	
색상	–	–	백색	백색	백색	투명/흑색	흑색	백색/흑색	담회색	회갈색/흑색
밀도	1183	g/cm³	0.94	0.9	0.94	1.2	1.36	1.39	1.44	1.31
흡수율:										
23℃ 수중, 24/96 시간이후(1)	62	mg	–/–	–/–	–/–	–/–	–/–	6월 13일	5월 11일	5월 10일
	62	%	0.01/–	0.01/–	–/–	0.15/–	0.16/–	0.07/0.16	0.06/0.13	0.06/0.12
23℃ 공기중, 50%PH, 평형	–	%	–	–		–	–	0.25	0.23	0.2
23℃ 수중, 평형	–	%	0.01	0.01	–	–	0.29	0.5	0.47	0.45
열적성질/ThermalProperties(2)										
융점	–	℃	–			–		230	255	255
유리전이점	–	℃								
열전도도(23℃)	–	W/(K·m)	–	–	–	–	1.17	0.29	0.29	0.29
선팽창계수										
23-60℃평균값	–	m(m·K)	–	–	–	–	–	$60 \cdot 10^{-6}$	$65 \cdot 10^{-6}$	$50 \cdot 10^{-6}$
23-100℃평균값	–	m(m·K)	–	–	–	$56 \cdot 10^{-6}$	$27 \cdot 10^{-6}$	$80 \cdot 10^{-6}$	$85 \cdot 10^{-6}$	$50 \cdot 10^{-6}$
23-150℃평균값	–	m(m·K)	–	–	–	–	–	–	–	–
150℃ 이상값	–	m(m·K)	–	–	–	–	–	–	–	–
하중열변형온도										
방법A:1.8MPa	75	℃	47	–	54	136	146	75	75	200
최고연속사용온도(공기중) :										
단시간(3)	–	℃	–	–	–	–	–	160	160	310
장시간:5,000/20,000시간(4)	–	℃	–/–	–/–	–/–	–/–	–/–	115/100	115/100	250
최저연속사용온도(5)	–	℃	–	–	–	–	–	-20	-20	
난연성(6)										
"Oxygen Index"	4589	%	–	–	–	–	–	25	25	35
UL94(3/6mm두께)	–	–	HB/HB	HB/HB	HB/HB	HB/HB	V-0/V-0	HB/HB	HB/HB	V-0/V-0
기계적성질/Mechanical Properties at 23℃(7)										
인장테스트(8)										
인장강도(9)	527	MPa	23	26	31	72	110	90	76	110/–
+	527	MPa	–	–	–	–	–	90	76	
인장신율(9)	527	%	〉600	〉500	500	20	5	15	7	20
	527	%	–	–	–	–	–	15	7	
인장탄성율(10)	527	MPa	–	–	–	–	–	3700	3450	4400
	527	MPa	–	–	–	–	–	3700	3450	
압축테스트(11)										
1/2/5%변형,압축강도(10)	604	MPa	–/–/29	–/–/–	–/–/20	–/–/–	–/–/–	26/51/103	24/47/95	–/29/57
크리프테스트(8)										
1,000시간, 1%변형응력	889	MPa	–	–	–	–	–	26	23	
	889	MPa	–	–	–	–	–	26	23	
Charpy충격강도-Notch없음(12)	179/1eU	KJ/m²	–	–	–	–	–	≥50	≥30	no break
Charpy충격강도-Notches	179/1eA	KJ/m²	–	–	–	–	–	2	2.5	3.5
Lzod충격강도-Notches	180/2A	KJ/m²	no break	10	–	9.5	10.7	2	2.5	
	180/2A	KJ/m²	–	–	–	–	–	2	2.5	
강구압입경도(13)	2039-1	N/mm²	–	–	–	–	–	171	160	230
Rockwell경도(13)	2039-1	–	R60	R75	R52	R120	M91,R122	M96	M94	M105
전기적성질/Electrical Properties at 23℃										
절연파괴전압(14)	(60243)	KV/mm	–	–	–	–	19.3	22	21	24
	(60243)	KV/mm	–	–	–	–	–	22	21	
체적고유저항	(60093)	Ω.cm	〉10^{14}	〉10^{17}	〉10^{14}	〉10^{16}	〉10^{17}	〉10^{15}	〉10^{15}	〉10^{14}
	(60093)	Ω.cm	–	–	–	–	–	〉10^{14}	〉10^{14}	
표면고유저항	(60093)	Ω	〉10^{13}	〉10^{14}	〉10^{14}	〉10^{14}	–	〉10^{14}	〉10^{14}	〉10^{14}
	(60093)	Ω	–	–	–	–	–	〉10^{14}	〉10^{14}	
유전율 :										
100Hz	(60250)	–	–	–	–	–	–	3.4	3.4	3.2
	(60250)	–	–	–	–	–	–	3.4	3.4	
1MHz	(60250)	–	–	–	–	2.8	3.1	3.2	3.2	3.2
	(60250)	–	–	–	–	–	–	3.2	3.2	
유전정접										
100Hz	(60250)	–	–	–	–	–	–	0.001	0.001	0.001
	(60250)	–	–	–	–	–	–	0.001	0.001	
1MHz	(60250)	–	–	–	–	0.009	0.007	0.014	0.014	0.002
	(60250)	–	–	–	–	–	–	0.014	0.014	
비교트래킹지수(CTI)	(60112)	–	–	–	–	–	–	600	600	150
	(60112)	–	–	–	–	–	–	600	600	0

▶ 단위환산 : 1g/㎤ = 1,000Kg/m³ ; MPa = 1N/㎟, 1kV/㎜ = 1MV/m

물성표 | Physical properties

항 목	시험방법 ISO/(IEC)	단 위	ABS	CELAZOLE PBI	TORLON 4203 / 4503	TORLON 4301 / 4501	TORLON 5530 PAI	KETRON PEEK-1000	KETRON PEEK-HPV	KETRON PEEK-GF30
색상	–	–	베이지	black	yellow-ochre	black	khaki grey	natural/black	black	natural(brownish grey)
밀도	1183	g/cm³	1.07	1.3	1.41	1.45	1.61	1.31	1.45	1.51
흡수율:										
23℃ 수중, 24/96 시간이후(1)	62	mg		38 / –	29 / –	26 / –	25 / –	5 / 10	4/9	–
	62	%		0.05/–	0.35/–	0.30/–	0.25/–	0.06/0.12	0.05/0.11	–
23℃ 공기중, 50%PH, 평형	–	%		–	2.5	1.9	1.7	0.2	0.14	0.14
23℃ 수중, 평형	–	%			4.4	3.8	3	0.45	0.3	
열적성질/ThermalProperties(2)										
융점	–	℃	340	NA	NA	NA	NA	340	340	340
유리전어점	–	℃		425	280	280	280	–	–	–
열전도도(23℃)	–	W/(K·m)	0.25	0.04	0.26	0.54	0.36	0.25	0.24	0.43
선팽창계수										
23-60℃평균값	–	m(m·K)		–	–	–	–	–	–	–
23-100℃평균값	–	m(m·K)		25.10^{-6}	30.10^{-6}	25.10^{-6}	25.10^{-6}	50.10^{-6}	$30 \cdot 10^{-6}$	$30 \cdot 10^{-6}$
23-150℃평균값	–	m(m·K)	–	25.10^{-6}	30.10^{-6}	25.10^{-6}	25.10^{-6}	50.10^{-6}	$30 \cdot 10^{-6}$	$30 \cdot 10^{-6}$
150℃ 이상값	–	m(m·K)	–	25.10^{-6}	30.10^{-6}	25.10^{-6}	25.10^{-6}	110.10^{-6}	$65 \cdot 10^{-6}$	$65 \cdot 10^{-6}$
하중열변형온도										
방법A:1.8MPa	75	℃	95	425	280	280	280	160	195	230
최고연속사용온도(공기중) :										
단시간(3)	–	℃		500	270	270	270	310	310	310
장시간:5,000/20,000시간(4)	–	℃		310	250	250	250	250	250	250
최저연속사용온도(5)	–	℃		–	–	–	–	–	–	–
난연성(6)										
"Oxygen Index"	4589	%		58	45	44	50	35	43	40
UL94(3/6mm두께)	–	–		V-0/V-0	V-0/V-0	V-0/V-0	V-0/V-0	V-0/V-0	V-0/V-0	V-0/V-0
기계적성질/Mechanical Properties at 23℃(7)										
인장테스트(8)										
인장강도(9)	527	MPa	32	–	–	–	–	–	–	–
+	527	MPa		– /140	120/–	–/80	–/95	110/–	– /75	–90
인장신율(9)	527	%	30	–	–	–	–	–	–	–
	527	%		3	10	5	3	20	5	5
인장탄성율(10)	527	MPa	1900	–	–	–	–	–	–	–
	527	MPa		5800	4500	5800	6200	4400	5900	6300
압축테스트(11)										
1/2/5%변형,압축강도(10)	604	MPa		42/82/–	27/53/–	31/58/–	–	29/57/–	34/67/–	41/81/–
크리프테스트(8)										
1,000시간, 1%변형응력	889	MPa		–	–	–	–	–	–	–
	889	MPa		–	–	–	–	–	–	–
Charpy충격강도-Notch없음(12)	179/1eU	KJ/m²		–	no break	–	–	no break	25	35
Charpy충격강도-Notches	179/1eA	KJ/m²		3.5	10	4	3.5	3.5	2.5	4
Lzod충격강도-Notches	180/2A	KJ/m²		–	–	–	–	–	–	–
	180/2A	KJ/m²		–	–	–	–	–	–	–
강구압입경도(13)	2039-1	N/mm²		375	200	200	–	230	215	270
Rockwell경도(13)	2039-1	–		E105	E80(M12)	M105	E85(M125)	M105	M85	M99
전기적성질/Electrical Properties at 23℃										
절연파괴전압(14)	(60243)	KV/mm		–	–	–	–	–	–	–
	(60243)	KV/mm		22	24	–	28	24	–	24
체적고유저항	(60093)	Ω.cm		–	–	–	–	–	–	–
	(60093)	Ω.cm		$\rangle 10^{14}$	$\rangle 10^{14}$	$\rangle 10^{13}$	$\rangle 10^{14}$	$\rangle 10^{14}$	–	$\rangle 10^{14}$
표면고유저항	(60093)	Ω		–	–	–	–	–	–	–
	(60093)	Ω		$\rangle 10^{13}$	$\rangle 10^{13}$	$\rangle 10^{13}$	$\rangle 10^{13}$	$\rangle 10^{13}$	–	$\rangle 10^{13}$
유전율 :										
100Hz	(60250)	–		–	–	–	–	–	–	–
	(60250)	–		3.3	4.2	6	4.4	3.2	–	3.2
1MHz	(60250)	–		–	–	–	–	–	–	–
	(60250)	–		3.2	3.9	5.4	4.2	3.2	–	3.6
유전정접										
100Hz	(60250)	–		–	–	–	–	–	–	–
	(60250)	–		0.001	0.026	0.037	0.022	0.001	–	0.001
1MHz	(60250)	–		–	–	–	–	–	–	–
	(60250)	–		–	0.031	0.042	0.05	0.002	–	0.002
비교트래킹지수(CTI)	(60112)	–		–	–	–	–	–	–	–
	(60112)	–		–	–	–	–	150	–	175

▶ 단위환산 : 1g㎠ = 1,000Kg/m³ ; MPa = 1N/㎟, 1kV/㎜ = 1MV/m

물성표 | Physical properties

항 목	시험방법 ISO/(IEC)	단 위	KETRON PEEK-CA30	TECHTRON HPV PPS	PPSU 1000	PEI 1000	PSU 1000	SYMALIT PVDF 1000
색상	–	–	black	deep blue	black	natural(amber, translucent)	natural(yellow, translucent)	natural(white)
밀도	1183	g/cm³	1.41	1.43	1.29	1.27	1.24	1.79
흡수율:								
23℃ 수중, 24/96 시간이후(1)	62	mg	–	1/2	26/55	20/41	23/44	1/3
	62	%	–	0.001/0.03	0.35/0.72	0.26/0.54	0.32/0.61	0.01/0.03
23℃ 공기중, 50%PH, 평형	–	%	0.14	0.03	0.6	0.75	0.4	0.05
23℃ 수중, 평형	–	%	0.3	0.09	1.2	1.35	0.85	0.05
열적성질/ThermalProperties(2)								
융점	–	℃	340	280	NA	NA	NA	175
유리전어점	–	℃	–	–	220	215	190	–
열전도도(23℃)	–	W/(K·m)	0.92	0.3	0.35	0.22	0.26	0.19
선팽창계수								
23-60℃평균값	–	m(m·K)	–	–	–	–	–	–
23-100℃평균값	–	m(m·K)	$25 \cdot 10^{-6}$	$50 \cdot 10^{-6}$	$55 \cdot 10^{-6}$	$45 \cdot 10^{-6}$	$60 \cdot 10^{-6}$	$130 \cdot 10^{-6}$
23-150℃평균값	–	m(m·K)	$25 \cdot 10^{-6}$	$60 \cdot 10^{-6}$	$55 \cdot 10^{-6}$	$45 \cdot 10^{-6}$	$60 \cdot 10^{-6}$	$145 \cdot 10^{-6}$
150℃ 이상값	–	m(m·K)	$55 \cdot 10^{-6}$	$80 \cdot 10^{-6}$	$55 \cdot 10^{-6}$	$45 \cdot 10^{-6}$	–	–
하중열변형온도								
방법A:1.8MPa	75	℃	230	115	200	190	170	105
최고연속사용온도(공기중) :								
단시간(3)	–	℃	310	260	210	200	180	160
장시간:5,000/20,000시간(4)	–	℃	250	220	180	170	150	150
최저연속사용온도(5)	–	℃	–	–	–	–	–	–
난연성(6)								
"Oxygen Index"	4589	%	40	47	44	47	30	44
UL94(3/6mm두께)	–	–	V-0/V-0	V-0/V-0	V-0/V-0	V-0/V-0	HB/HB V-0/V-0	V-0/V-0
기계적성질/Mechanical Properties at 23℃(7)								
인장테스트(8)								
인장강도(9)	527	MPa	–	–	–	–	–	–
+	527	MPa	–/1.30	–/75	76/–	105/–	80/–	50/–
인장신율(9)	527	%	–	–	–	–	–	–
	527	%	5	5	30	10	10	〉20
인장탄성율(10)	527	MPa	–	–	–	–	–	–
	527	MPa	7700	3700	2500	3400	2700	2300
압축테스트(11)								
1/2/5%변형,압축강도(10)	604	MPa	49/97/–	28/55/–	18/35/–	25/49/–	20/39/–	17/32/–
크리프테스트(8)								
1,000시간, 1%변형응력	889	MPa	–	–	–	–	–	–
	889	MPa	–	–	–	–	–	–
Charpy충격강도-Notch없음(12)	179/1eU	KJ/m²	35	25	no break	no break	no break	no break
Charpy충격강도-Notches	179/1eA	KJ/m²	4	3.5	10	3.5	4	10
Lzod충격강도-Notches	180/2A	KJ/m²	–	–	–	–	–	–
	180/2A	KJ/m²	–	–	–	–	–	–
강구압입경도(13)	2039-1	N/mm²	325	180	–	170	155	110
Rockwell경도(13)	2039-1	–	M102	M84	M80	M114	M91	M75
전기적성질/Electrical Properties at 23℃								
절연파괴전압(14)	(60243)	KV/mm	–	–	–	–	–	–
	(60243)	KV/mm	–	24	–	27	30	18
체적고유저항	(60093)	Ω.cm	–	–	–	–	–	–
	(60093)	Ω.cm	$〉10^{15}$	$〉10^{14}$	$〉10^{14}$	$〉10^{14}$	$〉10^{14}$	$〉10^{14}$
표면고유저항	(60093)	Ω	–	–	–	–	–	–
	(60093)	Ω	–	$〉10^{13}$	$〉10^{13}$	$〉10^{13}$	$〉10^{13}$	$〉10^{13}$
유전율 :								
100Hz	(60250)	–	–	–	–	–	–	–
	(60250)	–	–	3.3	3.4	3	3	7.4
1MHz	(60250)	–	–	–	–	–	–	–
	(60250)	–	–	3.3	3.5	3	3	6
유전정접								
100Hz	(60250)	–	–	–	–	–	–	–
	(60250)	–	–	0.003	0.001	0.002	0.001	0.025
1MHz	(60250)	–	–	–	–	–	–	–
	(60250)	–	–	0.003	0.005	0.002	0.003	0.165
비교트래킹지수(CTI)	(60112)	–	–	–	–	–	–	–
	(60112)	–	–	100	–	175	150	600

▶ 단위환산 : 1g/㎤ = 1,000Kg/㎥ ; MPa = 1N/㎟, 1kV/㎜ = 1MV/m

물성표 | Physical properties

항 목	시험방법 ISO/(IEC)	단 위	FLUOROSINT 500	FLUOROSINT 207	SEMITRON Esd 225	SEMITRON Esd 410C	SEMITRON Esd 500HR	SEMITRON Esd 520HR
색상	–	–	ivory	white	beige	black	white	khaki grey
밀도	1183	g/cm³	2.32	2.3	1.33	1.41	2.3	1.58
흡수율:								
23℃ 수중, 24/96 시간이후(1)	62	mg	14/–	4/–	392/705	–	4/–	56/–
	62	%	0.1/–	0.03/–	5/9	–	0.003/–	0.06/–
23℃ 공기중, 50%PH, 평형	–	%	–	–	0.8	0.75	–	–
23℃ 수중, 평형	–	%	3	2	10	1.35	2	–
열적성질/ThermalProperties(2)								
융점	–	℃	327	327	165	NA	327	NA
유리전어점	–	℃	–	–	–	215	–	280
열전도도(23℃)	–	W/(K·m)	0.77	–	–	0.35	–	0.36
선팽창계수								
23-60℃평균값	–	m(m·K)	–	–	–	–	–	–
23-100℃평균값	–	m(m·K)	$45 \cdot 10^{-6}$	$100 \cdot 10^{-6}$	$150 \cdot 10^{-6}$	$35 \cdot 10^{-6}$	$100 \cdot 10^{-6}$	$25 \cdot 10^{-6}$
23-150℃평균값	–	m(m·K)	$45 \cdot 10^{-6}$	$100 \cdot 10^{-6}$	–	$35 \cdot 10^{-6}$	$100 \cdot 10^{-6}$	$25 \cdot 10^{-6}$
150℃ 이상값	–	m(m·K)	$60 \cdot 10^{-6}$	$140 \cdot 10^{-6}$	–	$35 \cdot 10^{-6}$	$140 \cdot 10^{-6}$	$25 \cdot 10^{-6}$
하중열변형온도								
방법A:1.8MPa	75	℃	130	100	–	210	100	280
최고연속사용온도(공기중) :								
단시간(3)	–	℃	280	280	140	200	280	270
장시간:5,000/20,000시간(4)	–	℃	260	260	90	170	260	250
최저연속사용온도(5)	–	℃	–	–	–	–	–	–
난연성(6)								
"Oxygen Index"	4589	%	≥95	≥95	≥20	47	≥95	48
UL94(3/6mm두께)	–	–	V-0/V-0	–/HB	V-0/V-0	V-0/V-0	V-0/V-0	
기계적성질/Mechanical Properties at 23℃(7)								
인장테스트(8)								
인장강도(9)	527	MPa	–	–	–	–	–	–
+	527	MPa	–/8	–/10	–/38	–/62	–/10	–/83
인장신율(9)	527	%	–	–	–	–	–	–
	527	%	10	50	15	2	50	3
인장탄성율(10)	527	MPa	–	–	–	–	–	–
	527	MPa	2200	1800	1500	6400	1800	5500
압축테스트(11)								
1/2/5%변형,압축강도(10)	604	MPa	–/–/–	–/–/–	11/20/–	–/–/–	–/–/–	–/–/–
크리프테스트(8)								
1,000시간, 1%변형응력	889	MPa	–	–	–	–	–	–
	889	MPa	–	–	–	–	–	–
Charpy충격강도-Notch없음(12)	179/1eU	KJ/m²	no break	no break	no break	–	no break	–
Charpy충격강도-Notches	179/1eA	KJ/m²	4	5	8	4	5	4
Lzod충격강도-Notches	180/2A	KJ/m²	–	–	–	–	–	–
	180/2A	KJ/m²	–	–	–	–	–	–
강구압입경도(13)	2039-1	N/mm²	–	–	70	–	–	–
Rockwell경도(13)	2039-1	–	R55	R50	R106	M115	R50	M108
전기적성질/Electrical Properties at 23℃								
절연파괴전압(14)	(60243)	KV/mm	–	–	–	–	–	–
	(60243)	KV/mm	11	8	–	–	–	–
체적고유저항	(60093)	Ω.cm	–	–	–	–	–	–
	(60093)	Ω.cm	$>10^{12}$	$>10^{12}$	$>10^{10}$–$>10^{12}$	$>10^{4}$–$>10^{8}$	$>10^{10}$–$>10^{12}$	$>10^{10}$–$>10^{12}$
표면고유저항	(60093)	Ω	–	–	–	–	–	–
	(60093)	Ω	$>10^{12}$	$>10^{12}$	$>10^{10}$–$>10^{12}$	$>10^{4}$–$>10^{8}$	$>10^{10}$–$>10^{12}$	$>10^{10}$–$>10^{12}$
유전율 :								
100Hz	(60250)	–	–	–	–	–	–	–
	(60250)	–	–	–	–	–	–	–
1MHz	(60250)	–	–	–	–	–	–	–
	(60250)	–	2.85	2.65	–	–	–	–
유전정접								
100Hz	(60250)	–	–	–	–	–	–	–
	(60250)	–	–	–	–	–	–	–
1MHz	(60250)	–	–	–	–	–	–	–
	(60250)	–	0.008	0.008				
비교트래킹지수(CTI)	(60112)	–	–	–	–	–	–	–
	(60112)	–	–	–	–	–	–	–

▶ 단위환산 : 1g㎤ = 1,000Kg/㎥ ; MPa = 1N/㎟, 1kV/㎜ = 1MV/m