

SSEIF[®]-B

Technical Data Sheets



1. Technical data sheet of SSEIF®-B

Production Information	Product name	SSEIF-B	
	Chemical name	Lignin/Cellulose	
	CAS No.	9005-53-2	
Physical Properties		Units	Values
	Molecular weight	-	Not Measurable
	Density (g/cm ³)	g/cm ³	1.4
	Particle refractive index		1.53
	Appearance		Dark Brown Powder
	Decomposition temp.	°C	>250
Specification	Sieve residue 106 μm	%	0 %
	Specific surface area	m ² /kg	1900
	Moisture (%)		≤5 %
	pH	-	6~8
	Particle size Dv(10)	μm	2.2
	Particle size Dv(50)	μm	4.5
	Particle size Dv(90)	μm	9.9

2. Particle size distribution

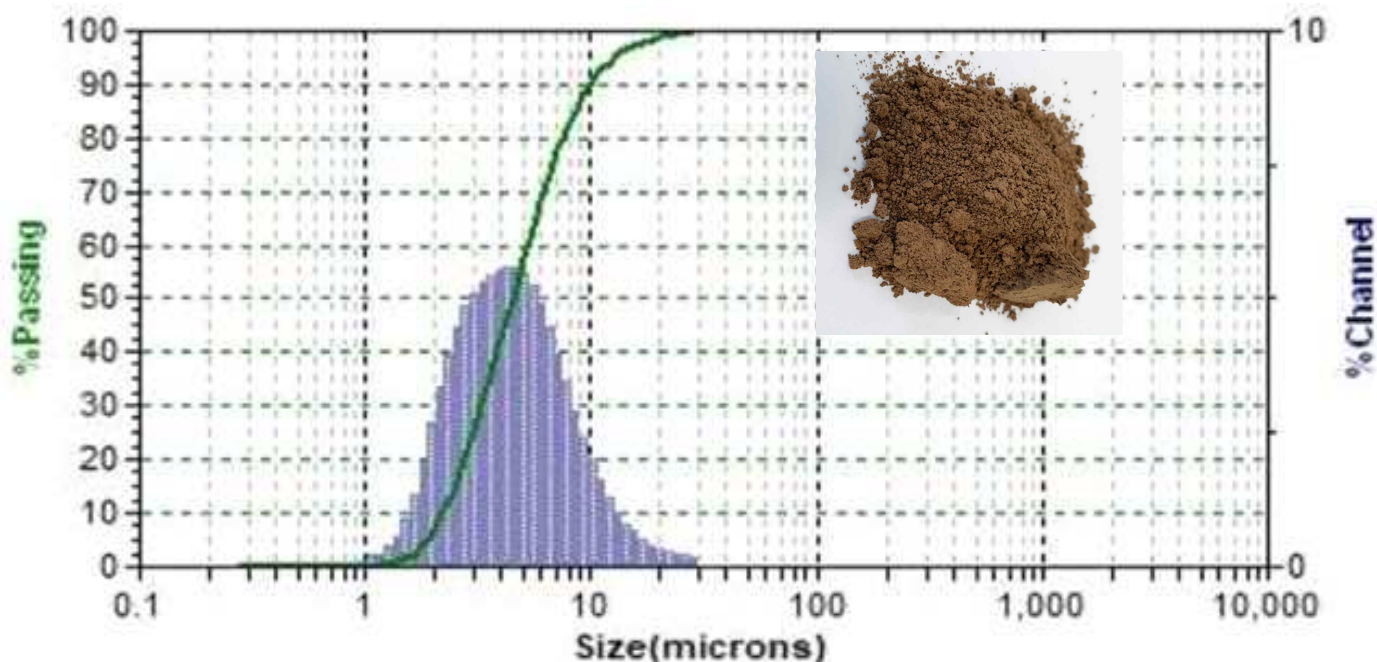
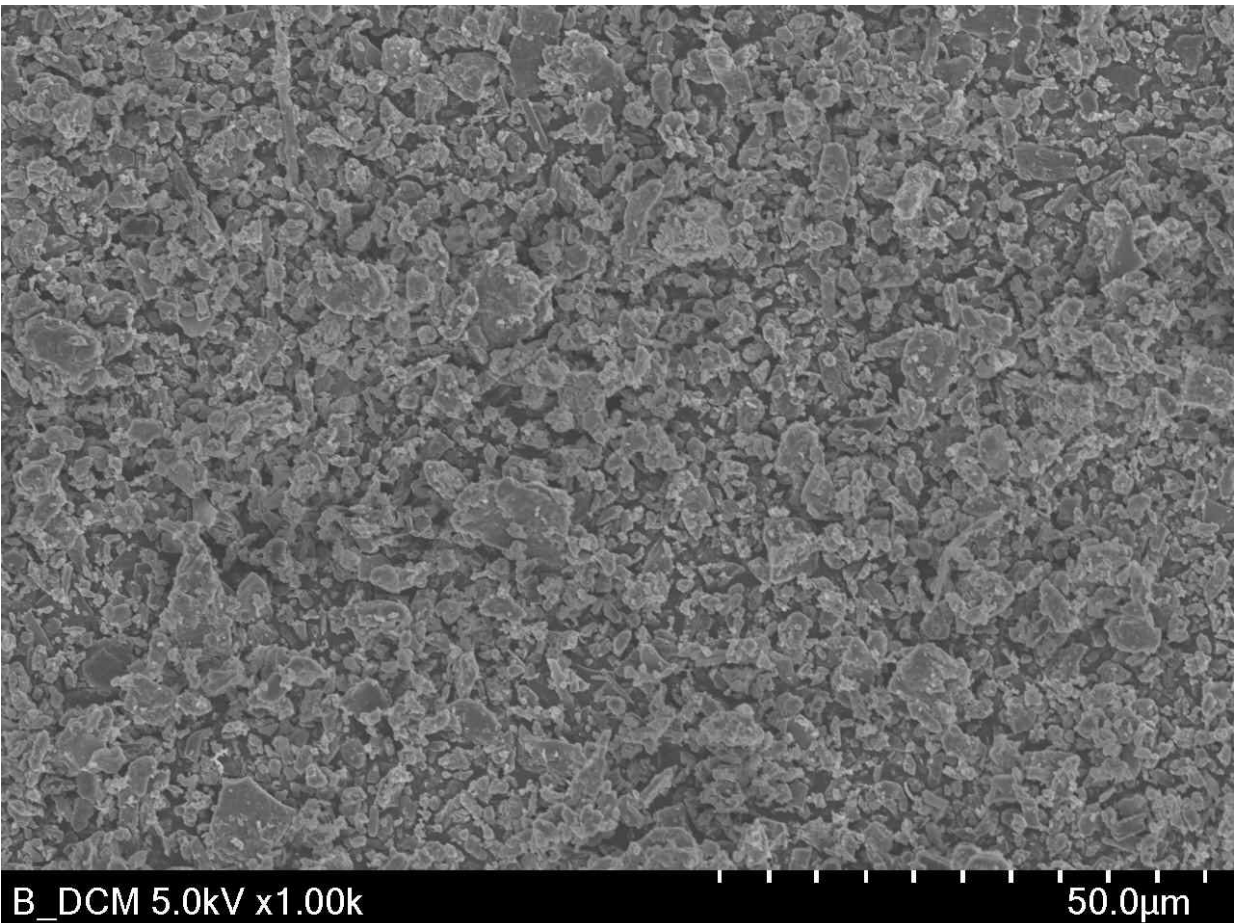


Fig. SSEIF-B

3. SEM



SSEIF[®]-B

Application Data Sheets

1. Physical properties of EPDM-SSEIF[®]-BD rubber composite

Properties		Units	CaCO ₃ , 20 wt%	SSEIF [®] -BD, 10 wt%	SSEIF [®] -BD, 20 wt%
MV ML (1+4, 100°C)	Compound MV	MU	45.2	53.0	52.6
Scorch ML (1+, 125°C)	t5	minutes	5.0	8.4	11.5
	t35	minutes	7.9	14.0	17.8
Rheometer MDR.	MH	dNm	26.6	21.0	19.4
	ts2	minutes	0.44	0.67	0.81
	T10	minutes	0.46	0.66	0.79
	T90	minutes	3.18	3.79	2.40
Physical properties	S.P	g/cm ³	1.295	1.218	1.197
	Hardness	Shore-A	72	78	74
	Tensile strength	kgf/cm ²	110	92	67
	Elongation	%	232	315	237

2. Physical properties of FKM-SSEIF[®]-BD rubber composite* (FKM; Fluorine Kautschuk Material)

Properties	Units	Results	Samsung Electronics requirements	Test methods
Hardness	shore A	71	70±5	ISO 7619
Tensile strength	MPa	12.9	> 12	ISO 37
Elongation	%	550	> 250	ISO 37
UVA, UVB	ΔE	1.27, 1.34	< 3	Samsung Electronics requirements ver. 20200522
Lip stick, BB cream	ΔE	1.95, 2.04	< 3	
Sweat test	ΔE	1.5	< 3	
Hot water (80°C±2°C in water bath), 30 min	%	1.21	< 5	

*The composite contains 5 wt% of SSEIF-BD

3. Physical properties of PBAT-SSEIF[®]-BD film composite

Properties	Units	PBAT		PBAT+ SSEIF-BD 10 wt%		Test methods
		TD	MD	TD	MD	
Thickness	mm	0.030		0.030		KPS M-1001
Tensile strength	N/cm ²	1953	2506	2135	2839	
Elongation	%	492	457	475	403	
Tear strength	N/cm	1160	1080	1103	1103	

4. Physical properties of NBR-SSEIF[®]-BA, L rubber composite

Properties	Units	Fillers			
		-	Kraft lignin	SSEIF-BA	SSEIF-L
NBR (phr)	phr	100	100	100	100
Kraft lignin (phr)		-	10	-	-
SSEIF-BD		-	-	10	-
SSEIF-L		-	-	-	10
Zinc oxide		5	5	5	5
Stearate		1	1	1	1
PEG4000		3	3	3	3
Sulfur		1.5	1.5	1.5	1.5
2-Mercaptobenzothiazole		0.7	0.7	0.7	0.7
2-Mercaptobenzothiazole disulfide		1.0	1.0	1.0	1.0
Mixing condition		30°C→80°C	-	30°C→80°C	30°C→80°C
Roll condition		30°C/3min	30°C/10min	30°C/3min	30°C/3min
Molding condition		155°C/T90	155°C/T90	155°C/T90	155°C/T90
Physical properties					
Density	g/cm ³	1.03	1.073	1.074	1.059
Hardness	A type	45	44	48	48
Tensile strength	kgf/cm ²	33.4	20.3	47.4	47.7
Elongation	%	480	495	822	839
Tear strength	kgf/cm	19.1	13.3	17.8	18.7
Resilience	%	25	24	23	23
DIN abrasion	mm ³	111	481	105	85
Friction force	(μ), dry/wet	0.55/0.31	0.52/0.30	0.50/0.28	0.50/0.27

5. Physical properties of EVA-SSEIF[®]-BA L composite

Properties	Units	Fillers					
		-	Kraft lignin	SSEIF-BA		SSEIF-L	
EVA (phr)	phr	100	100	100	100	100	100
Kraft lignin (phr)			10				
SSEIF-BD				10	10		
SSEIF-L						10	10
Zinc oxide		2	2	2	2	2	2
Stearate		1	1	1	1	1	1
TiO ₂		5	5	5	5	5	5
Dicumyl peroxide (DCP)		1	1	1	1	1	1
Azodicarbonamide (JTR)		4	4	4	6	4	6.5
Mixing condition			30°C→80°C				
Roll condition		80°C/3min	80°C/10min				
Molding condition		170°C/10min(10T mold)					
Physical properties							
Density	g/cm ³	0.170	0.144	-	0.172	-	0.173
Hardness	C type	48	35	72	47	68	47
Tensile strength	kgf/cm ²	18.3	10.3	-	20.5	-	19.8
Elongation	%	157	175	-	285	-	272
Tear strength	kgf/cm	9.9	7.6	-	12.1	-	11.3
Resilience	%	58	56	54	57	54	57
DIN abrasion	mm ³	394	832	-	385	-	392
Ammonia	ASTM D1426-15	Detected	Detected	N.D*	N.D	N.D	N.D
Expansion ratio	%	170	182	130	170	140	170

*ND: not detected

6. Physical properties of carbon CFRP-SSEIF[®]-BA composites

Prepreg		Unidirectional (UD) Prepreg		Fabric Prepreg	
		FC1310-6	Toray #2592	FC1310-6	FC812T
Resin System	Epoxy resin	Confidential	Toray #2592	Confidential	FC812T
		Bio-based	Petro-based	Bio-based	Petro-based epoxy
	Filler	SSEIF-BA	-	SSEIF-BA	-
	T _g (°C)	145	115	145	120
	Curing temp. (°C)	150	120-135	150	150
	Curing process	Autoclave, Press, Oven	Autoclave, Press, Oven	Autoclave, Press, Oven	Autoclave, Press, Oven
	Bio-carbon (%)	65	0	65	0
Carbon Fiber		T700s Carbon fiber UD	T700s Carbon fiber UD	3K Twill fabric	3K Twill fabric
0°Tensile Strength		2601.94 MPa	2860 MPa	675.67 MPa	694 Mpa
0°Tensile Modulus		129.25 GPa	134 GPa	61.8 GPa	58 GPa
0°Compressive Strength		1442.46 MPa	1450 MPa	619.76 MPa	594 Mpa
0°Compressive Modulus		112.5 GPa	-	53.58 GPa	47 GPa
Flexural Strength		1983.25 MPa	1690 MPa	888.94 MPa	918 Mpa
Flexural Modulus		118.52 GPa	120 GPa	56.71GPa	54 GPa
Interlaminar Shear Strength		62 MPa	86.9 MPa	-	-
45°/ -45 ° Inplane Shear Strength		-	-	73.25 MPa	83 MPa
45°/ -45 ° Inplane Shear Modulus		-	-	4.19 GPa	3.3 GPa

