

Performance Tables

Shinmei Lite laminated bar (rod) performance table

Type	Unit	Material	Phenol paper	Phenol cloth	Phenol glass	Epoxy glass	Silicon glass
		Processing JIS standard	PB-PEM	PB-FLE	PB-PG	EB-GEM	SG-SGL
Withstand voltage	kv/mm	C-90- / 20 / 65	8	7	3	9	-
Breakdown voltage	kv/mm	C-90- / 20 / 65	9~14	8~13	4~8	12~16	-
Insulation resistance (normal state)	Ω	C-90- / 20 / 65	$3 \times 10^9 \sim 1 \times 10^{10}$	$3 \times 10^9 \sim 1 \times 10^{10}$	$3 \times 10^9 \sim 3 \times 10^{10}$	$1 \times 10^{11} \sim 1 \times 10^{12}$	$1 \times 10^{11} \sim 1 \times 10^{12}$
Insulation resistance (after boiling)	Ω	C-90- / 20 / 65 + D-2 / 100	$5 \times 10^7 \sim 5 \times 10^8$	$2 \times 10^7 \sim 2 \times 10^8$	$5 \times 10^6 \sim 5 \times 10^7$	$5 \times 10^7 \sim 5 \times 10^4$	-
Bending strength	kg/mm ²	A	15~20	14~18	25~35	30~40	25~35
Compression strength	kg/mm ²	A	16~20	17~22	18~25	20~30	18~25
Water absorption ratio	%	E-24 / 50 + D-24 / 23	0.3~0.8	0.5~1.3	0.7~1.5	0.2~0.6	0.2~0.4
Specific gravity	-	A	1.34~1.40	1.35~1.40	1.63~1.73	1.77~1.82	1.77~1.82
*Appearance after heating (after heating for 2 hours)	℃	A	130℃ OK	140℃ OK	180℃ OK	180℃ OK	200℃ OK
Features and applications			Voltage resistance, for electrical and mechanical applications	For electrical and mechanical applications	Thermal resistance, for electrical and mechanical applications	Superb chemical resistance, thermal resistance, and electrical properties	The highest level of thermal resistance. H type insulator

Shinmei Lite laminated tube (pipe) performance table

Type	Unit	Production Method	Mold Method (PTM)			
		Material	Phenol paper	Phenol cloth	PhaEpoxy glassenol cloth	Silicon glass
		Processing/Symbol	PTM-PEM	PTM-FLE	ETM-GEM	ETM-SGL
Flatwise 1 minute withstand voltage (in oil)	kv/mm	C-90- / 20 / 65	9	6	13	6
Flatwise breakdown voltage (in oil)	kv/mm	C-90- / 20 / 65	15~25	10~15	20~35	7~15
Edgewise 1 minute withstand voltage (in oil)	kv/15mm	C-90- / 20 / 65	20	18	25	18
Edgewise breakdown voltage (in oil)	kv/15mm	C-90- / 20 / 65	35~45	25~35	40~50	20~30
Insulation resistance (normal state)	Ω	C-90- / 20 / 65	$1 \times 10^{10} \sim 1 \times 10^{11}$	$1 \times 10^{10} \sim 5 \times 10^{10}$	$5 \times 10^{11} \sim 5 \times 10^{12}$	$5 \times 10^{11} \sim 5 \times 10^{12}$
Dielectric constant (1MHz)	-	C-90- / 20 / 65	-	-	4.0~5.0	3.0~4.0
Dielectric dissipation factor (1MHz)	-	C-90- / 20 / 65	-	-	0.01~0.03	0.004~0.01
Bending strength	kg/mm ²	A	10~15	10~15	30~35	10~15
Compression strength	kg/mm ²	A	16~20	13~18	20~25	8~12
*Appearance after heating(after heating for 2 hours)	℃	A	130℃ OK	140℃ OK	180℃ OK	200℃ OK
Water absorption ratio	%	E-24 / 50 + D-24 / 23	0.7~1.2	0.9~1.6	0.3~0.7	0.1~0.3
Specific gravity	-	A	1.35~1.40	1.35~1.45	1.70~1.90	1.70~1.80
Features and applications			Voltage resistance, for electrical and mechanical applications	For electrical and mechanical applications	Superb chemical resistance, thermal resistance, and electrical properties	The highest level of thermal resistance. H type insulator

FRP (pipe) performance table

Item	Unit	Properties			
		Sample 1	Sample 2	Sample 3	Sample 4
Specific gravity	-	1.63	1.63	1.62	1.63
Water absorption ratio	%	0.063	0.049	0.045	0.052
Bending	kg/mm ²	39.5	35.6	36.8	37.3
Tension	kg/mm ²	26.0	28.6	30.6	28.4
Thermal resistance	180℃ / 2 h	No abnormalities observed			
Insulation resistance (normal state)	Ω	1.2×10^{14}	2×10^{14}	2×10^{14}	1.7×10^{14}
Insulation resistance (after boiling)	Ω	8×10^{10}	9×10^9	3×10^{11}	6.7×10^{10}
Arcing resistance	Seconds	138	135	139	137
Tracking resistance	V/drop	600 / 51 OK	600 / 51 OK	600 / 51 OK	600 / 51 OK
Flatwise withstand voltage	KV/mm	13KV/mm 1 min OK	13KV/mm 1 min OK	13KV/mm 1 min OK	13KV/mm 1 min OK
Edgewise withstand voltage	KV/15mm	25KV/15mm 1 min OK	25KV/15mm 1 min OK	25KV/15mm 1 min OK	25KV/15mm 1 min OK

Epoxy glass (pipe) performance table

Item	Unit	Silane-treated glass			Borane colored glass		
		1	2	3	1	2	3
Specific gravity	-	1.71	1.72	1.73	1.80	1.77	1.79
Water absorption ratio	%	0.045	0.048	0.049	0.057	0.052	0.054
Bending	MPa	517.0	517.0	522.2	491.0	544.2	550.0
Tension	MPa	265.6	257.0	-	271.6	244.3	-
Thermal resistance	180℃ / 2 h	No abnormalities observed			No abnormalities observed		
Insulation resistance (normal state)	MΩ	6.0×10^7	9.4×10^7	-	5.8×10^7	2.5×10^8	-
Insulation resistance (after processing)	MΩ	8.3×10^4	4.1×10^5	-	3.1×10^4	4.8×10^4	-
Arcing resistance	Seconds	131	134	-	132	132	-
Tracking resistance	V/drop	600V / 51 ok	600V / 51 ok	-	600V / 51 ok	600V / 51 ok	-
Flatwise withstand voltage	MV/m	13MV/1 min ok			13MV/1 min ok		
Flatwise breakdown voltage	MV/m	24.8	24.8	-	24.5	25.7	-
Edgewise withstand voltage	KV/15mm	25KV/15mm 1 min OK			25KV/15mm 1 min OK		
Edgewise breakdown voltage	KV/15mm	54.4	52.8	-	57.1	52.8	-

Note: 1) Testing method defined in JIS K 6911. 2) Processing conditions: A – accept state, C – constant temperature, constant humidity processing, D – water immersion processing, E – heating processing, O – oil immersion processing (figures indicate time/temperature/humidity)

* The above values are measurement values and do not constitute guarantees.

