Breakthrough Newssheet

Sheet No. SOE-016

AsahiKASEI

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Grades：S.O.E.™ L605&L606

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S.O.E.™ L605 & L606 (trial grades)

Modifiers for enhancement of polyphenylene ether (PPE), applicable to flame retardant wire coating material

- **S.O.E.™L605 & L606（trial grades）have excellent compatibility with PPE and perform as modifier for enhancement of PPE.**
- **L605 & L606 make the particle size of PPE smaller. They enable development of flexible and flame retardant compounds with phosphorus flame retardants.**

Table1：Basic properties of L605 & L606

Property	Test method	Test conditions	Units	L605	L606
Specific gravity	JIS K7112	-	-	1.00	0.96
MFR	JIS K7210	230deg C, 2.16kgf	g/10 min	3.5	2.9
Hardness（aft.10sec）	JIS K6253	Type A	MPa	67	62
100% tensile stress	JIS K6251	#3 dummbell tensile speed 500mm/min	MPa	3.5	1.8
300% tensile stress			MPa	13	3.6
Tensile strength			MPa	32	20
Elongation			%	460	490
Dunlop resilience	BS 903	23deg.C		4	65

Figure 1：TEM photograph of PPE/S.O.E.™, and regular SEBS compounds

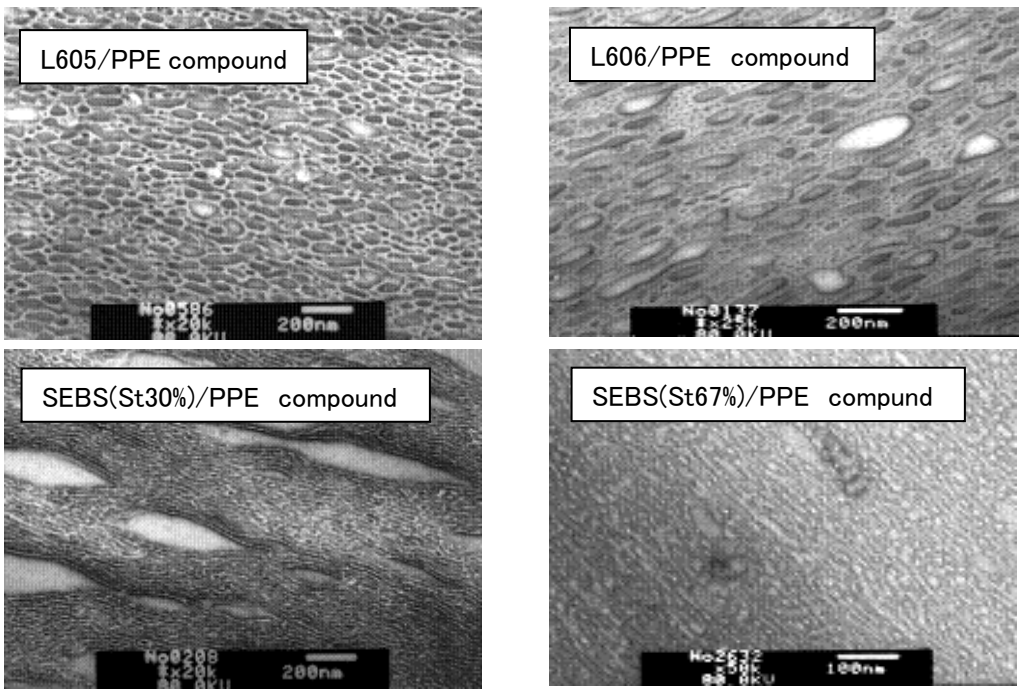


Table 2：Relationships between PPE particle size and burning time of flame retardant compounds

Composition	Hardness (Shore)	Average diameter of PPE particles (nm)	Burning time (sec)
①L605(60)+PPE(30)+FR(10)	A88	75	18
②L605(36)+L606(24)+PPE(30)+FR(10)	A90	100	20
③L605(24)+L606(36)+PPE(30)+FR(10)	A79	160	24
④L606(60)+PPE(30)+FR(10)	A76	250	26
⑤SEBS[*1](60)+PPE(30)+FR(10)	A97	400	38
⑥SEBS[*2](60)+PPE(30)+FR(10)	D73	30	20

[*1]:SEBS(St30%), [*2]:SEBS(St67%)

Figure 2：Burning time vs. PPE particle size in PPE + S.O.E.™ or SEBS + phosphorus flame retardant compounds

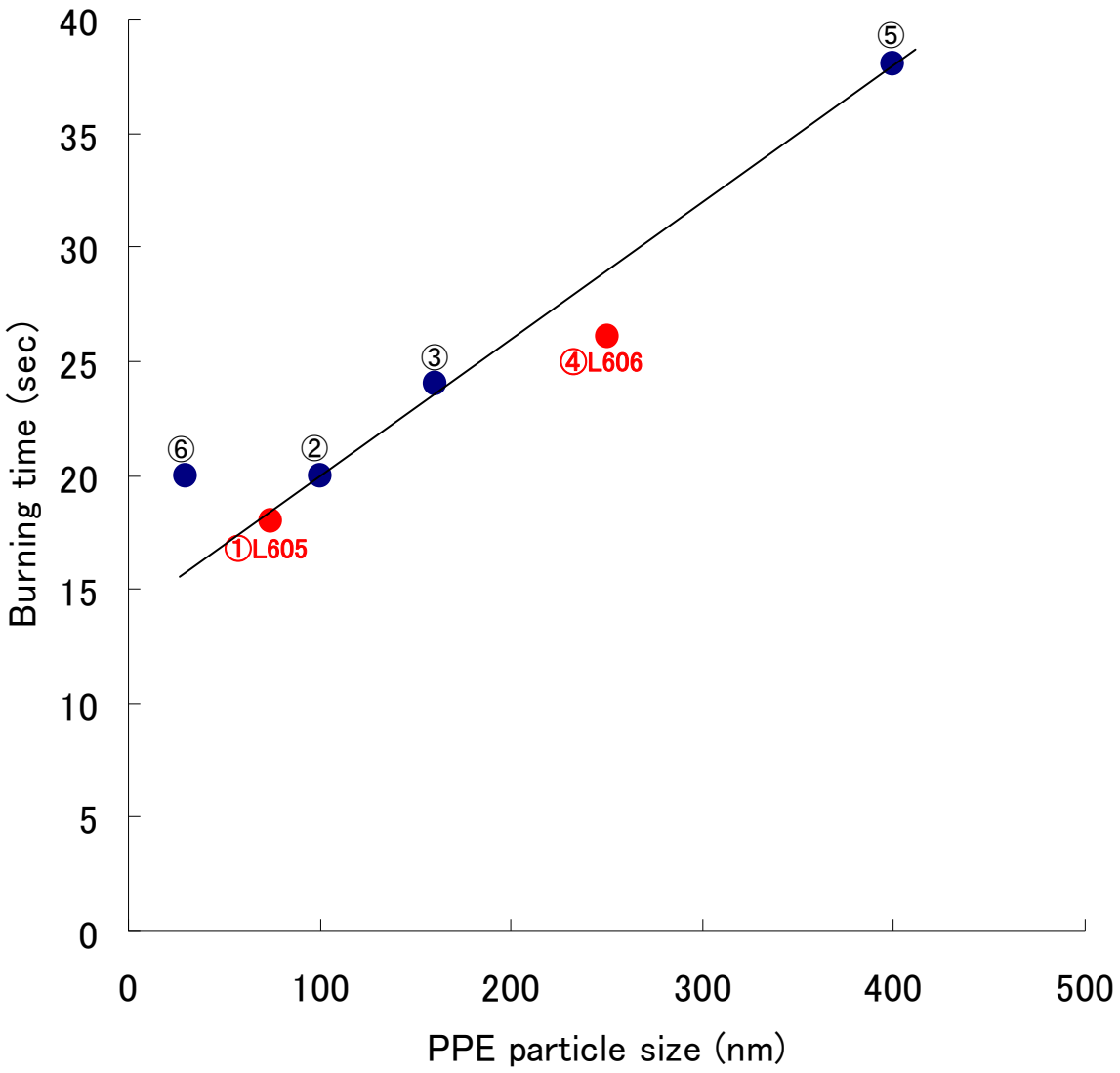
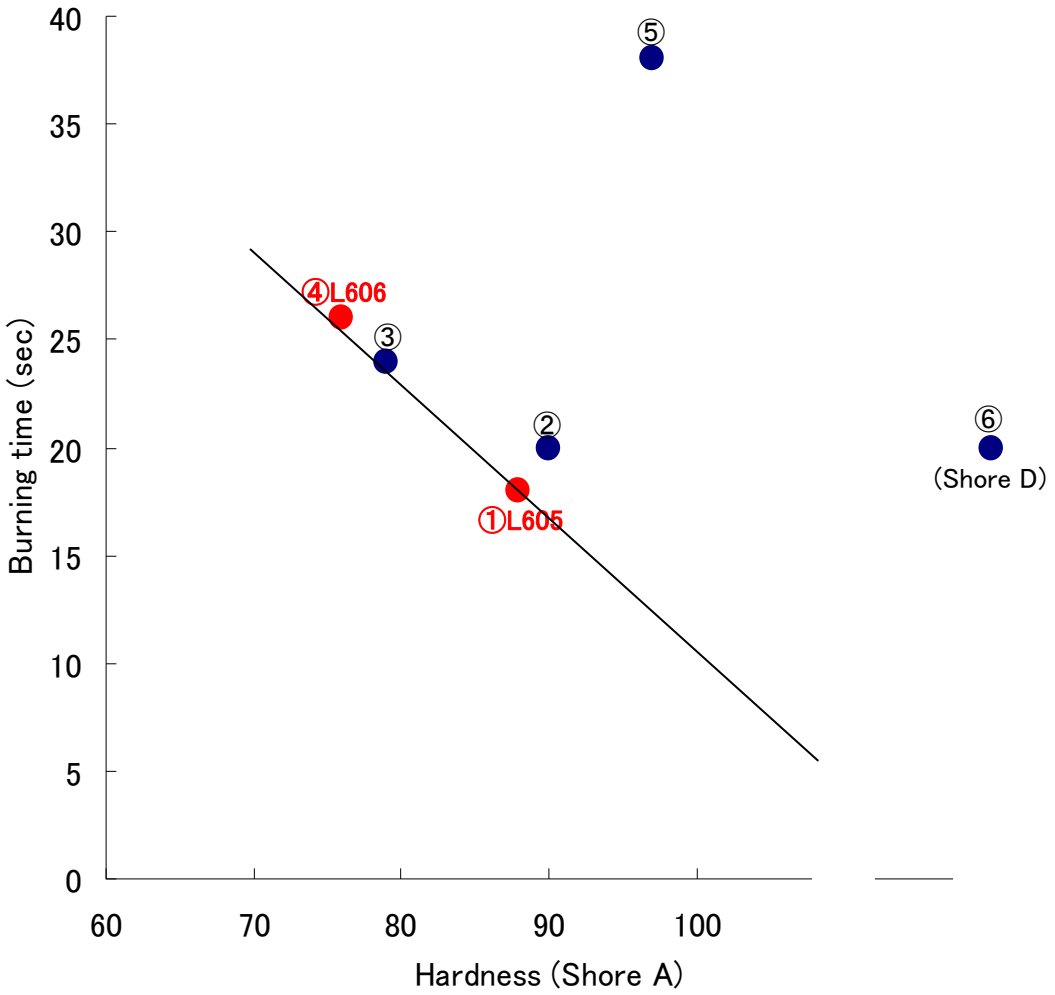


Figure3: Burning time vs. hardness in PPE + S.O.E.™ or SEBS + phosphorus flame retardant compounds



Reference: Test method for measuring the burning time of the compounds

●Vertical flame test ***(a test method similar to UL1581 VW-1 flame test)***

1. Safety Regulations applied

Test equivalent to UL1581 1080.vw1 Flame Test

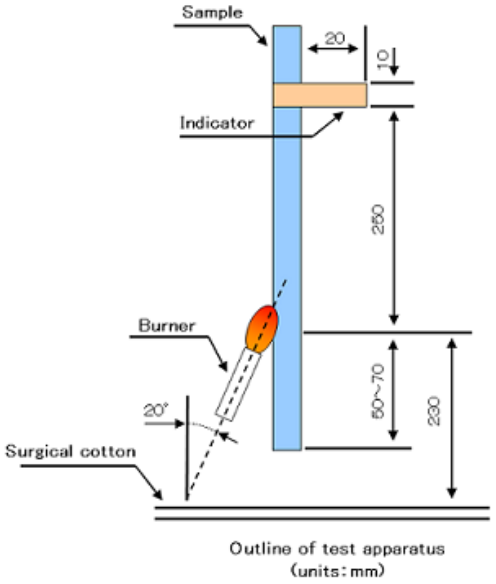
2. Test Process (see picture)

Fix the sample attached to the indicator in a vertical position. Set the burner at a 20° angle and apply its flame directly for 15 seconds, and then take it away for 15 seconds. Repeat this cycle 5 times, and check the degree of the combustion of the sample.

3. Judging Standards

1)The remaining flame burns out within 60 seconds.
2)The indicator does not suffer fire damage of 25% or more.
3)The surgical cotton under the sample does not get burned by falling object.

Burning time : time of the remaining flame of VW-1 flame test to be self burning, after first ignition



Outline of test apparatus (units: mm)