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S.O.E.TM L605 & L606 (trial grades)

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

- S.O.E.TML605 & 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 dumbbell 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.TM, and regular SEBS compounds

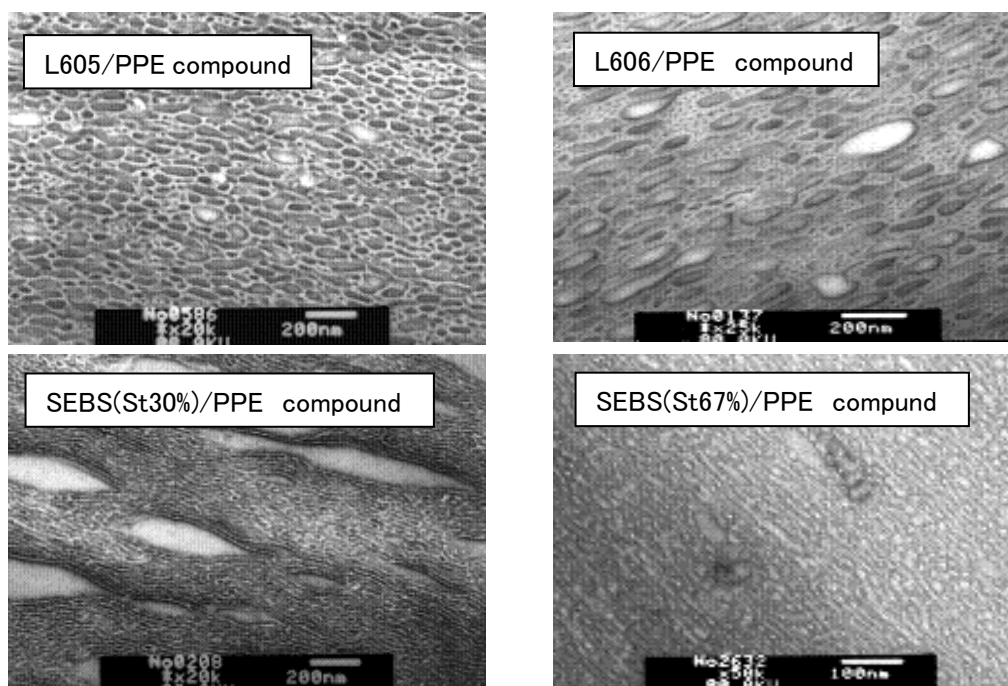


Table 2: Relationships between PPE particle size and burning time of flame retardant compounds

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

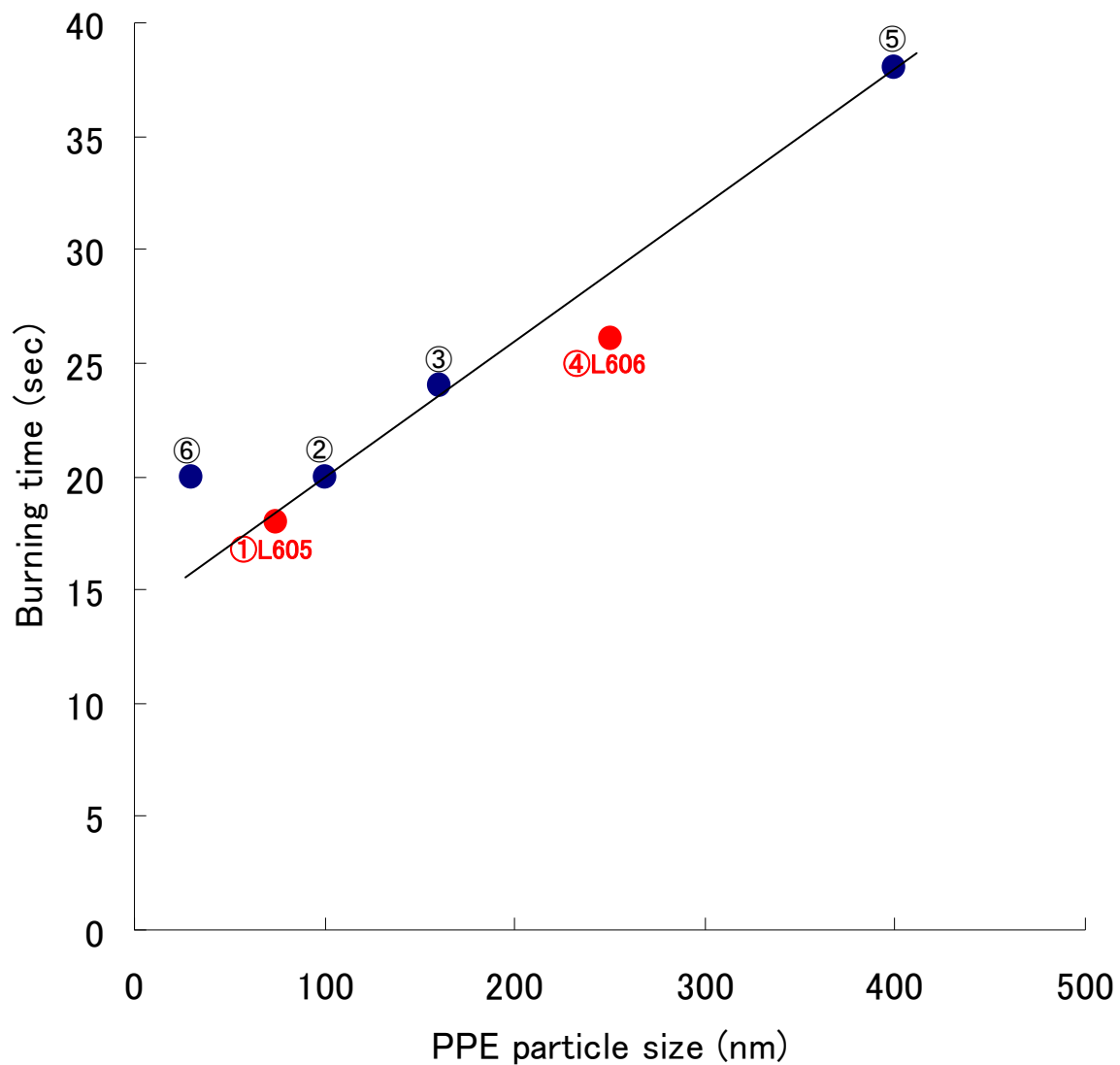
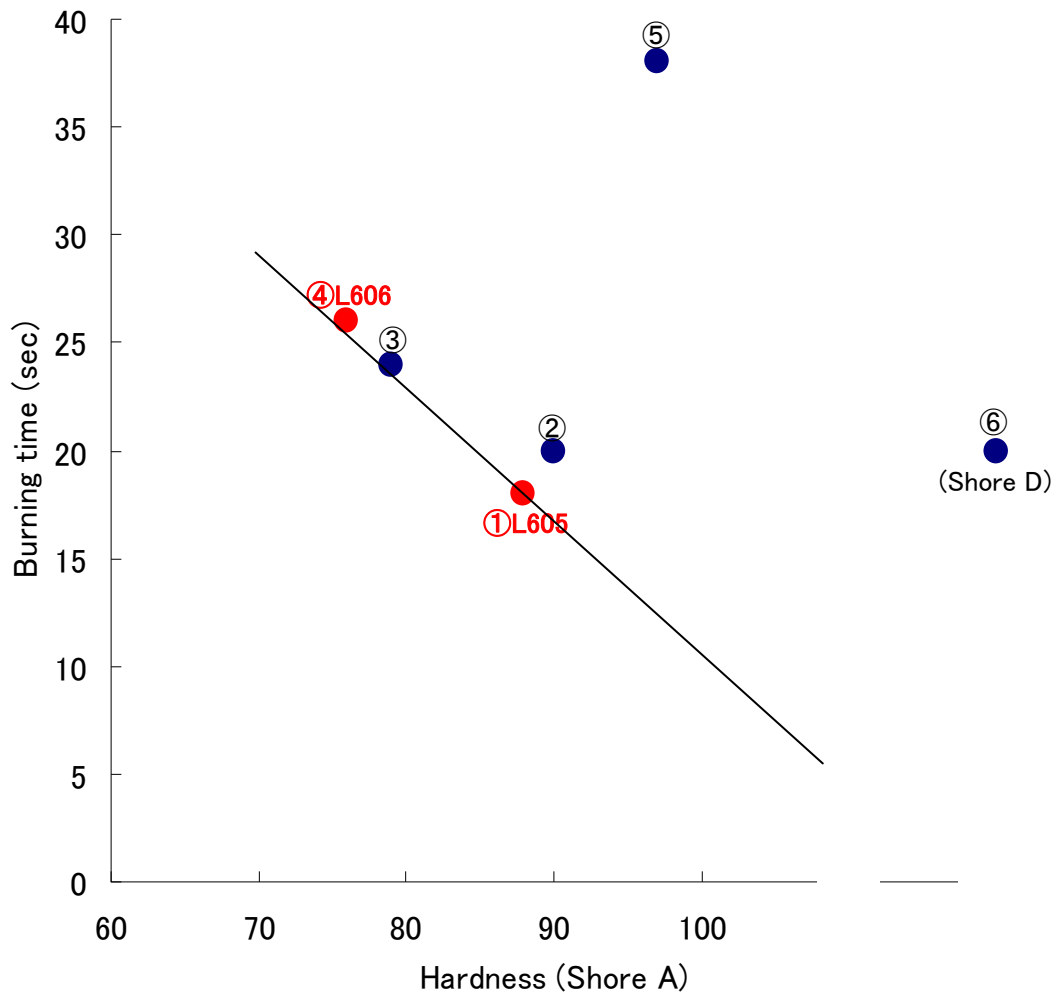


Figure3: Burning time vs. hardness in PPE + S.O.E.TM or SEBS + phosphorus flame retardant compounds



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

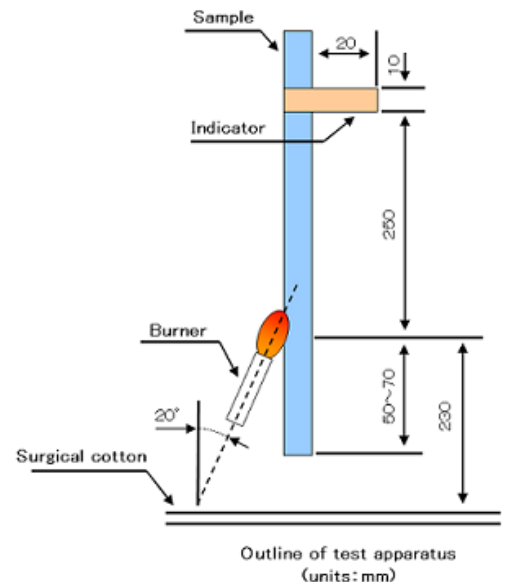
2. Test Process (see picture)

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



All data and values based on specific test methods, and given for basic reference only and not as any warranty or specification. Applications shown for illustration only, and represent no warranty of suitability or non-infringement of intellectual property rights. Note: L605 & L606 are trial grades under development. Thus, their specifications may be changed without notice, and L605 & L606 may not be commercialized. The products of Asahi Kasei Chemicals shown herein must not be used for any medical device or drug, except with its express written consent.

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