Daihachi Chemical Industry Co., Ltd.

Flame Retardancy and Physical Properties of Phosphates

Resin;	ABS	100 phr
FR agent;	PX-200, CR-741, TPP	4 ～12 phr

Kneading;	220 °C Twin screw extruder (D=37mm, LID=35)
Molding;	220 °C Injection molding machine

Melting Point

PX-200	95 °C
CR-741	liq.
TPP	52 °C

UL-94 Vertical (1.6mm)

FR(phr)	4	6	8	10	12
PX-200			Burn	V-2	
CR-741	Burn	Burn	Burn	V-2	V-2
TPP		Burn	V-2	V-2	

Oxygen Index

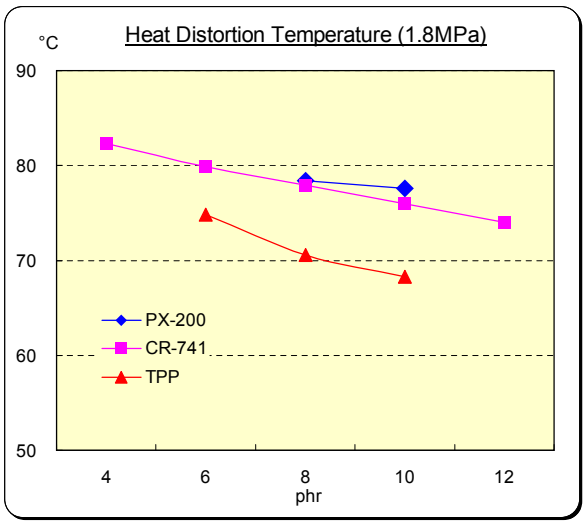
FR(phr)	4	6	8	10	12
PX-200			20.2	20.6	
CR-741	19.7	20.2	20.2	20.6	20.6
TPP		20.6	20.6	20.2	

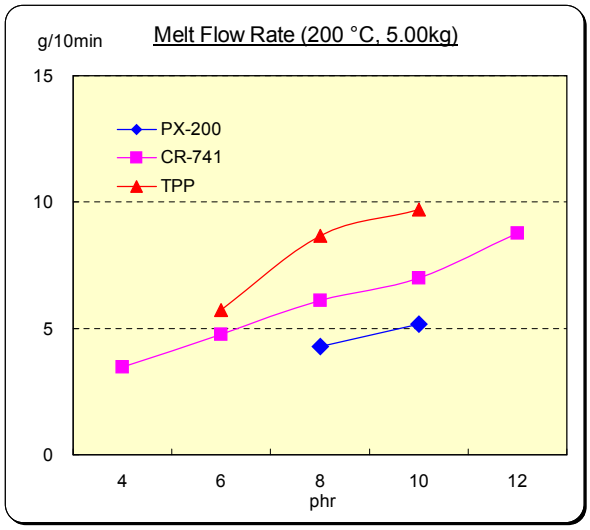
Heat Distortion Temperature

FR(phr)	4	6	8	10	12
PX-200			78.4	77.6	
CR-741	82.3	79.9	77.9	76.0	74.0
TPP		74.8	70.6	68.3	

Melt Flow Rate

FR(phr)	4	6	8	10	12
PX-200			4.3	5.2	
CR-741	3.5	4.8	6.1	7.0	8.8
TPP		5.7	8.7	9.7	



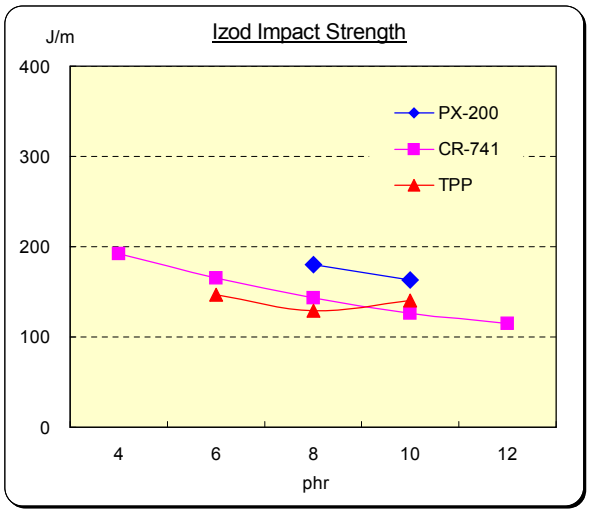


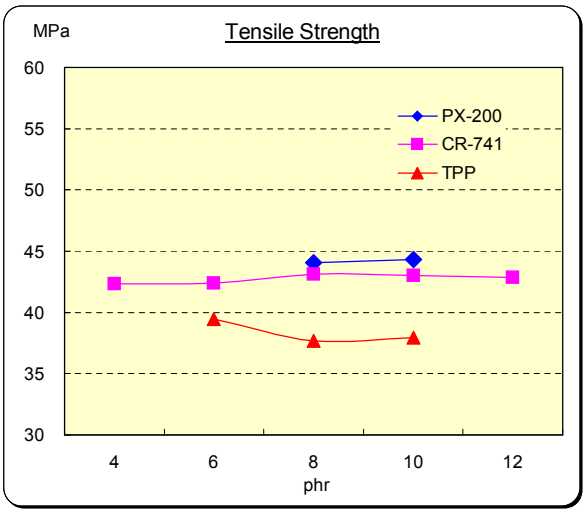
Izod Impact Strength (3.2mm)

FR(phr)	4	6	8	10	12
PX-200			180	163	
CR-741	192	165	143	126	115
TPP		147	129	140	

Tensile Strength

FR(phr)	4	6	8	10	12
PX-200			44.0	44.3	
CR-741	42.3	42.4	43.1	43.0	42.8
TPP		39.4	37.7	38.0	



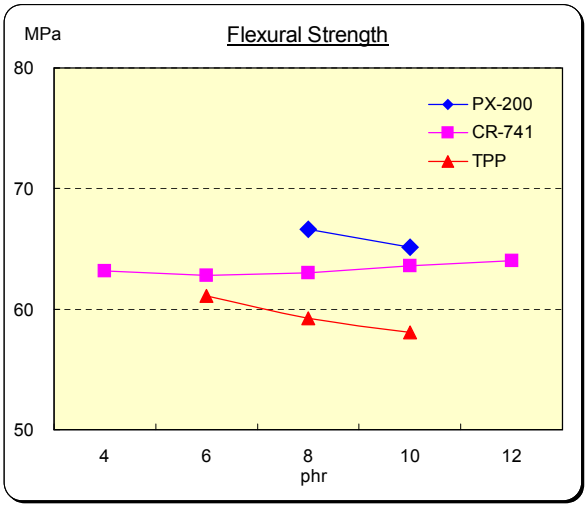


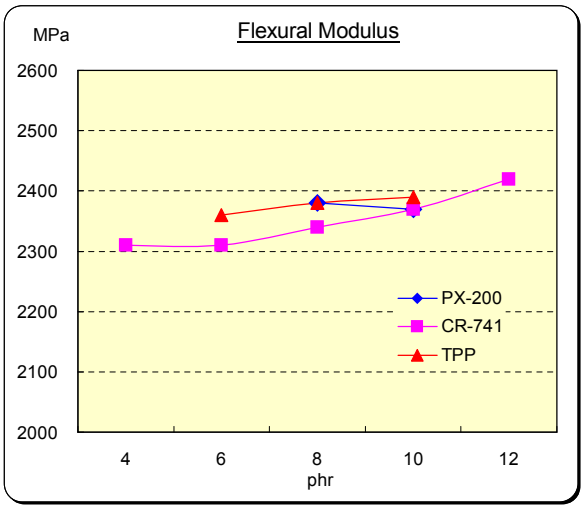
Flexural Strength

FR(phr)	4	6	8	10	12
PX-200			66.6	65.1	
CR-741	63.2	62.8	63.0	63.6	64.0
TPP		61.1	59.3	58.1	

Flexural Modulus

FR(phr)	4	6	8	10	12
PX-200			2380	2370	
CR-741	2310	2310	2340	2370	2420
TPP		2360	2380	2390	





Hydrolysis Resistance of Phosphates (MIL-H-19457D(SH))

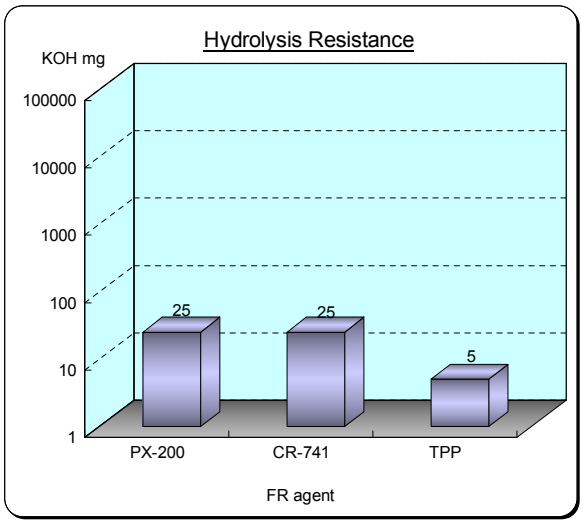
FR agent	KOH mg
PX-200	25
CR-741	25
TPP	5

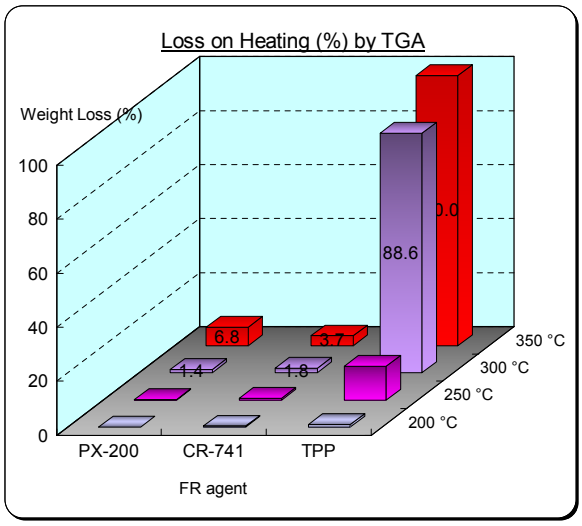
KOHmg ; Acid amount of water layer after hydrolysis
Hydrolysis Condition ; sample 75g + distilled water 25g, 93 °C×48 hrs

Loss on Heating (%) by TGA

FR agent	200 °C	250 °C	300 °C	350 °C
PX-200	0.1	0.3	1.4	6.8
CR-741	0.4	0.7	1.8	3.7
TPP	1.0	12.6	88.6	100.0

N2 ; 150 mL/min Heating Rate ; 10 °C/min
Sample pan ; open





October, 2008