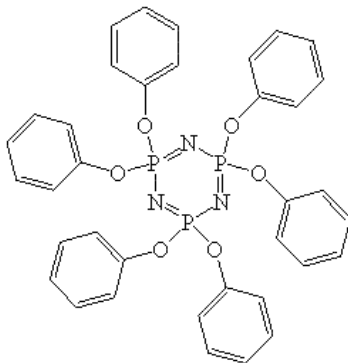


## Technical Data Sheet

Vision: 3

<b>Product name:</b>	HPCTP (PCPZ)
<b>Product Form:</b>	White powder
<b>Chemical name:</b>	Hexaphenoxycyclotriphosphazene
<b>Synonym:</b>	Phenoxycyclotriphosphazene, Cyclo-tris(diphenoxyphosphonitrile)
<b>CAS No:</b>	1184-10-7
<b>EINECS No:</b>	482-200-1
<b>Molecular formula:</b>	$C_{36}H_{30}N_3O_6P_3$
<b>Molecular weight:</b>	693.56
<b>InChi</b>	=1S/C36H30N3O6P3/c1-7-19-31(20-8-1)40-46(41-32-21-9-2-10-22-32)37-47(42-33-23-11-3-12-24-33,43-34-25-13-4-14-26-34)39-48(38-46,44-35-27-15-5-16-28-35)45-36-29-17-6-18-30-36/h1-30H
<b>IUPAC name:</b>	2,2,4,4,6,6-hexaphenoxy-1,3,5-triaza-2 $\lambda^5$ ,4 $\lambda^5$ ,6 $\lambda^5$ -triphosphacyclohexa-1,3,5-triene

**Structure formula:**



**Chemical Specification**

Appearance:	White powder
Assay (%):	99.0 min.
Melting point (°C):	116-119
Density (g/cm <sup>3</sup> ):	1.31
Phosphorous (%):	13.4
Nitrogen (%):	6.0
5% weight loss temperature (°C):	>350
Decomposition temperature (T5)(°C):	380
Chloride (ppm):	50 max.

**Packing:** as required

**Feature:**

1. Excellent Flame Retardancy
2. High Phosphorous Content: 13.4%
3. Nitrogen Content: 6%
4. Halogen-free, Antimony-free
5. Ultra-Hydrophobic & Predominant Hydrolysis Resistance
6. Less Electrical Degradation
7. Soluble in Ketonic and Aromatic Solvents
8. Nonvolatile and High Stability at High Temperature

**Solubility:**

Condition: (25°C, g/100g solvent)

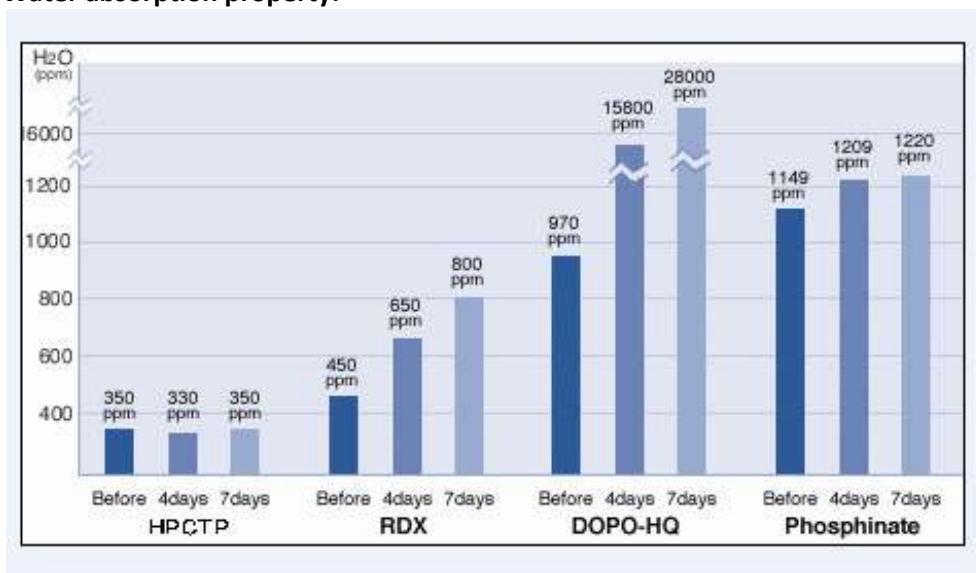
Water:	<0.1
Methanol:	0.1
Benzene:	43
Toluene:	24
Acetone:	21
Methyl Isobutyl Kentone:	12
Ethyl Acetate:	16
DMF	14.5

**Hydrolysis Resistance:**

Compound	Na <sup>+</sup>	K <sup>+</sup>	NH <sub>4</sub> <sup>+</sup>	Cl <sup>-</sup>	PO <sub>4</sub> <sup>3-</sup>	HPO <sub>3</sub> <sup>2-</sup>	Conductivity/μ S/cm
Blank	0.04	<0.03	0.4	<0.01	<0.07	-	1
HPCTP	2	1	50	10	250	-	210
BDP	37	10	3	2250	24200	-	4980
RDX	14	30	4	4040	8300	-	4410
TPP	2	6	12	210	23000	-	5850
Red P	75	5	9	190	665	3510	2370

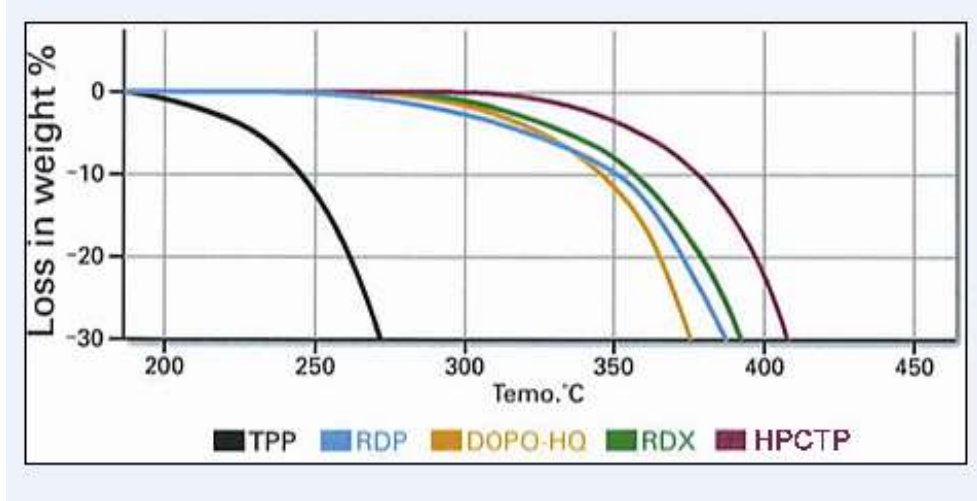
Conditions: Analyzed by ion-chromatography (after 20 hours at 160°C)

**Water absorption property:**



Condition: 90% WH at 40°C

**Thermal properties:**



TG/DTA measurement: Atmosphere: N<sub>2</sub>, Heating Rate: 10°C/min

**Flame retarding properties in PC, PC/ABS**

Resin	Resin quantity (g)	HPCTP quantity (g)	LOI(%)	FV
<b>PC</b>	150	0	26.1	-
	142.5	7.5 (5%)	28.3	FV-2
	135	15 (10%)	29.4	FV-0
	127.5	22.5 (15%)	29.8	FV-0
	120.0	30 (20%)	30.9	FV-0
<b>70% PC + 30% ABS</b>	150	0	22.0	-
	142.5	7.5 (5%)	23.6	-
	135	15 (10%)	24.1	FV-1
	127.5	22.5 (15%)	25.0	FV-0
	120.0	30 (20%)	24.6	FV-0

**Proposal usage:** PC: 10%. PC + ABS Alloy (70% PC + 30% ABS): 12.5%

**Application:**

This product is the environmental protection Phosphazene flame retardant. It does not produce pollutants after burning. It is mainly used in PC and ABS resins. It has good flame retardancy on epoxy resin, it can be used to make EMC for IC Packaging, its flame retardancy is much better than Brominated flame retardant, the flame retardancy can reach UL-94V0 grade. Oxygen index could reach 33.1%. When it is used in Benzoxazine Resin glass cloth laminate, if the HPCTP is 10%, the grade of burning could reach V-0 grade, the parallel breakdown voltage is 47KV. When it is used in Polyethylene, the LOI of final flame retardancy polyethylene could reach 30-33. After used in viscose spinning solution, we could get the flame retardant viscose fiber with oxygen index 25.3-26.7. If the added amount is 12% in PC/ ABS, it could pass the UL-94 V0 test. It also can be used in LED, powder coating, potting material and polymers.