

# Phosflex 375



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**Phosflex**<sup>®</sup>  
Flame Retardant Plasticizers

Phosflex 375 is a proprietary plasticizer blend containing an alkyl diphenyl phosphate and a triaryl phosphate ester to offer both reasonable plasticizing performance in addition to enhanced flame retardant properties. This mixture is useful in a number of PVC applications including wallcovering, transparent sheet goods, laminated products or any other flexible vinyl composite requiring a high degree of flame retardancy.

## Typical Properties:

Specific Gravity	
g/cm <sup>3</sup> @ 25°C	1.15
Viscosity	
mPa @ 25°C	48
Phosphorus %	8.3
Color	
APHA	< 100
Moisture Content %	< 0.1

## Flammability Performance:

Plasticizer (50 phr)	LOI% O <sub>2</sub>	UL-94 1.6mm
DIDP	23.0	Fail
Phosflex 375	30.5	V-0

## Typical Mechanical Properties in PVC:

The information below demonstrates the effect of Phosflex 375 to mechanical properties in suspension grade PVC as the primary FR plasticizer and in combination with other common flame retardant additives. In general, Phosflex 375 shows excellent plasticizing characteristics and compares well to isopropylated TPP phosphate esters (Phosflex 31L/41L). E- Modulus values are an indication of the plasticizing efficiency of each plasticizer (the tensile strain of each composite at 100% elongation; lower value - better plasticizer).

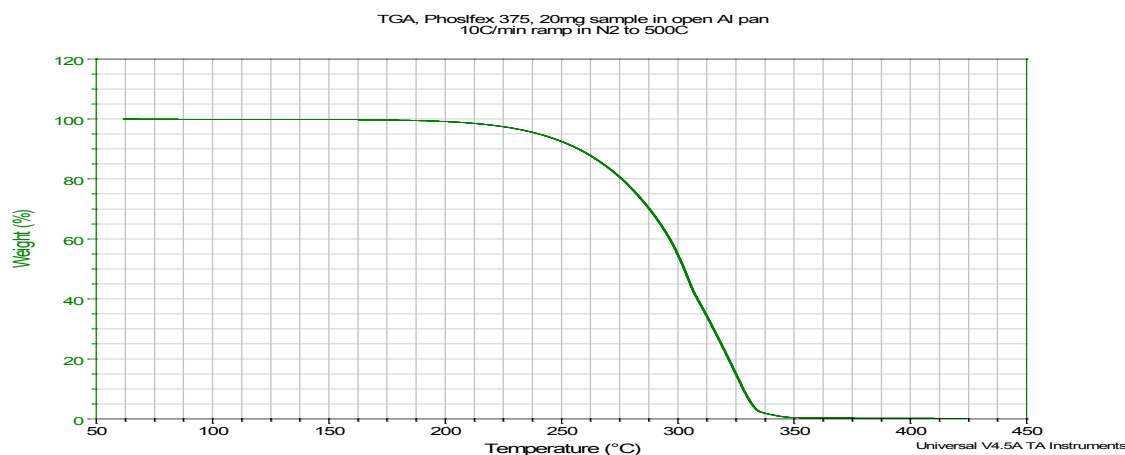
## Formulations for Flexible Suspension PVC at 50 phr Plasticizer

PVC Geon 103EP	100	100	100	100	100
CaCO <sub>3</sub>	50	50	50	50	50
Zinc Borate		3	6	3	6
ATH (Hydral 710)				20	40
Plasticizers	50	50	50	50	50
ESO	3	3	3	3	3
Stabilizers	5	5	5	5	5
totals:	210	213	216	233	256

## Physical Properties of Flexible FR PVC with Common FR Synergists/Additives

Components	Additive(s)	Tensile Properties			Hardness		LOI 100 Mils	UL-94 1/16" (AFT)
		Strength (psi)	E Modulus (psi)	Elong. %	Shore "A"			
					Initial	Creep (15 sec.)		
Phosflex 31L	50	1940	1128	305	92	88	30.4	V-0
ZB	3	1906	1074	314	92	88	31	V-0
ZB	6	1972	1118	324	92	87	31.6	V-0
ZB/ATH	3/20	1713	1127	286	92	88	32.8	V-0
ZB/ATH	6/40	1543	1170	242	93	90	35.5	V-0
Phosflex 375	50	1893	892	366	89	86	30.5	V-0
ZB	3	1915	843	409	89	86	30.8	V-0
ZB	6	1750	858	350	89	87	31.7	V-0
ZB/ATH	3/20	1572	869	352	90	87	32.5	V-0
ZB/ATH	6/40	1253	862	293	92	87	33.7	V-0

## Thermogravimetric Analysis (TGA):



Weight Loss%	@ Temperature (C)
2.00	219
5.00	240
10.0	257

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