

Phosflex™ 71B



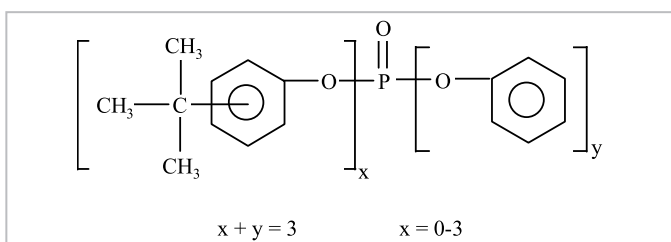
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Phosflex®
Flame Retardant Plasticizers

Chemical Name: Butylated triphenyl phosphate ester

CAS #:

t-butylphenyl diphenyl phosphate	56803-37-3
bis(t-butylphenyl) phenyl phosphate	65652-41-7
Tri (t-butylphenyl) phosphate	78-33-1
Triphenyl phosphate	115-86-6



Overview

Phosflex® 71B is a mixture of butylated (primarily mono-t-butylphenyl) triphenyl phosphate ester made from readily available synthetic feedstocks. It is an effective flame retardant plasticizer with good compatibility in PVC and other plastics such as modified PPO and PC/ABS alloys. When formulated with conventional plasticizers, Phosflex® 71B yields economical systems balanced for flame retardancy and plasticizer efficiency. Its high thermal stability allows its use in engineering resins for flame retardancy and also improved melt flow characteristics.

Key Applications

PVC Applications:

Formulations for Flexible Suspension PVC at 50 phr Plasticizer

	1	2	3	4	5
PVC Geon (103EP)	100	100	100	100	100
CaCO ₃	50	50	50	50	50
Zinc Borate (Firebrake ZB)		3	6	3	6
ATH (Hydral 710)				20	40
Plasticizers	50	50	50	50	50
ESO (Plastoflex 2307)	5	5	5	5	5
Stabilizers (Ba/Zn mixed metals)	5	5	5	5	5
Totals:	210	213	216	233	256

These five formulations represent basic formulation and component variations typically seen for FR-PVC. The resultant flammability and physical properties are shown in the following tables on the next page with comparisons to similar flame retarded vinyl systems.

Phosflex® Product Selector

	Key applications	Key characteristics
4	<ul style="list-style-type: none"> Primary plasticizer for nitrocellulose, chlorinated rubber Anti-foam agent 	<ul style="list-style-type: none"> Low viscosity Low density
31L	<ul style="list-style-type: none"> PVC film and sheet compounds Dispersant for plastisols 	<ul style="list-style-type: none"> Low color Blendable with non-FR plasticizers
41L	<ul style="list-style-type: none"> PVC film and sheet compounds Dispersant for plastisols 	<ul style="list-style-type: none"> Low color Blendable with non-FR plasticizers
71B	<ul style="list-style-type: none"> Flame retardant plasticizer for PVC 	<ul style="list-style-type: none"> Excellent flame retardant properties Low volatility
362	<ul style="list-style-type: none"> Flame retardant plasticizer for PVC alloys 	<ul style="list-style-type: none"> Low temperature and low smoke Excellent vinyl solvating properties Approved for packaging materials in food contact
390	<ul style="list-style-type: none"> Flame retardant plasticizer for PVC sheets and coatings 	<ul style="list-style-type: none"> Excellent low temperature flexibility Low smoke, good weathering properties
314, 318, 321, 327	<ul style="list-style-type: none"> Blended plasticizer for film and sheet vinyl goods 	<ul style="list-style-type: none"> High efficiency High solvating

Phosflex® Plasticizers in PVC Suspension Resin (50 phr level)

Component	Additive phr	Tensile Properties			Hardness		LOI 100 Mils	UL-94 1.6mm
		Strength psi (MPa)	E Mod psi (MPa)	Elong. %	Shore "A" Initial	Creep (15 sec.)		
DIDP	50	1844(12.7)	858(5.9)	426	88	85	23	FAIL
ZB	3	2018(13.9)	907(6.3)	461	88	84	23.2	FAIL
A-O	6	1824(12.6)	906(6.3)	417	90	86	23.2	FAIL
ZB/ATH	3/20	1635(11.3)	945(6.5)	359	91	86	23.6	FAIL
ZB/ATH	6/40	1715(11.8)	1081(7.4)	374	93	89	25	FAIL
Phosflex® 41L	50	2230(15.4)	1102(7.6)	383	92	86	30.7	V-0
ZB	3	2146(14.8)	1118(7.7)	350	93	87	31	V-0
ZB	6	1934(13.3)	1099(7.6)	305	92	87	31.6	V-0
ZB/ATH	3/20	2008(13.8)	1190(8.2)	334	93	88	32.8	V-0
ZB/ATH	6/40	1832(12.6)	1273(8.8)	290	93	90	35.5	V-0
Phosflex® 71B	50	2202(15.2)	1133(7.8)	362	92	86	31	V-0
ZB	3	2175(15.0)	1139(7.8)	363	93	88	31.5	V-0
ZB	6	1949(13.4)	1162(8.0)	305	92	87	32.6	V-0
ZB/ATH	3/20	1848(12.7)	1228(8.5)	291	93	89	33.6	V-0
ZB/ATH	6/40	1882(13.0)	1357(9.3)	286	94	90	36	V-0

Typical Properties

Physical appearance	Clear, transparent liquid
Phosphorus content, wt. %	8.5
Specific gravity, 20°C/20°C	1.182
Density @ 20°C, lbs/gal	9.85
kg/m ³	1182
Viscosity @ 25°C, mPa.s	70
@ 38°C, mPa.s	32
Acidity, mg KOH/g	0.10
Water content, wt. %	0.10
Color, APHA	<75

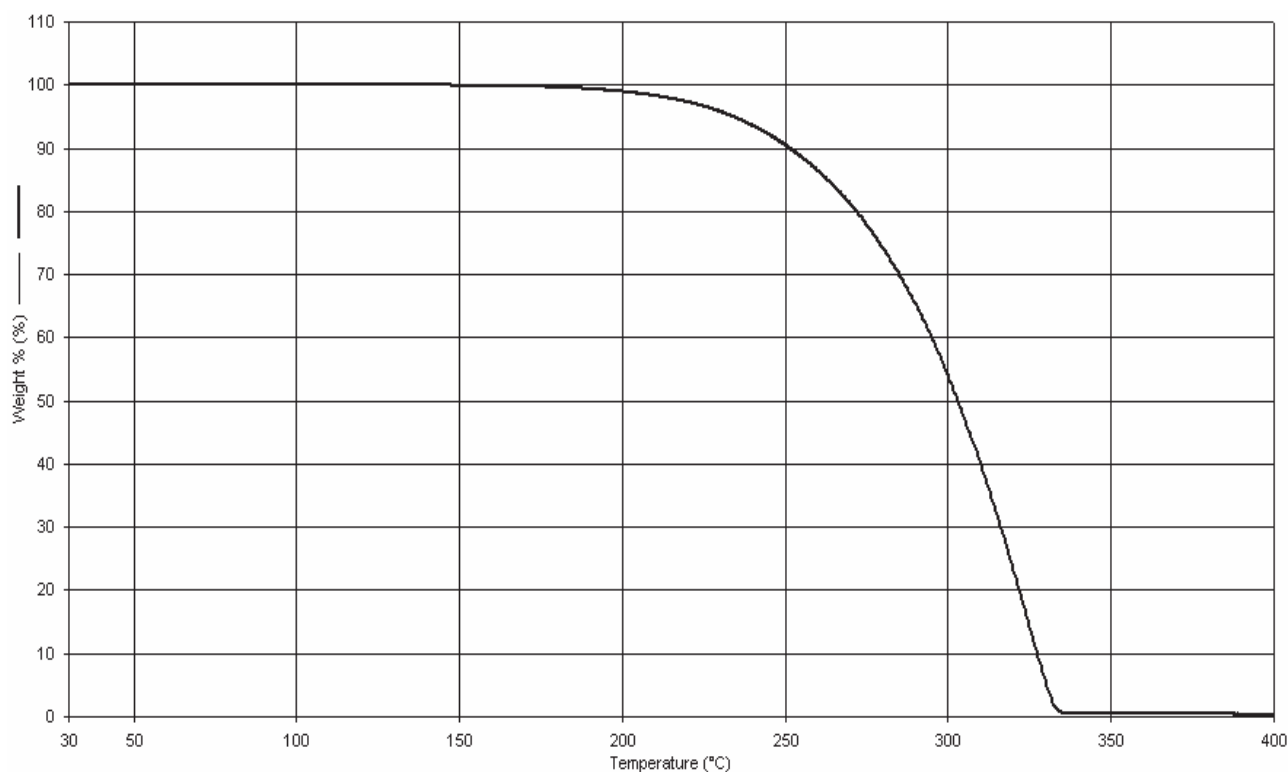
Safety & Handling

Consult the Material Safety Data Sheet for this product.

Shipping Information

Available in bulk tank trucks, isocontainers, 2,500 lb totes, and 533 lb drums.

Thermogravimetric Analysis: Phosflex® 71B (10°C rise/minute in nitrogen)



2% wt. Loss	213°C
5% wt. Loss	234°C
10% wt. Loss	251°C

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