

# ROFLEX SERIES

## FLAME RETARDANT PLASTICIZERS IN PVC

### GENERAL INFO & USES

**ROFLEX SERIES** - phosphorus based flame retardant plasticizers dedicated to flexible PVC. Highly specialized additives for plastics lead to effective plasticizing effect and flame retardancy. Roflex series allow blending with non-flame retarding plasticizers and solid form flame retardants providing better economics and wide formulations adjustment possibilities.

## KEY APPLICATIONS

- Technical foils, membranes
- Welding curtains
- Conveyor belts
- Artificial leather, tarpaulins
- Wire & cables

## KEY FEATURES

- Excellent flame retarding profile
- Efficient plasticizing effect
- Low migration
- Synergistic effect with solid flame retardants
- Compatibility with non-FR plasticizers

## TYPICAL PROPERTIES

Product name	Chemical name	Density at 25°C [g/cm³]	Viscosity at 25°C [mPa*s]	Phosphorous content [wt. %]	Feature
<b>Roflex 50</b>	Isopropylated triaryl phosphate	1.17	53	8.5	Low viscosity
<b>Roflex 65</b>		1.16	69	8.3	
<b>Roflex T70</b>	t-butylated triaryl phosphate	1.18	72	8.5	Safe to human health
<b>Roflex T70L</b>		1.12	310	7.4	No-labelling
<b>Roflex T45</b>	Modified aryl phosphate	1.04	45	proprietary	Low smoke & low temperature



## PRODUCT PERFORMANCE

Plasticizer / Feature	Plasticizing effect	FR efficiency	Low smoke	Surface migration	Paste viscosity reduction	Labelling
<b>Roflex 50 / 65</b>	••	•••	•	••	•••	•
<b>Roflex T70</b>	••	•••	•	••	••	••
<b>Roflex T70L</b>	•	••	••	••	•	•••
<b>Roflex T45</b>	•••	••	•••	•	•••	•••

• moderate    •• good    ••• excellent

## FLEXIBLE SUSPENSION PVC

### BASIC FORMULATION

Raw material	Loadings [phr]	Plasticizer / Feature	Elongation [%] at 25°C	Elongation [%] at 0°C	Hardness [°Sh A]	Migration wt. loss [%] after 7 days	LOI [%]	Thermal stability [min]
<b>S-PVC</b>	100	<b>Roflex 50 / 65</b>	195	95	93	0.29	33.8	30:00
		<b>Roflex T70</b>	190	85	94	0.29	33.5	30:00
<b>Plasticizer</b>	50	<b>Roflex T70L</b>	130	10	97	0.26	32.8	37:00
		<b>Roflex T45</b>	260	110	88	0.47	29.0	38:30
<b>Stabilizers</b>	4	<b>DOTP</b>	260	120	85	1.25	24.6	52:00

Raw material	Loadings [phr]	Plasticizer / Feature	Elongation [%] at 25°C	Elongation [%] at 0°C	Hardness [°Sh A]	Migration wt. loss [%] after 7 days	LOI [%]	Smoke generation D <sub>s,max</sub>
<b>S-PVC</b>	100	<b>Roflex 50 / 65</b>	260	115	88	0.94	30.2	682.5
<b>FR Plasticizer</b>	25	<b>Roflex T70</b>	260	110	88	1.01	29.0	717.5
<b>DOTP</b>	25	<b>Roflex T70L</b>	215	100	92	0.72	28.8	584.2
<b>Stabilizers</b>	4	<b>Roflex T45</b>	270	110	89	0.90	26.5	554.4

### Dedicated applications:

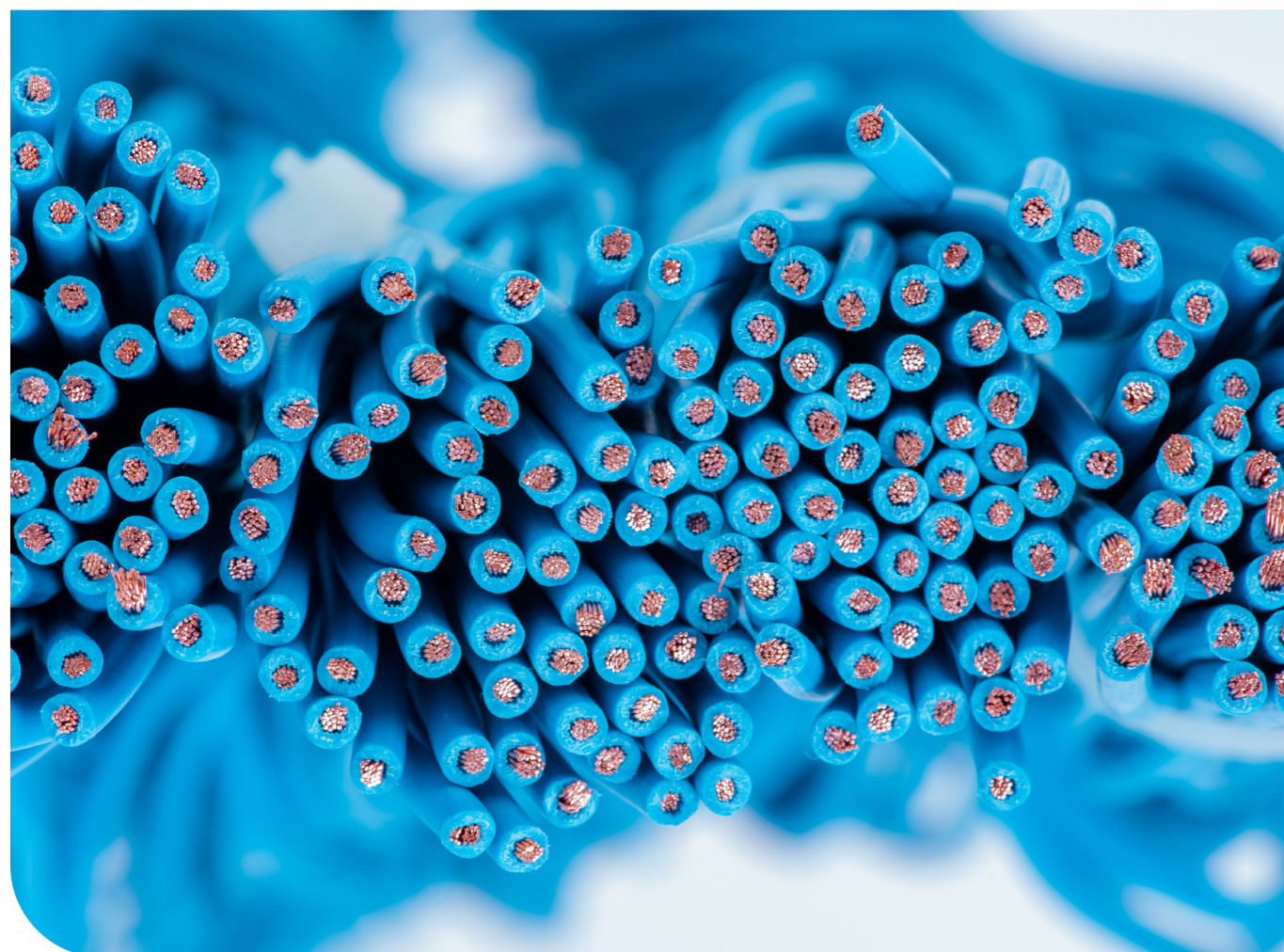
- Transparent and flexible foils
- Welding curtains
- Roofing membranes
- Transparent PVC films

## COMPATIBILITY WITH SOLID ADDITIVES

Raw material	Loadings [phr]	Plasticizer / Feature	Elongation [%]	Hardness [°Sh A]	Migration wt. loss [%] after 7 days	LOI [%]	UL-94 3.5 mm
S-PVC	100	Roflex 50 / 65	160	96	0.30	34.5	V-0
Plasticizer	50	Roflex T70	150	97	0.30	34.7	V-0
CaCO <sub>3</sub>	50	Roflex T70L	70	98	0.30	33.6	V-0
Zinc Borate	5	Roflex T45	170	94	0.50	28.9	V-0
Stabilizers	4	DOTP	190	92	0.85	25.0	V-1

### Dedicated applications:

- Semi-rigid PVC sheets
- Wire & Cables
- Semi-rigid PVC films
- PVC flooring



## EMULSION PVC PASTES

### BASIC FORMULATION

Raw material	Loadings [phr]	Plasticizer / Feature	Hardness [°Sh A]	Migration wt. loss [%] after 7 days	LOI [%]
E-PVC	100	Roflex 50 / 65	80	0.42	30.8
		Roflex T70	83	0.40	30.8
Plasticizer	70	Roflex T70L	92	0.39	30.5
		Roflex T45	74	0.56	27.1
Stabilizers	4	DOTP	77	1.32	22.2

Plasticizer / Feature	Initial plasticizer viscosity [mPa*s] at 25°C	Paste viscosity after 1h [mPa*s] at 25°C	Paste viscosity after 1h [mPa*s] at 40°C
Roflex 50	50	10 600	5 300
Roflex 65	65	13 500	6 000
Roflex T70	70	14 300	6 400
Roflex T70L	310	28 200	8 800
Roflex T45	45	13 500	5 300

## COMPATIBILITY WITH SOLID FLAME RETARDANTS

Raw material	Loadings [phr]	Plasticizer / Feature	Hardness [°Sh A]	Migration wt. loss [%] after 7 days	LOI [%]
E-PVC	100	Roflex 50 / 65	83	0.36	32.0
Plasticizer	75	Roflex T70	86	0.44	31.7
CaCO <sub>3</sub>	50	Roflex T70L	92	0.25	31.0
ATH	10	Roflex T45	79	0.52	27.8
ATO	5				
Stabilizers	4	DOTP	77	1.30	26.0

### Dedicated applications:

- Artificial leather
- Coated textiles
- Conveyor belts
- Tarpaulins
- Projection screens





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