

## Disflamoll® TP LXS 51036/Technical Information

### Description

Disflamoll TP LXS 51036 is a formulated phosphate ester with high softening efficiency and good low temperature resistance.

It is recommended for use in PVC applications, especially for artificial leather, where flame retardancy is required in combination with good low temperature performance.

Practical experience has shown that plastisols with good processing characteristics can be obtained by using Disflamoll TP LXS 51036.

### Physical properties

Appearance:	clear, colourless liquid
Phosphorus content:	8, 8 % (calculated)
Water content:	max. 0,1 %
Hazen colour value:	max. 60
Density at 20 °C:	1,123 g/cm <sup>3</sup>
Viscosity at 20 °C:	30 m Pa·s
Dissolution temperature:	102 °C

### Properties in PVC compounds

Disflamoll TP LXS 51036 was evaluated in a PVC compound with following formulation:

Solvic 373 MC (PVC- Paste K value)	50 p.b.w.
Disflamoll type	50 p.b.w.
Bärostab UBZ 770	3 p.b.w.
Estabex 2307	3 p.b.w.
Martinal OL 104 C	20 p.b.w.

### General properties in PVC

Properties	Test method	Dim.	PVC/ Disflamoll DPK	PVC/Disflamoll TP LXS 51036
Shore Hardness A	DIN 53505		54	50
Shore Hardness D	DIN 53505		13	11
Tensile strength	EN ISO 527/3	MPa	14,4	11
Elongation at break	EN ISO 527/3	%	349	376
Stress at 100% strain	EN ISO 527/3	MPa	4,5	3,3
Differential Scanning Calorimetry	DSC	°C	-27	-54

**FLAME  
RETARDANTS**

## Flame Retardance

Flame retardant leather cloth is required for upholstery and furnishings used in public buildings, high risk areas and public transport.

## Density of Smoke Limited Oxygen Index

Specific optical density of smoke ASTM E 662	PVC/ Disflamoll DPK	PVC/Disflamoll TP LXS 51036
<b>flaming conditions</b>		
Dm	1246	1297
tDm	3' 15"	3' 47"
Dm (corr)	1209	1205
SOI	13846	45219
<b>smouldering conditions</b>		
Dm	825	719
tDm	18' 28"	15' 16"
Dm (corr)	747	705
SOI	746	529
<b>Limited Oxygen Index (%) ASTM ISO 4589</b>		
	31	29

Dm = maximum specific optical density  
 Dm (corr) = corrected maximum specific optical density  
 tDm = time to maximum specific optical density  
 SOI = smoke obscuration index

## FMVSS-302 Test

FMVSS-302 Test (Federal Motor Vehicle Safety System) is the flame retardancy standard for materials used as the compartment of motor vehicles. In this test, a horizontally placed specimen is exposed to a small flame at its edge for 15 sec. The distance and the time burning or the time consumed for burning between two marks are measured.

Both formulations, with Disflamoll DPK and Disflamoll TP LXS 51036, exhibited good performance in this test, both qualities being self extinguished after removing the flame.

## California TB 117

One of the key flammability test used in the furniture is California TB 117. This is a small scale flammability test consisting of a small open flame test (Part A) and a cigarette smoulder test (Part D). Part A requires that foams be tested before and after ageing in an air flow oven for 24 hours at a temperature of 104 °C.



Test method	PVC/Disflamoll TP LXS 51036	PVC/Disflamoll DPK
<b>MVSS 302</b>	se	se
	<b>after flame(s)/average char length(mm)</b>	
<b>California TB 117 (unaged)</b>	0/32	0/38
<b>California TB 117 (aged)</b>	0/67	0/72
<b>Requirement: 5s/15,2 cm</b>	passed	passed

## DIN 4102-1 Baustoffklasse B2

### Formulation

Vinnolit E 68 CF	60 p.b.w.
Disflamoll type	40 p.b.w.
Bärostab UBZ 770	2 p.b.w.
Estabex 2307	2 p.b.w.
Martinal OL 104	20 p.b.w.

	Disflamoll DPK	Disflamoll TP LXS 51036
<b>Edge exposure</b>		
Flame height	54 mm	70 mm
Burning time	16 s	17 s
Burned length	35 mm	48 mm
<b>Surface exposure</b>		
Flame height	60 mm	54 mm
Burning time	16 s	16 s
Burned length	45 mm	41 mm
<b>DIN 4102-B2</b>	passed	passed

## Conclusions

In artificial leather Disflamoll TP LXS 51036 is an alternative to Disflamoll DPK, having following advantages:

- low dissolution temperature ( 102°C) means good gelling behaviour which is asked in the manufacturing process of plastisols
- good resistance at low temperatures
- high plasticizing efficiency

The fire behaviour of both products is comparable

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## FLAME RETARDANTS

TECHNISCHE INFORMATION

