

Technical data sheet

DIPLAST[®] NS/ST

Version: December 2015

Chemical composition

Diisononyl phthalate (DINP) with antioxidant.

CAS Number

28553-12-0

EINECS number

249-079-5

Specifications

Characteristic	Unit	Value	Test method	
Density at 20°C	g/ml	0.972 - 0.977	GM012	ASTM D 4052-96
Refractive index n ²⁰ _D		1.484 - 1.488	GM020	ASTM D 1045-95
Colour	Pt – Co	30 max.	PL02F	ASTM D 1045-95 ASTM D 1209-00
Acidity	mgKOH/g	0.07 max.	PL02C	ASTM D 1045-95
Water content	%	0.05 max.	GM010	ASTM E 203-96
Viscosity at 20°C	mPa·s	72 – 82	GM022	ASTM D 445-96
Ester content	%	99.5 min	PL10C	G.C.

DIPLAST[®] NS/ST is an oily, limpid, anhydrous liquid, with a mild characteristic odour. It is soluble in common organic solvents, insoluble in water, and miscible with most of the plasticizers used in processing PVC.

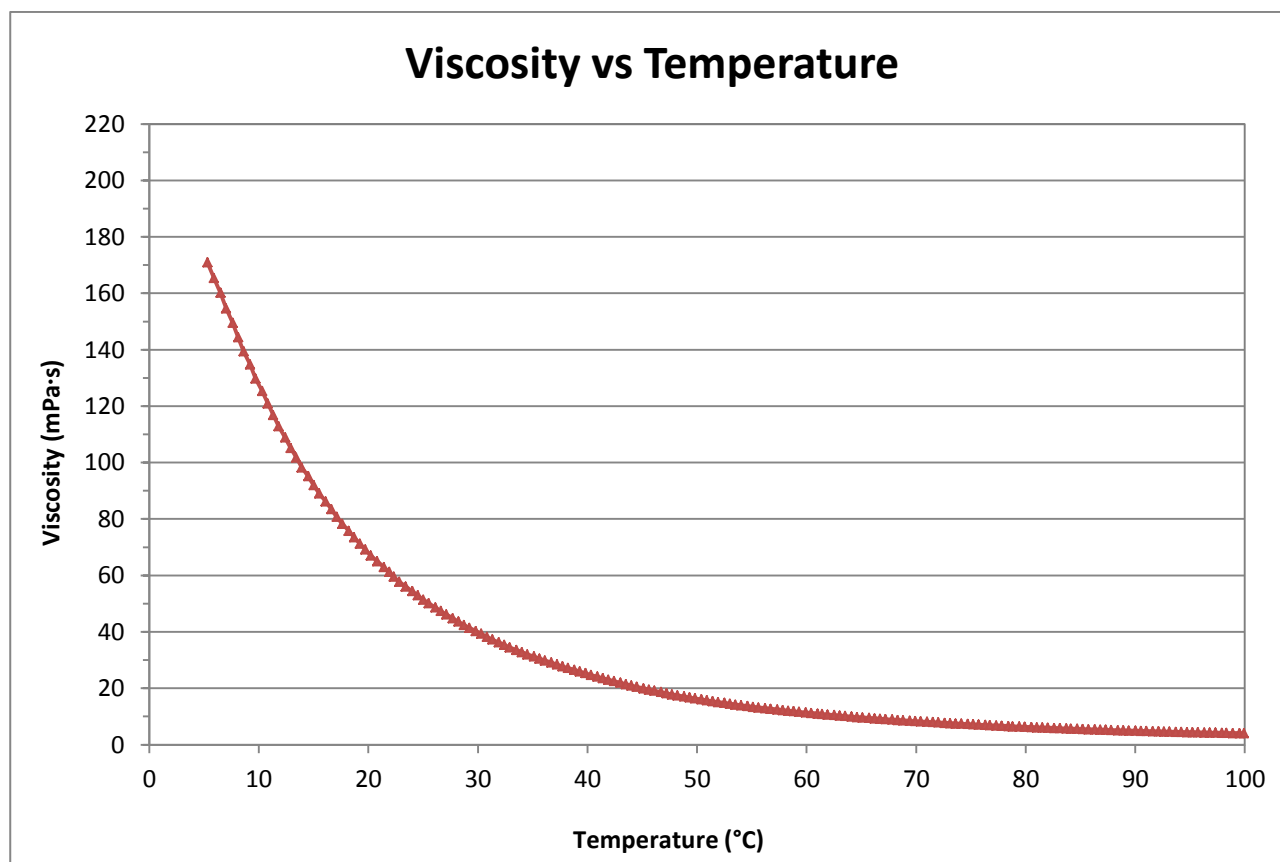
The product **DIPLAST[®] NS/ST** due to its nature does not have a shelf life. However it can be stored in appropriate containers at a temperature of approximately 25°C and the exclusion of humidity for at least 1 year, without losing its chemical properties.

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Liquid properties



Temperature (°C)	DIPLAST® NS/ST Brookfield Viscosity LV DVII+ (mPa·s)
-10	770
0	320
10	155
20	77
30	40
40	20
50	15
60	8

Pour point	c.a. -54 °C
Flash point	c.a. 200 °C
Volume resistivity at 23°C (ASTM D 1169-95)	$1 \cdot 10^{11}$ Ohm·cm

The figures above are typical values and are not intended as specification limits.
 For further information on the characteristics and properties of **DIPLAST® NS/ST** in the liquid state, see the relevant EC-standard Materials Safety Data Sheet.

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Characteristics and applications

DIPLAST® NS/ST, as diisononyl phthalate (DINP), is a plasticizer for PVC with a broad spectrum of uses.

DIPLAST® NS/ST, as compared with bis(2-ethylhexyl) phthalate (**DOP**), shows similar characteristics of workability and efficiency, having at the same time a lower volatility.

With **DIPLAST® NS/ST** it is possible to obtain a good performance in terms of resistance to extraction by water and aqueous soap, and stability on plastisol.

DIPLAST® NS/ST is typically used in the manufacture of:

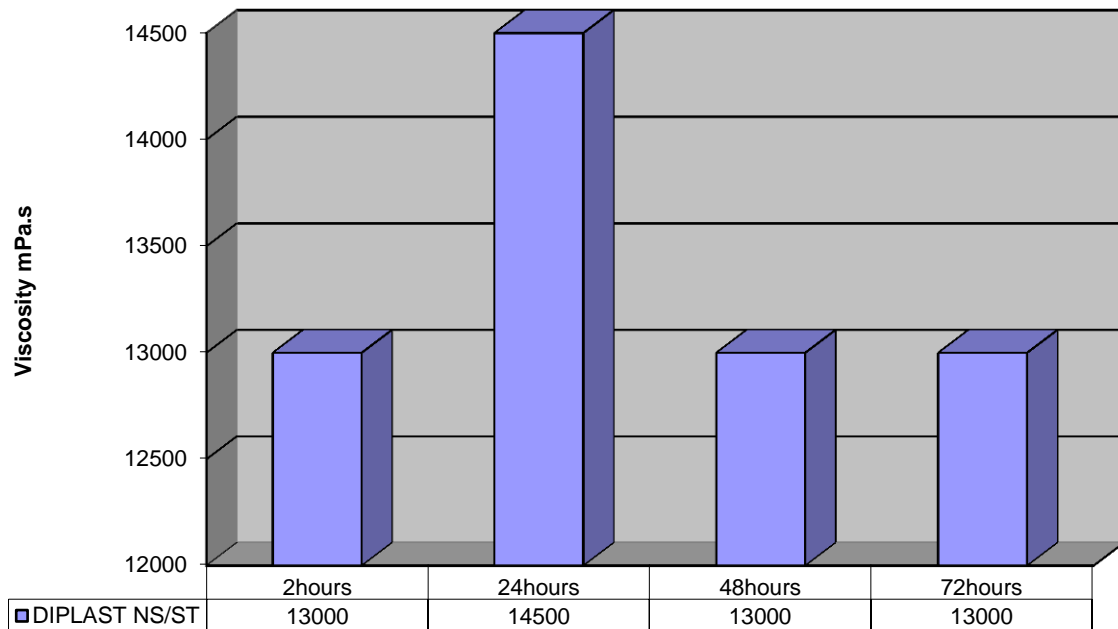
- imitation leather;
- conveyor belts;
- profiles, gaskets, and tubing for a variety of applications;
- plastisol for motor-vehicle underbodies

Owing to its electrical resistivity characteristics and its mechanical properties after ageing, it is especially suited to the manufacture of electrical cables for mid-range operating temperatures.

DIPLAST® NS/ST is a technical grade product. Should you have more specific needs, you are invited to contact our sales offices or representative agencies.

Plastisol Viscosity

Plastisol Viscosity - Brookfield RVF - 70phr, 23°C, 20rpm -



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General properties in PVC compounds

The properties of **DIPLAST® NS/ST** were evaluated using the following formulation :

Formulation	PVC K70	Plasticizer	Ca/Zn	Stearic Acid
(parts by weight)phr	100	50	1.2	0.3

The specimen were prepared by calendering and moulding to obtain the thickness required for the different test methods.

Results

	Test method	DIPLAST® NS
Shore “A” hardness	ISO 868	82
Cold flex °C (Clash & Berg)	ISO/R 458	-26
Solution Temperature °C (*)	DIN 53408	129
Extraction resistance	ISO 175	
-% weight loss- (48h at 70°C)		
• Water		-0.1
• Aqueous soap 1%		-0.7
• Olive oil		-6.8
• Mineral oil		-5.5
• n-Hexane (24h at 23°C)		-27.6
Volatility (7days at 100°C)	ISO 176	-6.1
Mechanical characteristics	ISO 527	
Tensile strenght MPa		24.4
Elongation at break %		346
100% modulus MPa		12.7
Rheological properties		
• Dryblending time 83°C (Mixer P-600 : 100 RPM)	Brabender Plasticorder	3' 45"
• Gel time 88°C (at max torque) (Mixer W-50 : 40 rpm; 48g)	Brabender Plasticorder	9'20"
• Fusion Temperature (°C) (Mixer W-50, 5°C/min, 40Rpm)	Brabender Plasticorder	117

(*) Solution temperature determined with dispersion of resin: two grams of PVC are placed in 48 grams of plasticizer and the solution is heated at 1°C/min.

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Properties in PVC compounds for cables

DIPLAST® NS /ST, has been evaluated in PVC compound.

Results of these tests prove that **DIPLAST® NS/ST** can be advantageously used in the production of cable insulators, thanks to its good workability and to the excellent characteristics imparted to the PVC insulator, like the good retention of mechanical properties after thermal ageing and the good flexibility at low temperature.

Formulation	PVC K70	Plasticizer	Ca/Zn	CaCO3	Stearic Acid
(parts by weight)phr	100	47	8	15	0.5

Results

Characteristic -Thickness 1 mm	DIPLAST NS/ST (DINP)
Dry-blending time at 83°C – minutes	2'52"
Cold Flex (Clash & Berg test) - °C	-21
Mechanical properties – (original specimen)	
Tensile Strength - Mpa	20.9
Elongation at break - %	284
Modulus 100%	12.3
Mechanical properties after 10 days at 100°C in air	
Tensile Strength - Mpa	20.5
Elongation at break - %	274
Modulus 100%	13.9
% Variation on original specimen	
Tensile Strength -	-1.9
Elongation at break -	-3.5
Modulus 100% -	+13

The information contained here is correct and accurate and is based on our technical and scientific knowledge at the date of going to press.

Such information is, in all cases, relevant only with respect to the product as used in its pure state and only for the uses referred to in this publication.

Nothing stated here may be taken or construed as implying a breach of existing patents.

No warranty, either expressed or implicit, is given with regard to the results to be obtained from using this information.

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