

Technical data sheet

DIPLAST[®] TM 8

Version: May 2015

Chemical composition	Tri-n-octyl Trimellitate
CAS number	89-04-3
EINECS number	201-877-4

Specifications

Characteristics	Unit	Value	Test method	
Density at 20°C	g/ml	0.982 - 0.986	GM 012	ASTM D 4052-96
Refractive index n ²⁰ _D		1.480 - 1.490	GM 020	ASTM D 1045-95
Colour	Pt – Co	70 max.	PL02F	ASTM D 1045-95 ASTM D 1209-00
Acidity	mg KOH/g	0.10 max.	PL02C	ASTM D 1045-95
Water content	%	0.1 max.	GM 010	ASTM E 203-96
Ester content	%	99.5 min.	PL10C	G.C.

DIPLAST[®] TM 8 is a pale yellow liquid, anhydrous, clear and free from matter in suspension. It is miscible with common organic solvents, practically insoluble in water and miscible and compatible with most of the monomeric plasticizers usually utilised to soften PVC.

The product **DIPLAST[®] TM 8** 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.

Liquid properties

Temperature (°C)	Viscosity (mPa·s)
0	406
5	282
10	197
15	142
20	103
25	82
30	62
40	41
50	25

Volume resistivity at 23°C (ASTM D 1169-95)	1·10 ¹¹ Ohm·cm
Fogging DIN 75201 reflectometric (3hours at 100°C)	>95%

The figures above are typical values and are not intended as specification limits.

For further information on the characteristics and properties of **DIPLAST[®] TM 8** in the liquid state, see the relevant EC-standard Materials Safety Data Sheet.

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Characteristics and applications of trimellitates

PVC plasticizers based on Polynt Spa Trimellitic Anhydride (Trimellitate plasticizers) offer to users and compounders many of the performance advantages of both Polyester and Phthalate plasticizers. Trimellitate plasticizers show an unique balance of properties that can be summarized as follows:

- **Processability and efficiency**
Comparable with those of many Phthalate plasticizers and better than most Polyester plasticizers.
- **Permanence at high temperatures and retention of mechanical properties.**
Trimellitate plasticizers provide the same or even better performances than Polyester plasticizers.
- **Low temperature flexibility**
Unlike Polyester plasticizers, Trimellitate plasticizers provide good flexibility at low temperatures.
- **Permanence and compatibility**
Trimellitate plasticizers are more permanent than many other plasticizers. They are extremely resistant to extraction by aqueous soap and have an excellent compatibility under high humidity. The migration resistance in PVC compounds when in contact with a wide range of materials is much better than phthalates and other monomeric plasticizers and comparable to Polyester plasticizers.

Characteristics and applications of DIPLAST® TM 8

DIPLAST® TM 8 can be used in a wide range of **PVC** application as:

- PVC compounds for the production of high temperature cables according to European and International standards like BS 6746, VDE 0207, UL 62, ISO 6722, etc.;
- vinyl sheets for car interior components required to meet stringent “windscreen fogging” specifications;
- various compounds: foils, profiles, shoes, gaskets, etc. which have to exhibit special requirements such as heat resistance, low volatility and low migration tendency.

DIPLAST® TM 8 can be used as a base stock for synthetic lubricating oils.

General properties in PVC compounds

The properties of **DIPLAST® TM 8** were evaluated using the following formulation:

Formulation	1 (parts by weight)	2 (parts by weight)
PVC K70	100	100
Plasticizer	50	47
Ca/Zn	1.2	12
CaCO3		15
Stearic acid	0.3	
Calcium stearate typo E	-	0.5

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

Results

	Test method	TM 8 (1)	TM 8 (2)
Shore “A” hardness		88.5	
Shore “D” hardness	ISO 868		38
Cold flex °C (Clash & Berg)	ISO/R 458	-28.5	-21
Solution Temperature °C (*)	DIN 53408	136	
Extraction resistance -% weight loss-(48h at 70°C)	ISO 175		
• Water		-0.1	
• Aqueous soap 1%		0	
• Olive oil		-5.5	
• Mineral oil		-5.1	
• n-Hexane (24hours at 23°C)		-28.6	
Volatility (7days at 100°C)	ISO 176	-1.1	
Rheological properties			
• Dryblending time 83°C (Mixer P-600; 100 rpm)	Brabender Plasticorder	4'30"	3'38"
• Gel time 88°C (at max torque) (Mixer W-50; 40 rpm; 48gr)	Brabender Plasticorder	14'00"	
• Fusion Temperature (°C) (Mixer W-50, 5°C/min, 40Rpm)	Brabender Plasticorder	122.4	

(*) 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.

Properties in PVC compounds for cables

DIPLAST® TM 8 with antioxidant enables high temperature cables to be produced.
 As a technical information, the following results are quoted:

Test conditions	TM 8 Formulation 2 specimen thickness 1mm
ORIGINAL SPECIMENS: Tensile strength MPa Elongation at break % Modulus 100% Cold Flex °C (Clash & Berg) Thermal stability at 200°C h (Min. value 120 minutes)	21.2 285 13.5 -21 5
SPECIMENS AGED 14 days at 140°C VDE 0207 YI8 Tensile strength Variation % (± 25% max.) Elong at break Variation % (± 25% max.) Modulus 100% Variation % Cold Flex °C (Clash & Berg) Cold Flex Variation % Weight loss (mg/cm ²)	-8.5 -4.6 -2.2 - 18 -14.2 -1.33
SPECIMENS AGED 10 days at 150°C Accelerated ageing test for class C automotive cables ISO 6722 Tensile strength Variation % Elong at break Variation % Modulus 100% Variation % Cold Flex °C (Clash & Berg) Cold Flex Variation % Weight loss (mg/cm ²)	-7.6 -7.4 +0.7 -17 -19.0 -2.19

In the tests, compounds were aged in an oven with forced ventilation

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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