

Technical data sheet

Uraplast[®] S 5640

Version: May 2015

Chemical composition

Polyester plasticizer based on adipic acid and polyhydric alcohols

Specifications

Characteristics	Unit	Value	Test method	
Density at 23°C	g/ml	1.115 – 1.135	GM 012	ASTM D 4052-96
Refractive index n ²⁰ _D		1.4695 – 1.4725	GM 020	ASTM D 1045-95
Colour	Pt - Co	150 max.	PL02F	ASTM D 1045-95 ASTM D 1209-00
Acidity	mgKOH/g	3.0 max	PL02C	ASTM D 1045-95
Viscosity at 23°C	mPa·s	45000 - 55000	GM 022	ASTM D 445-96

Uraplast[®] S 5640 is a pale yellow liquid, anhydrous with a low odour and free from matter in suspension. It is soluble with common organic solvents, practically insoluble in water and miscible and compatible with most of the monomeric plasticizers usually utilized to soften PVC (it is good laboratory practice to make a preliminary compatibility test in the specific PVC compound being considered).

The product **Uraplast[®] S 5640** 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.

With reference to the Commission Regulation (EU) N° 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with food, **Uraplast[®] S 5640** is a polymeric substance, whose chemical composition satisfies the definition written in Annex I, table 1, column (4) of the Regulation (EU) N° 10/2011, REF N° 76866, FCM substance N° 73.

The above mentioned polymeric substance can be used as additive or aid to polymerisation with the following Group Restrictions (Annex I, Table 2):

31 (FCM: 73; 797). SML (T) 30 mg/Kg expressed as the sum of the substances

32 (FCM: 8; 72; 73; 138; 140; 157; 159; 207; 242; 283; 532; 670; 728; 729; 775; 783;797; 798; 810; 815). SML(T) 60 mg/Kg expressed as the sum of the substances.

Fat (Consumption) Reduction Factor (FRF) is applicable.

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Liquid properties

Temperature (°C)	Viscosity (mPa·s)
15	83000
25	38000
40	12600
60	4050

The above figures are typical values and should not be considered as specifications limits.

For further information on the characteristics and properties of **Uraplast® S 5640** in the liquid state, see the relevant EC-standard Materials Safety Data Sheet.

General properties in PVC compounds

The properties of **Uraplast® S 5640** were evaluated in comparison with those of **DINP (diisononylphthalate)** using the following formulation:

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

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

Results

	Test method	Uraplast® S 5640	DINP
Shore “A” hardness	ISO 868	92.5	82
Cold flex °C (Clash & Berg)	ISO/R 458	-2.5	-26
Extraction resistance -% weight loss- (48 hours at 70°C)	ISO 175		
• Water		-0.6	-0.17
• Aqueous soap 1%		-1.6	-0.74
• Olive oil		-0.9	-7.0
• Mineral oil		-0.0	-5.5
• n-Hexane (24hours at 23°C)		-0.2	-28
Volatility (7days at 100°C)	ISO 176	-1.0	-9.1
Rheological properties			
• Dryblending time 83°C (Mixer P-600 : 100 RPM)	Brabender Plasticorder	5' 10"	3' 52"
• Gel time 88°C (at max torque) (Mixer W-50 : 35 rpm; 48g)	Brabender Plasticorder	22' 22"	9' 06"
• Fusion Temperature °C (Mixer W50-, 5°C/min, 40rpm)	Brabender Plasticorder	127	117

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Weight in loss after 10 days at 40°C in contact with food simulants (specimen thickness = 0,35mm)

The properties of **Uraplast® S 5640** were evaluated using the following formulation:

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

Results

	Weight in loss %
• Water 100%	-0.66
• Acetic acid 3% (water solution)	-0.68
• Ethanol 10% (water solution)	-0.78
• Olive oil	-1.26
• Ethanol 50% (water solution)	-5.76

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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