

# Hexamoll® DINCH

Edition dated July 2019

Valid for product produced in Ludwigshafen only

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® = Registered trademark of BASF SE

**Versatile non-phthalate plasticizer for PVC and other polar polymers, specially intended for use in applications that involve intimate human contact.**

## Chemical nature

1,2-Cyclohexane dicarboxylic acid, diisononyl ester

Molecular formula	C <sub>26</sub> H <sub>48</sub> O <sub>4</sub>
CAS number	166412-78-8 Europe & Asia 474919-59-0 USA
EC number	431-890-2

## Delivery specification

Property	Value	Unit	Test method DIN/ASTM
Dynamic viscosity* at 20 °C	44 – 60	mPa · s	ASTM D 7042
Density* at 20 °C	0.944 – 0.954	g/cm <sup>3</sup>	DIN 51757 ASTM D 4052
Platinum-cobalt color	40 max.		DIN EN ISO 6271 ASTM D 1209
Refractive index* $n_D^{20}$	1.460 – 1.466		DIN 51423-2 ASTM D 1045
Acid value	0.07 max.	mg KOH/g	DIN EN ISO 2114 ASTM D 1045
Ester content	99.5 min.	% by area	GC-method BASF
Water content	0.1 max.	% by weight	DIN 51777, Part 1 ASTM E 203
Phthalate content	0.01 max.	%	UV-BASF
Metal content*			
Sb, As, Ba, Sn	each max 1	ppm	ICP-MS
Cr, Pb, Hg, Se	each max 1	ppm	ICP-MS
Cd	0.6 max.	ppm	ICP-MS

\*These properties are not measured routinely.

**Properties**

Hexamoll® DINCH is a colorless, clear and practically anhydrous liquid with a hardly noticeable odor. It is soluble in the usual organic solvents and is miscible and compatible with all of the monomeric plasticizers commonly used in PVC. Hexamoll® DINCH is almost insoluble in water.

Hexamoll® DINCH is listed for use in food-contact and medical applications. Information on its regulatory status according to food-contact or medical legislation is available in a separate document that we would be pleased to send you on request.

**Physical data**

The following physical data were measured in the BASF SE laboratories. They do not represent any legally-binding guarantee of properties for our sales product.

Molar mass	424.7 g/mol
Pour point (DIN ISO 3016)	-54 °C
Solution temperature at the clear point (5 % S-PVC; K-value 71; DIN 53408)	151 °C
Surface tension at 20 °C (DIN EN 14370)	30.7 mN/m
Saponification value (DIN EN ISO 3681)	264 mg KOH/g
Volume resistivity 20 °C (IEC 60093)	$1.5 \cdot 10^{13}$ Ohm · cm

Vapor pressure	T [°C]	p [hPa]
	50	$1.3 \cdot 10^{-6}$
	60	$5.5 \cdot 10^{-6}$
	70	$2.2 \cdot 10^{-5}$
	80	$7.5 \cdot 10^{-5}$
	90	$2.3 \cdot 10^{-4}$
	100	$6.7 \cdot 10^{-4}$
	120	$4.4 \cdot 10^{-3}$
	140	$2.2 \cdot 10^{-2}$
	160	0.09
	180	0.31
	200	0.95
	220	2.6
	240	6.2
	260	13.9
	270	20.2
Antoine constants for (p in bar; T in °C)	ln (p) = A + B / (C + T)	
	A = 11.6057	
	B = -6601.25	
	C = 155.61	

(The Antoine constants were determined from vapor pressure data measured in the temperature range of 190 °C to 270 °C by a dynamic method in a nitrogen atmosphere. The values in the table were calculated using the Antoine equation. The data serve only as a rough guide.)

## Density and viscosity dependent on temperature

Temperature [°C]	Density* $\rho$ [g/cm <sup>3</sup> ]	Dyn. Viscosity $\eta$ [mPa · s]
-25	0.9796	2000
-10	0.9691	430
0	0.9621	187
5	0.9586	135.1
10	0.9551	95.5
20	0.9481	52.0
30	0.9411	30.1
40	0.9341	19.3
50	0.9271	13.1

\*Calculated using the following equation:  $\rho = (-0.0007 \cdot t + 0.9621)$  from data measured by BASF SE.

( $\rho$  = Density in g/cm<sup>3</sup>, T = Temperature in °C)

Specific heat  $C_p$  (DSC) according to DIN 51007

Temperature [°C]	Specific heat $C_p$ [J/(g · K)]
30	1.81
45	1.88
60	1.94
90	2.06
105	2.10
120	2.14
135	2.18
150	2.20

## Net and gross calorific value measured according to ISO 1716

Net calorific value $H_u$ [MJ/Kg]	Gross calorific value $H_o$ [MJ/Kg]
34.5	37.0

**Storage & Handling**

Hexamoll® DINCH can be stored in tanks and drums constructed from normal carbon steel, e. g. A 283 grade. If severe demands are imposed on the product quality, we recommend to store it in tanks constructed from stainless steel, e. g. AISI TP 316 Ti (German steel No. 1.4541) or aluminum (AlMg3).

It is recommended to take steps to ensure the exclusion of atmospheric moisture, e. g. by storing under a blanket of dry nitrogen, as otherwise the product quality may deteriorate, e. g. the water fraction may rise, or the Hexamoll® DINCH may be discolored by rust in normal steel tanks.

Drums containing the product should be kept tightly closed in a well-ventilated place.

Hexamoll® DINCH can be stored for one year in its original packaging at temperatures below 40 °C, if moisture is excluded. Only dedicated equipment should be used to discharge this product.

**Pumps:**

Cast-steel centrifugal pumps with a simple slip-ring seal are suitable.

**Flange seals:**

An example of a suitable material for seals is chemical-resistant Polytetrafluoroethylene (PTFE). Other plastics should be checked for suitability before they are taken into use.

**Safety**

When using this product, the information and advice given in our **Safety Data Sheet** should be observed. Due attention should also be given to the **precautions** necessary for handling chemicals.

**Note**

The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed.

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