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Ergoplast® DOS

CHEMICAL NAME: bis(2-ethylhexyl) sebacate; abbrv. **BEHS**

OTHER NAMES: bis(2-ethylhexyl) decanodioate; IUPAC name

di(2-etyhylhexyl) sebacate; abbrev. **DEHS**

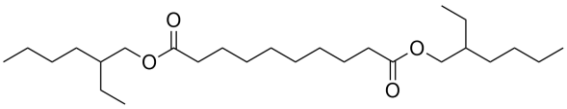
dioctyl sebacate; abbrev. **DOS**

CAS REGISTRY NUMBER: **122-62-3**

EC NUMBER: **204-558-8**

MOLECULAR FORMULA: **$C_{26}H_{50}O_4$**

STRUCTURAL FORMULA:



PROPERTIES

Ergoplast® DOS is an oily, clear and colorless liquid with no noticeable odor. It is obtained via esterification of sebacic acid with 2-ethylhexyl alcohol and as long-chain aliphatic ester is practically insoluble in water (0.2 g/dm^3 in 20°C)[1].

Ergoplast® DOS as a plasticizer is characterized by high plasticizing efficiency, low volatility and provides the plasticized material with flexibility at low temperatures down to -50°C. It is also highly resistant to extraction with water and solutions of typical detergents.

Thanks to its excellent lubricating properties, Ergoplast® DOS acts as an internal lubricant and improves the polymer processing performance.

The main component of Ergoplast® DOS – bis(2-ethylhexyl) sebacate is readily biodegradable in water: 84.6% in 28 days (ECHA; met. OECD 301B)[2].

PHYSICOCHEMICAL PARAMETERS

Parameter	Unit	Required value	Test method
Color in Pt-Co scale (APHA color)	Hazen units	max. 50	PN-EN ISO 6271-1:2006P PN-C-04534-01:1981 ISO 2211
Density at 20 °C	g/cm^3	0.912 – 0.918	PN-EN ISO 12185:2002 PN-C-04504:1992 DIN 51 757
Refractive index n^{20}_D	-	1.449 – 1.453	PN-C-89401:1988 DIN 51 423
Acid value	mg KOH/g	max. 0.15	PN-C-89401:1988 DIN 53402/90
Flash point	°C	min. 210	PN-EN ISO 2592:2008
Volatile matter, temp. 130 °C/2h	%	max. 0.1	PN-C-89401:1988
Water content	%	max. 0.1	PN-C-04959:1981 PN-ISO 760:2001 DIN 51777
Viscosity in 40°C	mm^2/s	10.5 – 12.5	ASTM D445
Ester content: - bis(2-ethylhexyl) sebacate - bis(2-ethylhexyl) adipate*	% by peak area	min. 99.0	GC – FID

* The maximum content of adipic ester does not exceed 3%.

APPLICATIONS

Ergoplast® DOS is used as a plasticizer in the plastic processing, especially in the production of polyvinyl chloride (PVC), vinyl chloride copolymers and synthetic rubber[3], such as nitrile butadiene rubber (NBR)[4]. It can be applied as a primary or secondary plasticizer, also in combination including Ergoplast® DOA [bis(2-ethylhexyl) adipate], Ergoplast® DEHT [bis(2-ethylhexyl) terephthalate] as well as Ergoplast® ES (epoxidized soybean oil).

Exemplary products based on polymers plasticized with bis(2-ethylhexyl) sebacate:

- common or cold-proof electrical insulation (PVC granules)[3];
- synthetic leather and floor covering[3];
- specialty products – membranes[5], gaskets and DOT 5 break fluids.

Furthermore/moreover, Ergoplast® DOS may be a component of (frost-resistant) lubricants in turbines, compressors or pumps used in the automotive and aviation industries. Bis(2-ethylhexyl) sebacate is also applied as pressure transmitting fluid (PTF) in hydraulic machines and hydraulically operated devices[5].

PACKING AND TRANSPORT

Ergoplast® DOS transport is carried out in IBC, tank trucks and customer's unit containers. Covered means of transport should be used to transport unit containers.

Recommended storage temperature up to 30°C. The warranty period is 12 months.

CONTACT

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LITERATURE REFERENCES

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