



*for flexible solutions ...*



Leba Industries has been founded in the year 1981 and started trading chemicals then moved on to manufacturing in 1996. We have started producing some main stream plasticizers such as D.O.P. (Di 2-Ethylhexyl Phthalate), D.I.D.P. (Di-Isodecyl Phthalate), D.I.N.P. (Di-Isononyl Phthalate), D.O.A. (Di 2-Ethylhexyl Adipate). After 2013 we have started manufacturing phthalate free products, such as D.O.T.P. (Di 2-Ethylhexyl Terephthalate), T.O.T.M. (Tri Octyl Trimelliate) and some other specialty adipates. Since 2013 our whole plant is phthalate free and Leba has the capacity of producing 15.000 tonnes of plasticizer per year.

**COMPANY**



Production

Manufacturing

Goods

**INDUSTRY**

Services

Strategy

Technology

Development

Engineering

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# What are plasticizers?

Plasticizers are colorless and odorless type of ester which are used to help improve and increase the overall elasticity, flexibility and to reduce the brittleness of the PVC materials.

While used in many different products, plasticizers are also heavily regulated to ensure that they remain safe for use around humans like printing ink, paint, rubber products, and adhesives, which are found in many walks of life.

Today, over 85 percent of all plasticisers consumed in Europe are employed in flexible PVC applications, largely for the construction, automotive and wire & cable sectors.

Plasticizers have been an important part of the materials industry for several years, and each year they get safer and more efficient than the year before.

# PLASTICIZERS



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# Application Areas





**P R O D U C T S**





# D.O.T.P.

## DI 2-ETHYLHEXYL TEREPHTHALATE

**CAS No : 6422-86-2**

**EC No : 229-176-9**

D.O.T.P. is highly compatible with PVC polymers and has good processing characteristics. It can be used as a proper substitute to ortho-phthalate plasticizers. D.O.T.P. is used as a primary plasticizer where higher strength to tensile and ease of use is needed. Since it has low volatility and low migration characteristics, it can be used as general purpose plasticizer in most of PVC and rubber applications.

Properties	Value	Unit
Density	0,981 – 0,986	gr/cm <sup>3</sup>
Viscosity	60 – 70	mPa s
Acidity	0,1 Max.	mg KOH/gr
Refractive Index	1,4894 - 1,4896	
Flash Point	220 Min.	°C

# PRODUCTS



# D.O.A.

## DI 2-ETHYLHEXYL ADIPATE

**CAS No : 103-23-1**

**EC No : 203-090-1**

D.O.A. is generally used for its low temperature characteristics. It is highly compatible with PVC, rubber and nitro cellulose. It is generally used for food contact applications for health concerns. D.O.A. is chemically stable and resistant to discoloration on extended exposure to heat. It can also be used in plastisols for its good solvating properties.

Properties	Value	Unit
Density	0,924 – 0,926	gr/cm <sup>3</sup>
Viscosity	13 – 15	mPa s
Acidity	0,1 Max.	mg KOH/gr
Refractive Index	1,446 - 1,448	
Flash Point	210 Min.	°C



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# T.O.T.M.

## TRI OCTYL TRIMELLATE

*CAS No : 3319-31-1*

*EC No : 222-020-0*

T.O.T.M. is a primary plasticizer for PVC. Due to its low volatility and low migration characteristics, it is generally used when extreme low volatility and high temperature is needed. Such as high temperature resistant cables and sanitary applications. T.O.T.M. is preferred for its ease of use and good end product characteristics.

Properties	Value	Unit
Density	0,984 – 0,991	gr/cm <sup>3</sup>
Viscosity	250	mPa s
Acidity	0,3 Max.	mg KOH/gr
Refractive Index	1,485	
Flash Point	220 Min.	°C

# PRODUCTS

# T.B.C.

## TRI BUTYL CITRATE

CAS No : 77-94-1

EC No : 201-071-2

T.B.C. is a very good plasticizer for PVC and cellulosic derivatives. T.B.C. improves light stability and it has good solvating properties for rubber and PVC. Since it has good low temperature properties and also is a non-toxic plasticizer, it can be used in food contact applications.

Properties	Value	Unit
Density	1,035 – 1,045	gr/cm <sup>3</sup>
Viscosity	32-35	mPa s
Acidity	0,1 Max.	mg KOH/gr
Refractive Index	1,443-1,445	
Flash Point	180 Min.	°C



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## LBmoll A

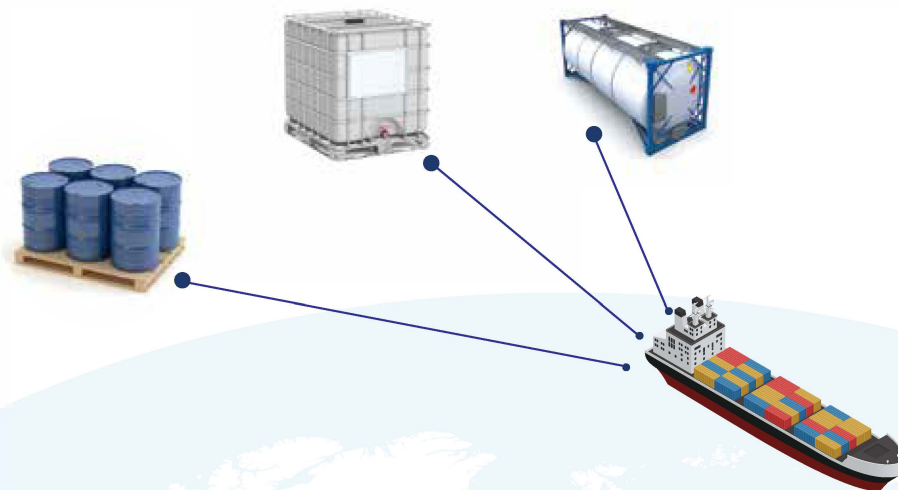
LBmoll A is used as a plasticizer for PVC and NBR. It is highly compatible with PVC, PVAC, NBR, SBR, CR, EVM and EPM. It has excellent low temperature properties. In plastisol applications it can be used to reduce the viscosity. LBmoll A can be used in artificial leather and hot melt applications in order to plasticise the final product. It is preferred for it's good solvating and low temperature properties.

Properties	Value	Unit
Density	0,975 – 1,00	gr/cm <sup>3</sup>
Viscosity	16	mPa s
Acidity	0,1 Max.	mg KOH/gr
Refractive Index	1,470-1,483	
Flash Point	220 Min.	°C

# PRODUCTS



# HOW WE DO IT ?



## QUALITY - PACKAGING - LOGISTICS

LEBA has shifted its production lines to **phthalate-free plasticizers** at 2013. Regulatory compliance for **ROHS, PAH, EFSA, FDA** is available upon request. Our products are audited by independent laboratories in order to achieve REACH compliance. Additionally, all quality certificates and test reports are available online.

LEBA plasticizers can be obtained by any packaging form available in the market. Bulk shipments can be delivered by ISOTANK, Flexibag and road tankers. Upon request, IBCs and drums can be loaded and delivered with 20' DC and 40' HC containers.

LEBA is currently supplying its plasticizer products to global trademarks over twenty countries in Europe, Middle East and North Africa regions.

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Applications	Desired Plasticizer Performances	Typical Used Product(s)
Wire & Cable Insulation		
Building Wire	· Long term safety	DOTP, DINP, TOTM, linear phthalates
Other Wire & Cable	· Safety is key · Performance requirements depending on exact use	DOTP, DOP, DINP, TOTM, DOA linear phthalates
Construction		
Caulks & Sealants	· Low indoor air emissions · Film coalescent · Long shelf life	LBMoll A, BBP, dibenzoates, C7 phthalates
Urethane & Sealants	· UV resistant · Low volatility · Compatibility · Long shelf life	LBMoll A, dibenzoates, DINP, linear phthalates, linear phthalates
Wallpaper	· Low indoor air emissions · Film coalescent · Long shelf life · Printability	DOTP, linear phthalates DINP, DIDP
Hoses	· FDA approval · High clarity · Low water solubility · Hydrolytic stable	DOTP, DINP, DIDP, TOTM
Roofing	· UV resistant · Low volatility · Prolonged service life (up to 20 years)	DOTP, TOTM DIDP, linear phthalates
Swimming Pool Liners	· Low migration · UV resistant · Water resistant	DOP, DOTP, TOTM
Flooring & Carpets		
Viny Tile	· Ease of processing · Low migration · Long service life	LBMoll A, BBP, dibenzoates, DINP, DOP, DIDP, DOTP
Resilient Flooring	· Ease of processing · Stain resistance · Low emissions · Low odor · Long service life	LBMoll A, DOA, BBP, dibenzoates, DINP, DIDP, DOTP
Carpets	· Ease of processing · Stain resistance · Low emissions · Low odor · Long service life	DINP, DINP, DOTP

# APPLICATION AREAS

Applications	Desired Plasticizer Performances	Typical Used Product(s)
<b>Automotive</b>		
Artificial Leather	· Ease of processing · Minimized migration · Low fogging · Good cold temp · Flexibility · UV resistant · Heat stable	DOTP, DINP
Car Mats	· Ease of processing · Long service life · Good cold and warm temperature performance · Stain resistance	DOP, DOTP, adipates
Wiring	· Low migration · Oil extraction resistance · Heat stable · Low fogging	DIDP, DOTP, linear phthalates, trimellitates, polymeric
<b>Household</b>		
Furniture	· Ease of processing · Low emissions · Stain resistance	DOTP, DINP, TOTM
Garden Hoes	· Low water solubility · Hydrolysis resistance	DOTP, DINP, DIDP
Table Cloths	· Migration resistance · Stain resistance	DOTP, DINP, DIDP
Shower Curtains	· Migration resistance · Low water solubility	DOTP, DINP, DIDP
Floor Mats	· Migration resistance · Low emissions · Stain resistance	LBmol A, BBP, DINP, DIDP, DOTP
Food Cling Wraps	· FDA approval · Low water solubility	DOA, LBmol A, citrates
Toys	· Fast processing · Low migration · Low odor · High purity	DOTP, citrates, polymeric
<b>Medical</b>		
Blood Bags	· Relevant Approvals · Long safe history · No color change in sterilization	DOTP
Tubes	· Migration resistance · High clarity	DOTP, TOTM
Nutrition	· Migration resistance · High clarity	TOTM

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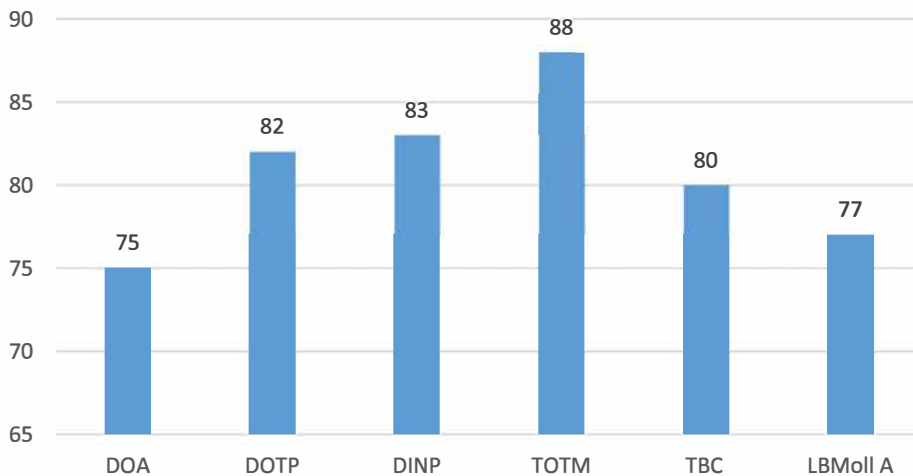


# PLASTICIZER PERFORMANCES

# Shore A Hardness

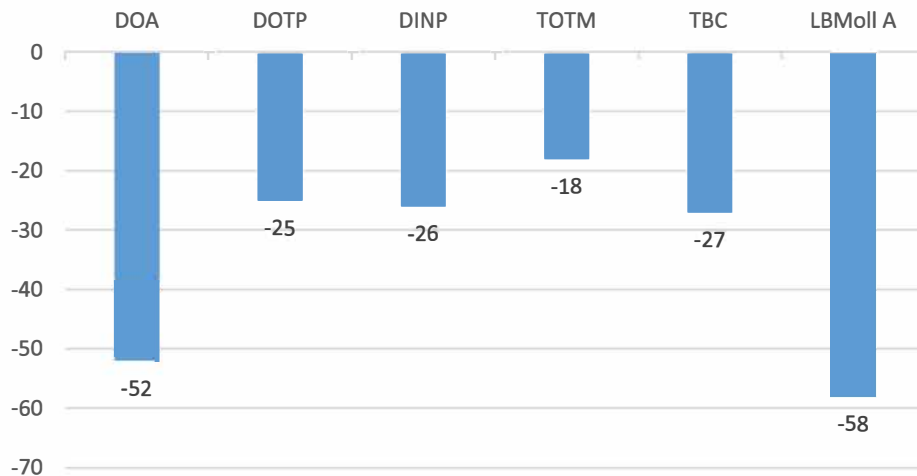
Shore A Hardness is an indication of the “efficiency” of the plasticizer. This test measures the materials ability to resist indentation under specific conditions of force and time.

The obtained values lie between 0 and 100. The higher the number, the greater the resistance. If the value is 0, the indenter completely penetrates the sample. If the result is 100, no penetration occurs.



# Low Temperature Flexibility

All plastics which are flexible at room temperature become harden when the temperature of the room decrease, finally becoming fragile at lower temperatures. This property is often measured by torsional tests over a wide range of temperatures. The specimen is bent to an angle of 90° and examined for cracks at the bend.

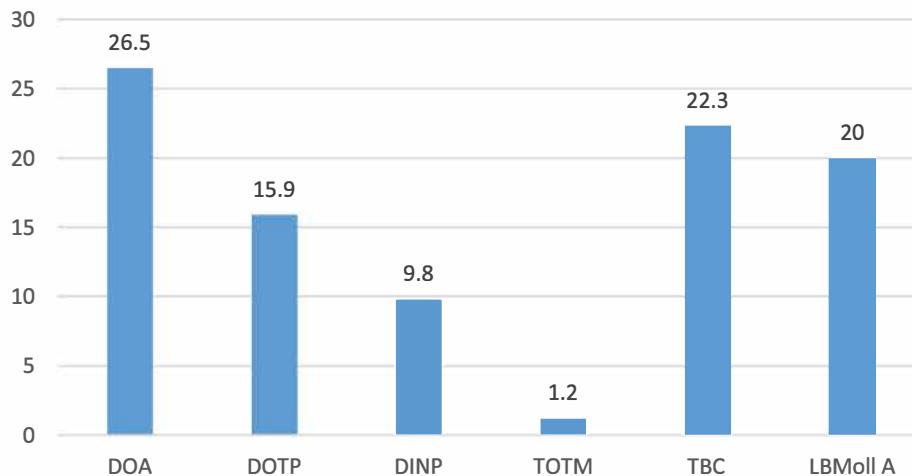


**PLASTICIZER PERFORMANCES**

# Elevated Temperature Volatility

Volatility is the tendency of a substance to evaporation and is directly related to a substances vapor pressure. At a given temperature, a substance with a higher evaporate pressure vaporizes more readily than a substance with a lower vapor pressure. Volatility is expressed as a percentage weight change (wt %) due to plasticizer loss to the atmosphere (value indicates loss of softener).

Volatility loss was measured after 7 days at 100°C (concentration = 50 phr).

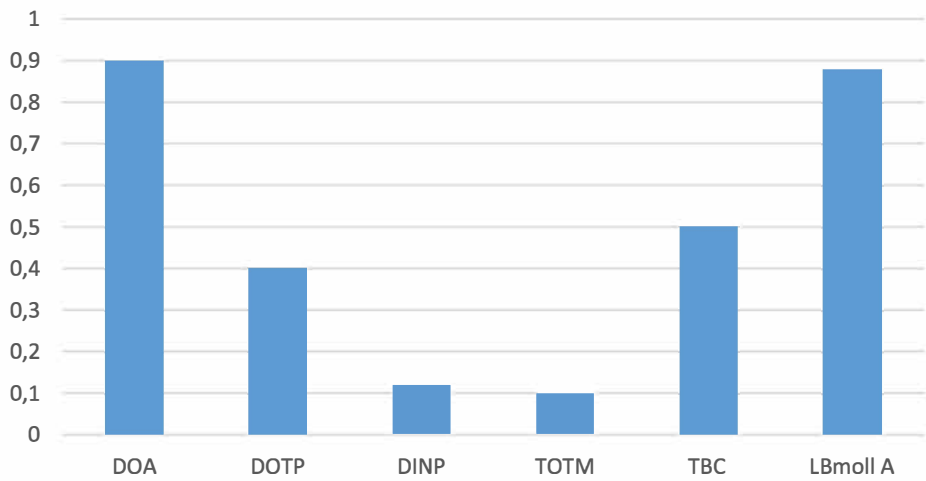


# Extraction Resistance

The relative extraction resistance is a test to determine the loss of the plasticizer from the plastic when immersed in commonly liquid that are highly likely to get in contact with the plastic.

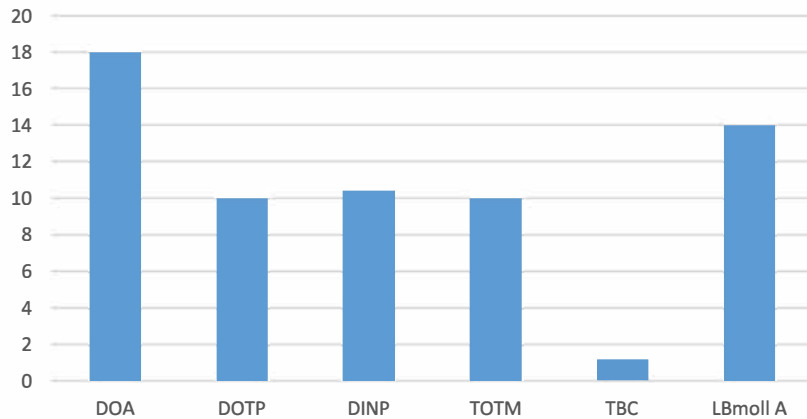
## Soapy Water Extraction

The values below shows the percentage weight change of the plastic after soapy water immersion.



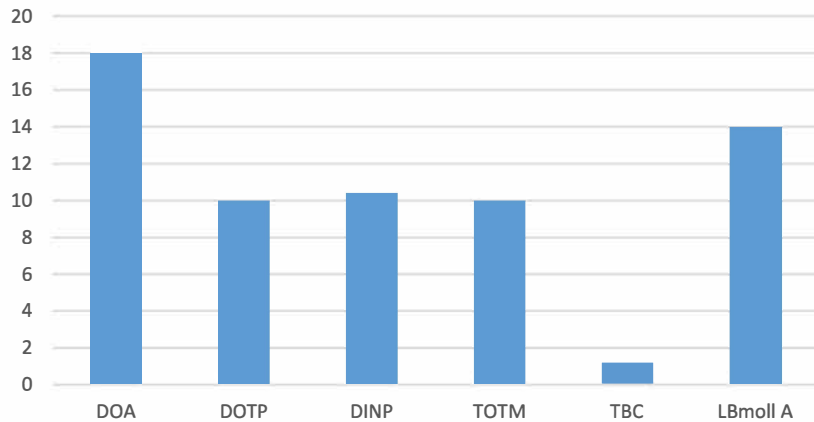
# Oil Extraction

The values below shows the percentage weight change of the plastic after olive oil immersion.



# Hexane Extraction

The values below shows the percentage weight change of the plastic after hexane immersion.





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