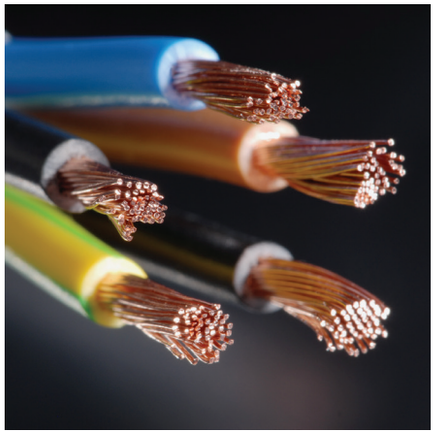
BASF
We create chemistry

A portfolio for success

BASF Plasticizers for North America



Products for a world of uses

Plasticizers to meet the needs of a changing world

There has been a need for plasticizers ever since PVC (polyvinyl chloride) was patented in 1913. In its unmodified state, PVC is rigid and brittle. Plasticizers are used to make the material soft and flexible.

BASF has been a leader in the market for plasticizers and raw materials throughout the history of flexible PVC. BASF developed the first manufacturing process for phthalic anhydride, is a global technology leader for Oxo alcohols, and in this new millennium has had commercial successes in the global introduction of Palatinol® DPHP and Hexamoll® DINCH. In North America we are responding to market changes and customer needs by offering Palatinol® DOTP.

But one size does not fit all. Today, soft PVC is used in a wide range of applications and industries, from high performance industrial cables to extremely sensitive medical devices. Some plasticized PVC applications need to withstand extreme temperatures; others have to be highly resistant to physical and environmental stress. Some products are especially designed for close human contact applications such as children's toys and blood storage bags.

Staying ahead in a changing world

Nothing stands still in the modern world. Markets, business models, consumer preferences and demands are all subject to constant change. New applications are developed. Stricter regulations continue to be drawn up that impact many important products. Increasing environmental awareness creates opportunities for technical innovations.

BASF has specialized in developing and producing plasticizers for decades. Throughout that time, we have done more than just provide our customers with all the functionality they need for their products. Equally important, we have helped them to ensure that their products meet new trends, supply new markets and conform to the latest regulations and safety and sustainability requirements. This is how we support our customer's businesses while helping them to build a solid and sustainable future.

Expert support for all your plasticizer needs

We offer comprehensive support throughout the entire value chain, from product development to technical consultation and marketing expertise.

Member of:

Flexible Vinyl Alliance

Institut de Vinyle du Canada / The Vinyl Institute of Canada

CFFA Chemical Fabrics & Film Association, Inc.

RFCI Resilient Floor Covering Institute

ecpi European Council for Plasticisers and Intermediates – Committed to the science of safety

vinyl plus – Committed to Sustainable Development

Support in industry associations

The BASF plasticizer team is committed to various industry groups throughout the world, aiming to ensure a positive future for soft PVC and plasticizers.

In North America we are a member of the Flexible Vinyl Alliance (FVA), the Vinyl Institute of Canada, the Chemical Fabric and Film Association (CFFA) and the Resilient Floor Covering Institute (RFCI).

In Europe we are member of the European Council for Plasticizers and Intermediates (ECPI), a trade association that supports the safe, sustainable and environmentally responsible use of plasticizers. As an ECPI member, we are part of the European PVC industry's VinylPlus program, a voluntary commitment to promoting sustainable production and use of PVC.

Technical Support
The BASF plasticizer technology team provides individual onsite support for technical queries. We support you in solving challenges you face and offer formulation trials in our own application laboratory.

Sales and Marketing
We at BASF enjoy working with our customers to find the best solutions for your business. The knowledge and expertise of our Sales & Marketing Teams allows us to assist you every step of the way. Contact us at plasticizers@basf.com today.

Supply Chain
Product availability and security of supply are our top priorities. BASF is your reliable supplier for a broad range of plasticizers. We have established a second level of pre-loading inspection at our filling facilities and continually strive to improve our processes in order to guarantee the high quality of our plasticizers. In addition, we have large storage capacities and an extensive network of terminals to ensure that we can react quickly to short term changes in customer demand. Our global availability and strict quality control gives you peace of mind when it comes to planning and reliable supply.

Toxicological Expertise
Our experts monitor and evaluate the safety of all BASF plasticizers, supporting our customers with regulatory support on their uses. In addition to conducting studies in our own laboratories, we constantly monitor scientific literature and regulatory databases, taking into account their possible impact on our plasticizer portfolio and our customer's needs.

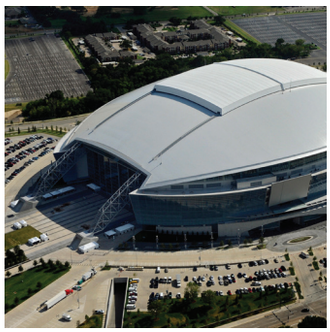
Regulatory Support
National and international regulations relating to the formulation and use of plasticizers are constantly changing. Existing regulations and directives are regularly adapted and updated, while new legal requirements are issued by US and Canadian authorities and other regions around the world. Our experts are always up to date on these developments, providing our customers with the latest information and the best possible support for their business.

BASF plasticizers: Functional, versatile and safe

BASF's comprehensive range of plasticizers provides a cost-effective solution for a large variety of applications from highly durable soft PVC products to the most sensitive medical devices. Our customers trust us to deliver the functionality, versatility and safety that their products rely on.

PALATINOL®

PALAMOLL®



PLASTOMOLL®

HEXAMOLL® DINCH

BASF plasticizers portfolio at a glance

Palatinol® DOTP
Palatinol® DOTP can be used in a broad range of applications as an alternative to general purpose ortho-phthalates, where good processing characteristics are needed and the finished product requires improved low temperature flexibility and low volatility. Palatinol® DOTP is approved and certified by international regulatory agencies (including US FDA) for food contact and other sensitive applications.

Hexamoll® DINCH
This trusted non-phthalate plasticizer is recommended when people come into close contact with PVC products that contain plasticizers. Key features include low viscosity, low density and cold temperature flexibility. Its excellent toxicological profile makes it ideal for applications with close human contact. Hexamoll® DINCH is approved and certified by international regulatory authorities.

Palatinol® Trimellitates
Palatinol® TOTM is suggested for use in those end-use areas where extremely low volatility is required. It is used in more demanding UL wire and cable applications and in medical uses that require low migration. Palatinol® 810TM combines very low volatility with excellent low temperature behavior.

Palatinol® DPHP
This plasticizer provides excellent weathering resistance properties for outdoor applications. The product's high UV stability is complemented by its low odor characteristics, making it ideal for automotive interior applications and standard cable formulations. Its low volatility results in minimal fogging, which is a desirable feature for automotive applications. Palatinol® DPHP also complies with UL and German VDE standards for use in wire and cable formulations.

Palatinol® Linear Phthalates
Palatinol® 911P offers excellent permanence, low volatility, good efficiency and good retention of physical properties for more demanding vinyl applications. Heat and light stability of Palatinol® 911P is superior to phthalate esters made from branched chain alcohols. Palatinol® 111P-I offers lower volatility and improved low temperature flexibility.

Palamoll® Polymeric Plasticizers
Our polymeric plasticizers offer low migration into contact materials such as plastics and adhesives. Their excellent extraction resistance to hydrocarbons, oils and fats makes Palamoll® the ideal solution for technical products such as decorative film and automotive applications.

Plastomoll® Adipate Plasticizers
These are adipic acid-based monomeric plasticizers with excellent low temperature properties. Plastomoll® DOA meets international requirements for food packaging (cling film). Plastomoll® DNA can be used in low temperature applications where lower volatility is required.

In developing and optimizing our plasticizers, we have the strength of BASF's vast research and development resources behind us.

Continuous improvement and rigorous testing ensure that our future-oriented products contribute to the sustainability of our customer's businesses.

PALATINOL® DOTP

PALATINOL® DOTP

General purpose alternative plasticizer

Applications

- Flooring
- Toys & Child Care Products
- Wire & Cable
- Film & Sheet
- Medical Devices
- Wall Coverings
- Sport & Leisure Products

Palatinol® DOTP

Palatinol® DOTP is a plasticizer based upon 2-ethylhexanol and terephthalic acid. It can be used in a wide range of applications as an alternative to ortho-phthalates. It is compatible with both homopolymer and copolymer vinyl resins. Palatinol® DOTP is used primarily to plasticize vinyl resin where good processing characteristics are needed and the finished product requires improved low temperature, flexibility and low volatility.

The addition of Palatinol® DOTP to plastisols and organosols lowers initial viscosity and leads to longer shelf life. Palatinol® DOTP is recommended for use in select consumer goods, film and sheet, coated fabrics, flooring, sealants and adhesives, wall coverings and wire and cable.

Palatinol® DOTP sets high standards for customers trying to meet today's market needs for safety and sustainability. As part of BASF's Sustainable Solution Steering® methodology, Palatinol® DOTP was classified as an "Accelerator" - a product generating a substantial contribution to sustainability in the value chain. In addition, it is well-studied and has an excellent toxicological profile to make it well-suited for general purpose as well as sensitive applications.

Features

- Good low temperature flexibility
- Excellent toxicological profile
- Imparts low initial viscosity and better storage stability to plastisols
- Use not restricted by the Consumer Product Safety Improvement Act (CPSIA)
- Not listed under California Proposition 65
- Low volatility
- Low oil extraction

PALATINOL® DOTP

Approved and assessed

Food Contact Applications

US FDA Food Contact Notification No. 1473

European Commission Regulation (EU) No. 10/2011

European Food Safety Authority (EFSA) - 2009

Drinking Water Applications

Risk Assessment under NSF / ANSI Standards 60 and 61

Medical Applications

Cytotoxicity data available

IV toxicity data available

EU Scientific Committee for Emerging and Newly Identified Health Risks (SCENIHR) - 2016

Toys & Child Care Products

Complies with US CPSC Consumer Product Safety Improvement Act

Reviewed by CPSC Chronic Hazard Advisory Panel - 2014

EU Regulation (EC) No. 1907/2006, Annex XVII, 51/52 (not listed);
Toy Safety Directive 2009/48/EC

Complies with ASTM F963

Other

French Agency for Food, Environmental and Occupational Health & Safety (ANSES, 2015)

HEXAMOLL®
DINCH

HEXAMOLL® DINCH

The Non-phthalate plasticizer for close human contact

Applications

Toys & Child Care Products

Medical Devices

Sport & Leisure Products

Sealants & Adhesives

Flooring

Approved and assessed

Medical Applications

US FDA Medical Device Master File (No. 1484, 16323)

EU Medical Device Directive 93/42/EEC

DIN EN ISO 10993

Toys & Child Care Products

Complies with US CPSC / CPSIA

Complies with ASTM F963

EU Toy Safety Directive 2009/48/EC

European Toy Safety Standards EN 71-3, 71-5, 71-9

Hexamoll® DINCH

Due to its excellent toxicological profile and low migration rate, this unique plasticizer is approved and certified by many authorities and institutions worldwide. Hexamoll® DINCH sets high standards with regard to sustainability. As part of BASF's Sustainable Solution Steering® methodology, Hexamoll® DINCH was classified as an "Accelerator" - a product generating a substantial contribution to sustainability in the value chain. In addition, it is well-studied and has an excellent toxicological profile to make it suitable for general purpose as well as close human contact.

High safety standards and extensive testing make Hexamoll® DINCH the ideal solution to replace ortho-phthalates in sensitive soft PVC applications involving close human contact.

This non-phthalate plasticizer is compatible with PVC across a broad concentration range and can be used in production processes such as extrusion, calendaring, injection molding, rotation molding and spread coating.

Features

Excellent toxicological profile

Low viscosity

Low density

Excellent cold flexibility

Good migration and extraction resistance

PALATINOL®
Trimellitates

High-temperature durability

Applications

- Wire & Cable
- Automotive Components
- Gaskets
- Medical Devices

Palatinol® TOTM

Palatinol® TOTM provides desirable properties in vinyl applications which require good plasticizer/resin compatibility, low volatility, resistance to extraction by soapy water and good electrical properties.

Palatinol® TOTM is often a good substitute for polyester polymeric plasticizers where improvements in processing are desired. Palatinol® TOTM is suggested for use in those end-use areas where extreme low volatility is required.

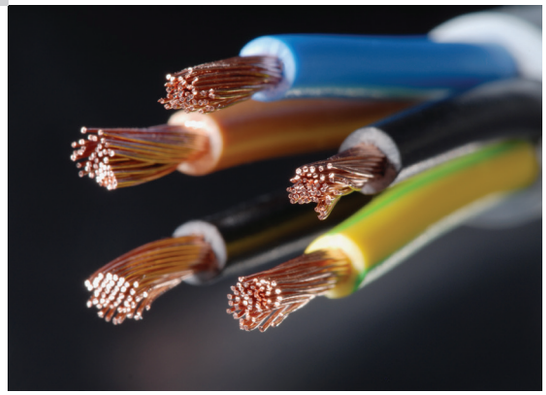
Palatinol® 810TM

Formulations made with Palatinol® 810TM exhibit superior low temperature flexibility and resistance to oxidative degradation at high temperatures. This trimellitate offers a unique combination of easy processability, a high degree of permanence and good compatibility.

Palatinol® 810TM is suggested for such applications as wire and cable insulation, refrigerator gaskets, where lacquer mar resistance is a factor, and very low fog automotive components.

Features

- Resistance to oxidative degradation
- Low volatility at higher temperatures
- Good electrical properties
- US FDA Food Contact Notification No. 1587



PALATINOL® DPHP

The plasticizer that gives your products a long life

Applications

- Automotive Interior Trim
- Wire & Cable
- Artificial Leather
- Roofing Membranes
- Tarpaulins
- Sealants

Palatinol® DPHP

Palatinol® DPHP is a versatile plasticizer with high durability, and it offers two core benefits: excellent weathering and low volatility properties, complemented by enhanced processing performance. Palatinol® DPHP is well-suited for flexible PVC products that require resistance to degradation caused by high temperature and weathering. These include applications such as roofing membranes, tarpaulins, wire and cable insulation and automotive interior trim, which demand low fogging, high UV stability and low odor.

Your products are designed to improve quality of life and make day to day living easier. As sustainability increases in importance, demand from consumers for longer lasting products is also growing, while consistent high quality and extensive choice are valued more and more.

Features

- Low odor
- Low volatility leading to reduced fogging - ideal for automotive interior trim
- Excellent outdoor weathering properties
- Compliant with UL and German VDE standards for wire and cable

PALATINOL®
Linear Phthalates

Good low-temperature flexibility and permanence

Applications

- Roofing
- Automotive Interior
- Wire & Cable
- Film & Sheet

Palatinol® 911P

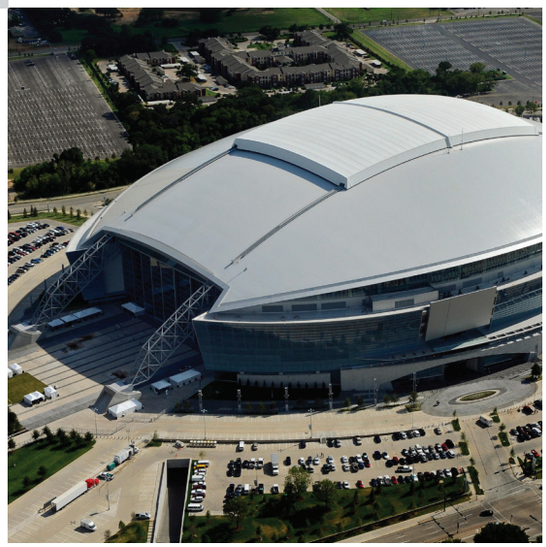
Palatinol® 911P offers excellent permanence, low volatility, good efficiency and good retention of physical properties for heat aging vinyl applications. Heat and light stability of Palatinol® 911P is superior to phthalate esters made from branched chain alcohols.

Palatinol® 111P-I

Palatinol® 111P-I has a higher degree of linearity than many competitive DUPs and thus shows superior performance in efficiency, aging and low temperature flexibility. Formulations made from Palatinol® 111P-I have low volatility and excellent oxidation resistance at high temperatures, and therefore, better retention of properties after oven aging.

Features

- Good outdoor weatherability
- Low temperature flexibility
- Excellent permanence and oxidation resistance
- Low volatility at higher temperatures
- Heat and light stability



PALAMOLL®
Polymeric Plasticizers

For performance that lasts

Applications

- Printable Decals
- Film & Sheet
- Packaging Solutions
- Automotive Interior Trim
- Wire & Cable

Palamoll® polymeric plasticizers

Palamoll® polymeric plasticizers are based on adipic acid and comprise a range of different molecular weights designed to provide outstanding technical performance. These polyesters serve as primary plasticizers and are most commonly used in flexible PVC. Due to their higher molecular weight, Palamoll® grades are resistant to extraction by hydrocarbons, oils, fats and water and are well suited for technical products, such as decorative films for automotive applications.

Since Palamoll® plasticizers consist of large, stable molecules, they provide low volatility and good resistance to migration into other plastics or adhesives in contact with them. As a result, they will remain in place and functional for many years to come.

Processing

Extrusion and calendaring are the most common processing methods for Palamoll® plasticizers formulations.

Features

- Low migration into contact materials such as plastics and adhesives
- Excellent extraction resistance to hydrocarbons, oils, fats and water
- Low volatility at higher temperatures
- Combination with monomeric plasticizers possible

PLASTOMOLL®
Adipate Plasticizers

The flexible solution for low-temperature applications

Applications

- Cling Film
- Secondary Plasticizers
- Tubing & Profiles
- Film & Sheet
- Wire & Cable
- Coatings

Plastomoll® DOA

Plastomoll® DOA is especially suitable for flexible PVC films and coatings that require good low-temperature properties. This plasticizer also meets food packaging requirements. With its low viscosity and high efficiency in plasticizing, Plastomoll® DOA is particularly suitable for use in the manufacture of cling films. Plastisols containing Plastomoll® DOA have a low initial viscosity and are easy to process.

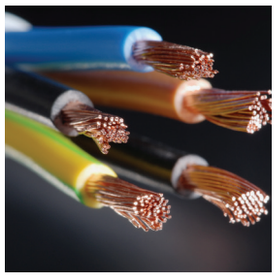
Plastomoll® DNA

Plastomoll® DNA is well-suited for use in flexible PVC products with low-temperature properties. Lower volatility and low viscosity make Plastomoll® DNA the ideal solution for the production of plasticized PVC products in combination with general purpose and polymeric plasticizers.

Features

- FDA clearances
- Excellent low-temperature properties and low-viscosity
- Plastomoll® DOA can be used in cling film and medical applications
- Plastomoll® DNA can be blended with other plasticizers to obtain better performance

Industries and applications


	Palatinol® DOTP	Palatinol® Trimellitates	Palatinol® Linear Phthalates	Palatinol® DPHP	Palamoll® Grades	Hexamoll® DINCH	Plastomoll® Grades
Film & Sheet	■	■	■	■	■	■	■
Wire & Cable	■	■	■	■	■		
Automotive	■	■	■	■	■		
Medical	■	■				■	■
Food Contact	■	■					■
Toy & Child Care Products	■					■	■
Flooring	■					■	■
Wall Coverings	■					■	■
Roofing			■	■			
Tarpaulines			■	■			

BASF – We Create Chemistry For A Sustainable Future

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. The approximately 114,000 employees in the BASF Group work on contributing to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio is organized into five segments: Chemicals, Performance Products, Functional Materials & Solutions, Agricultural Solutions and Oil & Gas. BASF generated sales of about €58 billion in 2016. BASF shares are traded on the stock exchanges in Frankfurt (BAS), London (BFA) and Zurich (BAS). Further information at www.basf.com.

BASF

We create chemistry

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