

**□ - BASF**

We create chemistry

Plasticizer product range  
for a sustainable business

**Certainty in a  
changing world**





# Future-proofed products for a world of uses

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.

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 stresses. Still others are especially designed for close human contact applications, from baby toys to blood containing plasma 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. Strict regulations are drawn up regarding PVC products and the plasticizers they contain. Increasing environmental awareness leads to regular technical modifications.

BASF has specialized in formulating 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 importantly, we have helped them to ensure that their products meet new trends, supply new markets and conform to the latest regulations. This is how we support our customers' businesses while helping them to build a solid and sustainable future.

# BASF plasticizers: functional, versatile and safe

**BASF'S COMPREHENSIVE RANGE OF PLASTICIZERS PROVIDES A COST-EFFECTIVE SOLUTION FOR A HUGE VARIETY OF APPLICATIONS. FROM THE TOUGHEST SOFT PVC PRODUCTS TO THE MOST SENSITIVE MEDICAL APPLIANCES, OUR CUSTOMERS TRUST US TO DELIVER THE FUNCTIONALITY, VERSATILITY AND SAFETY THAT THEIR PRODUCTS RELY ON.**



**PALATINOL® 10-P**

**PALATINOL® N**



**PALAMOLL®**



**PLASTOMOLL®**



## HEXAMOLL® DINCH

## BASF PLASTICIZERS PRODUCT RANGE AT A GLANCE

### Hexamoll® DINCH

This trusted non-phthalate plasticizer for high safety and quality standards is recommended whenever people come into close contact with PVC products that contain plasticizers. Key features include low viscosity, low density and excellent cold flexibility, combined with low volatility and good migration and extraction resistance. Its excellent toxicological profile makes it ideal for applications with close human contact. Hexamoll® DINCH is approved and certified according to international safety standards.

### Palatinol® 10-P

This plasticizer provides excellent weathering resistance and anti-aging properties for outdoor applications. The product's high UV stability is complemented by its odor-free 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 higher-temperature applications. Palatinol® 10-P also complies with UL and German VDE standards for use in wires and cables.

### Palatinol® N

This general purpose plasticizer for industrial applications is ideally suited to films and coatings. It is highly versatile and displays low viscosity. Other key features include its good low-temperature performance and low volatility.

### Plastomoll®

These are adipic acid-based monomeric plasticizers with good low temperature properties. Plastomoll® DOA meets international requirements for food packaging and is suitable for food packaging applications (cling film). Plastomoll® DNA can be used as a carrier solvent for PU systems, PVC colorants and coatings.

### Palamoll®

Palamoll® are polymeric plasticizers with low migration into contact materials such as plastics, bitumen and adhesives. Their excellent extraction resistance to hydrocarbons, oils, fats and water makes Palamoll® the ideal solution for technical products such as decorative film and automotive applications. These long-lasting plasticizers extend the service life of products where outstanding UV stability is required.

### Approved and certified

In developing and optimizing our plasticizers, we have the strength of BASF's huge research and development resources behind us. Continual improvement and rigorous testing ensure that our future-orientated products contribute to the sustainability of our customers' businesses.



HEXAMOLL®  
DINCH

**HEXAMOLL® DINCH –  
THE TRUSTED  
NON-PHTHALATE  
PLASTICIZER**

**Hexamoll® DINCH – on the market since 2002**

BASF has already invested more than € 7 million in toxicological research for Hexamoll® DINCH. Thanks to its excellent toxicological profile and low migration rate, this unique plasticizer is approved and certified by many authorities and institutions worldwide. Extensive tests have proved it safe for humans, including infants. In addition, Hexamoll® DINCH sets high standards with regard to sustainability. As part of BASF's Sustainable Solution Steering, Hexamoll® DINCH is classified as an "Accelerator", generating a substantial contribution to sustainability in the value chain.

**Well-balanced technical performance**

Hexamoll® DINCH can be processed on your existing machinery with only minor adjustments to formulation and process parameters. 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.

High safety standards and extensive testing make Hexamoll® DINCH the ideal solution for soft PVC applications involving close human contact. Thanks to its unique performance and excellent toxicological profile, Hexamoll® DINCH can be used as a substitute for traditional phthalates in a huge variety of applications.

Hexamoll® DINCH has become a market standard. This is supported by outstanding production capabilities. The commissioning of BASF's second Hexamoll® DINCH plant has increased our capacity to 200,000 tons, strengthening even further the delivery reliability of our non-phthalate plasticizer.

To learn more, visit [www.hexamoll-dinch.com](http://www.hexamoll-dinch.com)



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## Applications

- ▶ Medical devices

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- ▶ Toys

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- ▶ Food contact applications

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- ▶ Sport & leisure products

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- ▶ Flooring

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- ▶ Wall coverings

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## Approved and certified

Hexamoll® DINCH is approved and certified for sensitive applications worldwide. It is suitable for use in end-products that need to comply with:

### Medical applications

- ▶ Medical Device Regulation (EU) 2017/745
- ▶ European Pharmacopoeia
- ▶ DIN EN ISO 10993
- ▶ US FDA Medical Device Master Files (No. 1484; 16323)
- ▶ US Pharmacopoeia (Monograph 88, Class VI)
- ▶ Chinese Food and Drug Administration (CFDA)
- ▶ Japan Ministry of Health, Labor and Welfare (MHLW)

**Hexamoll® DINCH won the Solvin Award and Medical Device Award for the project: "Medical Devices without DEHP in blood product applications"**

### Food contact applications

- ▶ European Commission Regulation (EU) No 10/2011
- ▶ Swiss Ordinance on Materials and Articles in Contact with Food (consumer goods from plastics and printing inks)
- ▶ Chinese GB Standard GB9685-2016
- ▶ Japan Hygienic PVC Association (JHPA)
- ▶ Australian National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
- ▶ US National Sanitation Foundation Standard 61 for drinking water system components
- ▶ Health Canada's Health Products and Food Branch (HPFB)
- ▶ Safe for its intended use in Mexico
- ▶ Human biomonitoring (HBM) data confirm safe exposure

### Toys

- ▶ EU Toy Safety Directive 2009/48/EC
- ▶ European Toys Standards DIN EN 71-3, EN 71-5, DIN EN 71-9
- ▶ US-CPSC toy safety specification ASTM F963
- ▶ GB 6675-2014 Chinese Toy Safety Standard

### Other

- ▶ REACH registered
- ▶ EuPIA (European Printing Ink Association)
- ▶ OEKO-Tex® Standard 100 (textiles)
- ▶ Directive 2011/65/EU (RoHS-Requirements) incl. 2015/863
- ▶ Regulation (EC) No 850/2004
- ▶ Regulation (EC) No 1907/2006 Annex XVII No. 46, 5

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## Hexamoll® DINCH – Features

- ▶ Excellent toxicological profile

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- ▶ Low viscosity

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- ▶ Low density

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- ▶ Excellent cold flexibility

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- ▶ Low volatility

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- ▶ Good migration and extraction resistance

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PALATINOL® 10-P

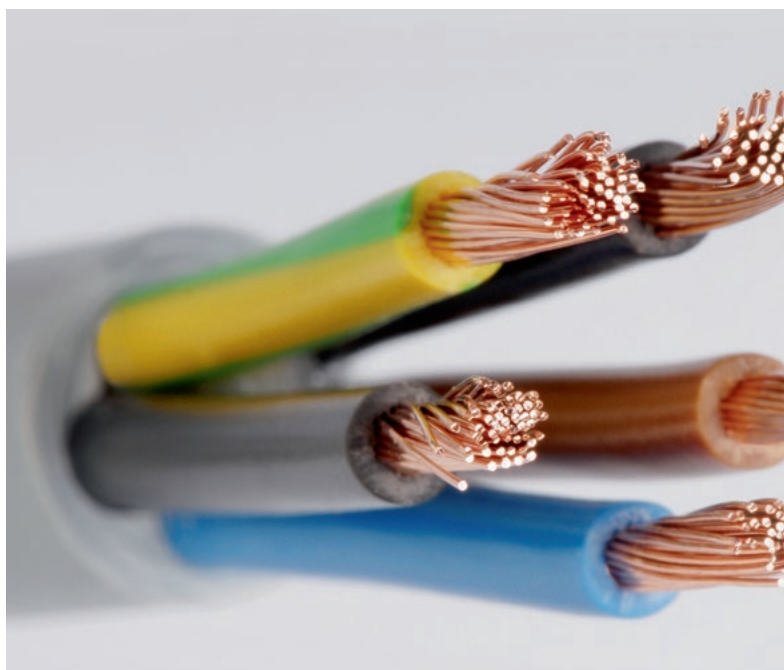
**PALATINOL® 10-P –  
THE PLASTICIZER THAT  
GIVES YOUR PRODUCTS  
A LONG LIFE**

**Superior properties to enhance your products**

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 consistently high quality and extensive choice are valued more and more.

Palatinol® 10-P offers two core benefits: excellent weathering and low fogging properties, complemented by enhanced processing performance. This makes Palatinol® 10-P the ideal choice for flexible PVC products that require resistance to degradation caused by high temperatures and weathering. These include applications such as roofing membranes and tarpaulins, wires, cables and automotive interior trim, which demand low volatility, high UV stability and minimal odor.

Palatinol® 10-P is a versatile plasticizer with high durability.





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## Applications

- ▶ Wires & cables
  - ▶ Automotive interior trim
  - ▶ Artificial leather
  - ▶ Roofing membranes
  - ▶ Tarpaulins
  - ▶ Advertising banners
  - ▶ Coil coating
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## Palatinol® 10-P – Compatible with most additives

Palatinol® 10-P is compatible with secondary plasticizers, stabilizers and additives, so switching from DEHP, DINP and DIDP to Palatinol® 10-P is easy. Please note that some slight adjustments to existing recipes and process parameters may be required.

Using Palatinol® 10-P on your existing equipment will result in improved processing performance compared with standard plasticizers and improved results at high processing velocity. We also offer Palatinol® 10-P stabilized with 0.25 % Irganox® 1010.

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## Palatinol® 10-P – Features

- ▶ Minimal odor
  - ▶ Low volatility leading to reduced fogging – ideal for higher-temperature applications
  - ▶ Compliant with UL and German VDE standards for wires and cables
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**PALATINOL® N –  
VERSATILITY AND  
EXCELLENT WEAR  
RESISTANCE**

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**Applications**

- ▶ Roofing sheets
  - ▶ Artificial leather
  - ▶ Films & coatings
  - ▶ Tarpaulins
- 

**General purpose plasticizer for industrial applications**

Palatino® N is a versatile low-viscosity plasticizer for PVC with good low-temperature performance and low volatility.

Palatino® N can be used to plasticize PVC for the manufacture of products for applications that demand low plasticizer volatility, good elasticity at low temperatures and low viscosity for processing using the plastisol method. Finished products have comparably good low-temperature flexibility and significantly reduced volatility. Products plasticized with Palatino® N display better resistance to water and weathering, as well as good electrical properties.



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**Palatino® N – Features**

- ▶ General-purpose plasticizer for industrial applications
  - ▶ Versatile with low viscosity
  - ▶ Good low-temperature performance
  - ▶ Low volatility
-

## PLASTOMOLL® – THE FLEXIBLE SOLUTION FOR LOW-TEMPERATURE APPLICATIONS

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### Applications

- ▶ Additive for other plasticizers
- ▶ Tubes & profiles
- ▶ Films & sheets
- ▶ Wires & cables
- ▶ Coatings
- ▶ Cling film (Plastomoll® DOA)

### Plastomoll® grades for versatile applications

Plastomoll® DOA is especially suitable for flexible PVC films and coatings that require good low-temperature properties. This plasticizer 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. Plasticsols containing Plastomoll® DOA have a low initial viscosity and are easy to process.

Plastomoll® DNA is well-suited for use in flexible PVC products with low-temperature properties. Low 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.



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### Plastomoll® – Features

- ▶ Adipic-acid-based monomeric plasticizers
  - ▶ Good low-temperature properties
  - ▶ Plastomoll® DOA meets requirements for food packaging and is therefore suitable for the use in cling film
  - ▶ Plastomoll® DNA can be used as a carrier solvent for PU systems, PVC colorants and coatings
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PALAMOLL®

## PALAMOLL® – FOR PERFORMANCE THAT LASTS

### **Excellent performance for durable products**

Palamoll® plasticizers are polymeric plasticizers based on adipic acid and comprise a range of different molecular sizes designed to provide outstanding technical performance. These polyesters serve as primary plasticizers and are most commonly used in flexible PVC. Due to their large molecular size, Palamoll® grades are resistant to extraction by hydrocarbons, oils, fats and water. Some grades can be used in food contact materials and technical products, such as decorative films for automotive applications.

Palamoll® products also extend the life of your products in outdoor applications that demand outstanding UV stability. Since Palamoll® plasticizers consist of large, stable molecules, they provide low volatility and good resistance to migration. As a result, they remain in place and functional for many years to come.



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## Applications

- ▶ Food contact applications
  - ▶ Wires & cables
  - ▶ Automotive interior trim
  - ▶ Outdoor applications
  - ▶ Packaging solutions
- 

## Processing

While Palamoll® plasticizers can be processed using any method applicable to typical flexible polyvinyl chloride processing, calendaring and extrusion are the most common processing methods.

## Compatibility

The Palamoll® product line is compatible with other monomeric plasticizers, especially BASF's adipic-acid-based Plastomoll® grades. Their good to excellent compatibility with many other plastics and elastomers allows them to be used in combination with PVC, PVAc, NBR, TPU and curable polyurethanes.

## Food contact legislation

If used unmodified and under the appropriate processing conditions, several of our Palamoll® products are suitable for use in food contact packaging, as per European Food Safety Authority (EFSA) approval.




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## Palamoll® – Features

- ▶ Low migration into contact materials such as plastics, bitumen and adhesives
  - ▶ Excellent extraction resistance to hydrocarbons, oils, fats and water
  - ▶ Low volatility at higher temperatures
  - ▶ Outstanding performance in outdoor applications, where high UV stability is required
  - ▶ Combination with monomeric plasticizers possible
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# 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.**

## Support in industry associations

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

We are a member of European Plasticisers, a trade association that supports the safe, sustainable and environmentally responsible use of plasticizers. As an European Plasticisers member, we are part of the European PVC industry's VinylPlus program – a voluntary commitment to promoting sustainable production and use of PVC.

In addition, we actively work with application-related associations such as the PVCmed Alliance, PVC4Cables and the German flooring association FEB (Fachverband der Hersteller elastischer Bodenbeläge).

As a member of the AgPU (Arbeitsgemeinschaft PVC und Umwelt), we aim to protect the image of PVC and soft PVC. A similar goal led us to join the PVC Forum Italia.



**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.

**Toxicological service**

BASF has invested millions of Euros in toxicological and ecotoxicological studies on our plasticizer portfolio, spending over € 7 million on Hexamoll® DINCH alone. Our experts monitor and evaluate the safety of all BASF plasticizers, supporting our customers with regulatory guidance on their uses. In addition to conducting studies in our own labs, we constantly monitor scientific literature and regulatory databases, taking into account their possible impact on our plasticizer portfolio and our customers' needs.

**Regulatory service**

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 the European Commission or at a national level 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. REACH – Registration, Evaluation, Authorization and Restriction of Chemicals – is the current European chemicals legislation. All BASF plasticizers are REACH-registered and fulfill all the relevant requirements.

**Supply-chain service**

Product availability and security of supply are our top priorities. BASF is your trustworthy expert supplier for a broad range of plasticizers.

We have established a second level of pre-loading inspection at our filling facilities and improved several other processes in order to guarantee the high quality of our plasticizers. In addition, we have large storage capacities to ensure that we can react flexibly and 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.

**Sales support**

The BASF plasticizer sales operation has local representatives in many European countries. This prevents language barriers and makes it easier for our customers to obtain quick and accurate answers to their questions. Wherever you operate, BASF's local sales network is there to support you.

**Marketing and communication service**

We are always open to the idea of joint communication activities to provide maximum support for your business. These may include joint promotion of the same product or the opportunity to use the BASF or Hexamoll® DINCH logos on your packaging or website. Our marketing teams are happy to share their extensive knowledge of many different sectors, from flooring and wall coverings to toys and medical devices, with you.

**BASF SERVES THE DIFFERENT NEEDS OF A VARIETY OF INDUSTRIES AND APPLICATIONS**



▶ Toys



▶ Medical



▶ Food



▶ Flooring



▶ Wall covering

HEXAMOLL® DINCH

PALATINOL® N (DINP)

PLASTOMOLL® DOA

PLASTOMOLL® DNA

PALAMOLL®  
FOOD GRADES

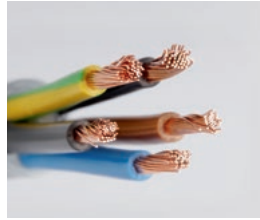




▶ Tarpaulins



▶ Other films & sheets



▶ Wires & cables



▶ Roofing



▶ Automotive

HEXAMOLL® DINCH

PALATINOL® 10-P (DPHP)

PALATINOL® N (DINP)

PLASTOMOLL® DNA

PALAMOLL® GRADES

## **BASF – WE CREATE CHEMISTRY FOR A SUSTAINABLE FUTURE**

At BASF, we create chemistry – and have been doing so for 150 years. Our portfolio ranges from chemicals, plastics, performance products and crop protection products to oil and gas. As the world’s leading chemical company, we combine economic success with environmental protection and social responsibility. Through science and innovation, we enable our customers in nearly every industry to meet the current and future needs of society. Our products and solutions contribute to conserving resources, ensuring nutrition and improving quality of life. We have summarized this contribution in our corporate purpose: “We create chemistry for a sustainable future.” Further information about BASF is available on the Internet at **[www.basf.com](http://www.basf.com)**.





We create chemistry

## Europe

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