



Grupa Azoty ZAK S.A.

OXO Segment 2017



Oxoplast.com



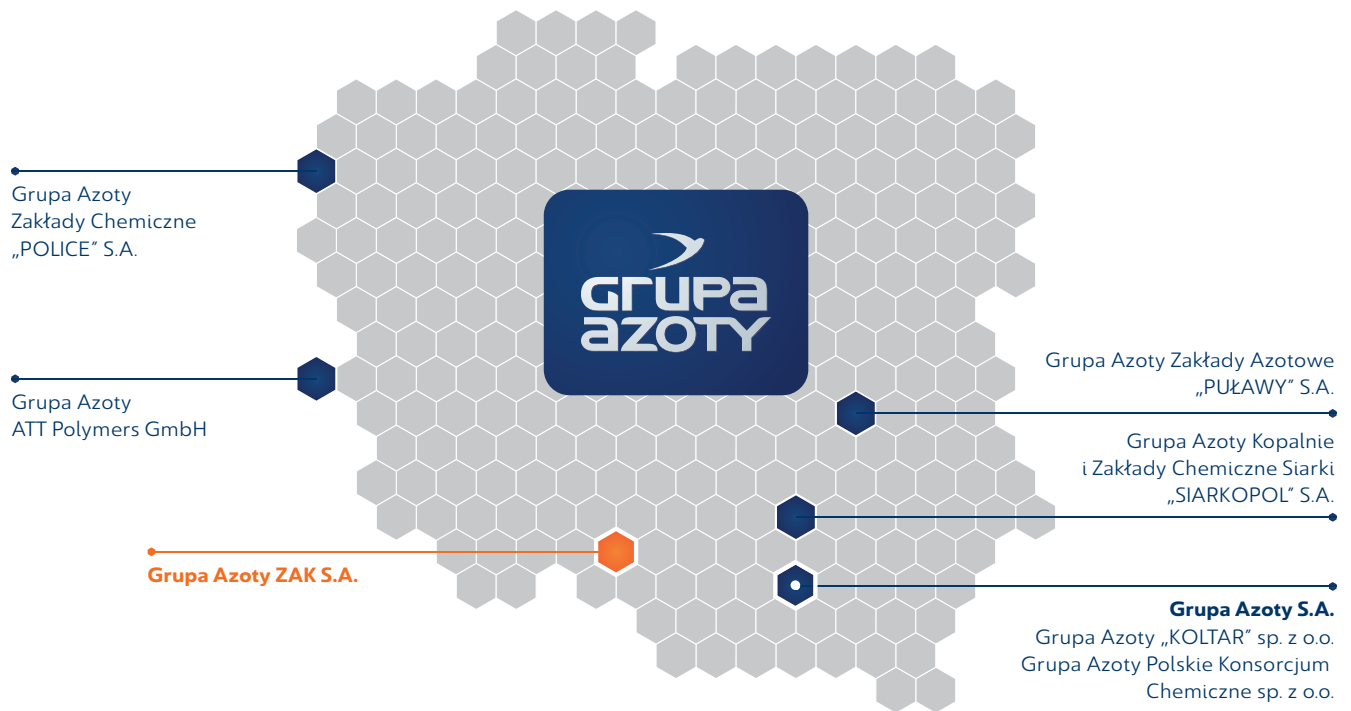
Aleksander Grymel
Director of Oxoplast Business Unit

We are a part of **Grupa Azoty**. The OXO Segment is an important element of Grupa Azoty core business. **We operate the most technologically advanced plants in Europe which are located in Southern Poland at Grupa Azoty ZAK S.A.** We have been gaining our experience in the OXO sector for many years – we have been producing plasticizers since 1954 and OXO alcohols since 1986. We are the largest Polish and fifth European company producing OXO alcohols and plasticizers. With 50 kT/year on-purpose plant, we are number one European producer of non-phthalate DEHT plasticizer which is traded under Oxoviflex® brand. We take an extra care to meet requirements of our clients and provide them with OXO Segment products they need.

Innovation in our case means not only technology but also **pioneer applications** aimed at making our company a competitive player on the European market. Our product range tends to be called “**smart additives**”. They are made according to stringent European standards concerning chemicals – REACH. We are dedicated to development through process optimisation and broadening our product portfolio. We carry out extensive R&D activities within our **newly put-up Research and Development Centre to introduce specialty plasticizers, including bio-based plasticizers and OXO based products into our product range.** These efforts are aimed at developing both the OXO Segment as well as contributing to a positive result of our business and growth of Grupa Azoty.



WE ARE A PART OF GRUPA AZOTY



| | Core Business | | | Others |
|---|---------------------------|---------------------------------------|----------------------------------|--|
| | Fertilizers | Chemicals | Plastics | |
| Grupa Azoty S.A. (parent company, capital group) | AN, CAN, ASN, AS | | PA6, POM, Compounds, Caprolactam | logistics, R&D, electricity and heat, laboratory services, designing and engineering services, mining, harbors |
| Grupa Azoty ZAK S.A. (capital group) | AN, CAN, UAN, CAN+S, urea | OXO alcohols, Plasticizers, Aldehydes | | logistics, R&D, electricity and heat, laboratory services, designing and engineering services, harbors |
| Grupa Azoty Zakłady Azotowe „PUŁAWY” S.A. (capital group) | AN, UAN, urea, NPK | Melamine | Caprolactam | logistics, R&D, electricity and heat, laboratory services, designing and engineering services, harbors |
| Grupa Azoty Zakłady Chemiczne „POLICE” S.A. (capital group) | NPK, NP, NS, urea | Titanium Dioxide | | logistics, R&D, electricity and heat, laboratory services, designing and engineering services, mining, harbors |
| Grupa Azoty ATT Polymers GmbH | | | PA6, Compounds | |
| Grupa Azoty „KOLTAR” sp. z o.o. | | | | logistics |
| Grupa Azoty Kopalnie i Zakłady Chemiczne Siarki „SIARKOPOL” S.A. | | Sulphur based products | | mining |
| Grupa Azoty Polskie Konsorcjum Chemiczne sp. z o.o. | | | | designing and engineering services, repairs, maintenance, chemical rescue |

OXO HISTORY

PLASTICIZERS
SINCE 1954

OXO
ALCOHOLS
SINCE 1986



Our experience in OXO products dates back to 1954. This is when we started production of our first PVC plasticizer.

We have started-up a modern OXO alcohols plant (2-Ethylhexanol, n-Butanol, Isobutanol) as well as hydrogen and synthesis gas facilities. The investment had been started in 1982 and employed Davy Process technology.

We began production of diisobutyl phthalate (DIBP). It was known as Oxoplast® IB.

1954

1963

1986

1996

1999

In 1963 we have started to produce diethylhexyl phthalate (DEHP). It is known worldwide as Oxoplast® O.

In co-operation with Davy Process we commenced OXO plant modernization aimed at increasing its capacity. The process ended in November 1998.

We changed our internal structure and a dedicated Oxoplast Business Unit was created.





Observing trends and dynamic changes in the market we have introduced a high molecular weight phthalate plasticizer – DPHP. It is known as **Oxoplast® PH**.



We decided to build a large scale plant for Oxoviflex® a non-phthalate plasticizer (50 kT /year).

We have started-up a large scale plant for a non-phthalate, PTA based plasticizer (50 kT /year). The product has been introduced under Oxoviflex® brand.



2002

2010

2011

2013

2014

2015

2016

As one of the first in Europe we developed a non-phthalate, PTA based plasticizer and put it to small scale production.

We have introduced a new product brand – Oxoplast Medica®, a plasticizer for medical purposes.

We have started putting up our Research and Development Centre.

We have started Specialty Esters Project.



ACTIVITY AND PRIZES 2016

February

We established an Innovation Council which is an advisory board in implementation of innovative specialty chemicals. The Council consists of chemistry experts and representatives of scientific circles.

February

We signed an agreement on establishing The OXO and Polymers Application Centre. The agreement was signed by the following entities: Ergis SA, SILEKOL Sp. z o.o., University of Silesia, Opole University of Technology, Institute of Biopolymers and Chemical Fibres and Blachownia Institute of Heavy Organic Synthesis.

February

We organised the first workshop within OXO and Polymers Application Centre.

April

We were one of the main partners of "PVC Formulation 2016" conference during which Maciej Budner (Strategic Marketing Office Manager) and Dr Ryszard Grzybek (Application Laboratory Manager) gave a speech on plasticizers and developments in plasticizer portfolio of Grupa Azoty ZAK S.A.

May

We were the main partner of "The 4th ICIS European OXO - alcohols Conference" during which Maciej Budner - Strategic Marketing Office Manager gave a presentation on Global and European plasticizers market.

May

We were awarded with a gold medal of the "Plastpol 2016" fair for an innovative production technology of Oxoviflex[®] – the non-phthalate plasticizer.

October

We and Institute of Industrial Chemistry in Warsaw were awarded with a platinum medal of the International Warsaw Invention Show (IWIS 2016) for developing a concept of additives for plastics.

October

We participated in the "K2016" fair in Dusseldorf, during which we held a meeting with OXO Segment business partners and had a chance to celebrate the 30th anniversary of the OXO alcohols plant with them.

November

We organised a first edition of "The OXO Conference" devoted to – advances in OXO synthesis which accompanied the 30th anniversary celebration of our OXO alcohol plant.

November

The National Research and Development Centre awarded us with a grant amounting PLN 23 million for a project aimed to developing a specialty esters plant.

November

Our „Speciality Esters Project" (SEP) technology was awarded by Polish Agency of Enterprise Development with Polish Product of the Future prize.

December

We applied and have been granted acceptance to join European Council of Plasticizers and Intermediates, beginning of January 2017th. The Council associates major European plasticizer producers.



OUR FUTURE

Research and Development Centre

In 2016 we have begun creating our Research and Development Centre which will develop advanced chemical additives mainly for plastics and polymer industry. The goal is to elaborate prototypes of new products (e.g. synthetics and

specialised additives), which after thorough testing will be introduced to Grupa Azoty ZAK S.A. product portfolio. Running advanced R&D works to develop new methods of manufacturing specialty plasticizers will be among the first tasks to

be completed by the Research and Development Centre. These plasticizers will pose unique parameters and will be used not only as PVC plasticizers, but also as additives in other polymers and plastics.

Specialty Esters Project (SEP)

SEP is a key development activity to be finalised in 2018th. The core part will be a new plant dedicated to innovative, specialty non-phthalate plasticizers including polyesters

and bio-polyesters. The production plant will be accompanied by semi-industrial unit designed for developing and producing batches of new plasticizer types. They will

be tested at Application Laboratory and at PVC converters production facilities.



Katarzyna Ruczka

*Strategy
and Development
Director*

We develop a new generation plasticizers and extend product chains. We constantly search for new applications and want to offer specialty products elaborated according to specific requirements of our OXO customers. Our dream is to create a space where business mixes with innovation. The Research and Development Centre is such a place and will provide a great technological support for us and for our business partners.

The largest propylene by PDH plant in Central Europe

PDH propylene plant is one of the strategic investments of Grupa Azoty aimed at creating downstream integration with OXO facility and entering European

propylene market. The plant will be built in Grupa Azoty Police facility. The production complex will also include new dedicated power station and liquid chemicals sea

terminal. This project is valued at 1,7 billion PLN and is to come on stream in 2019th.

Dawid Durawa

*Purchasing and Logistics
Director*

I'm to ensure we are never short of raw materials. Our strategic goal is to secure raw materials for the OXO Segment, this is why we are also involved in strategic investments of Grupa Azoty. Moreover my team ensures that all products are delivered to customers on time and securing the highest safety standards.

MANAGEMENT BOARD



Mateusz Gramza
Chairman of the Board
Grupa Azoty ZAK S.A.



Sławomir Brzeziński
Vice Chairman of the Board
Grupa Azoty ZAK S.A.



Adam Gąsiorowski
Vice Chairman of the Board
Grupa Azoty ZAK S.A.



OUR TEAM



Director of Oxoplast Business Unit
Aleksander Grymel



Production Director of Oxoplast Business Unit
Bogusław Gaca



Commercial Director of Oxoplast Business Unit
Agnieszka Kurpińska



Speciality Esters
Project Coordinator
Lech Janik



WGS Department Manager
Andrzej Dorosz



Sales Executive
Ludomira Trojnar



Coordinator-Technical Adviser
Boris Fleites-Jończyk



Esters Department Manager
Leszek Górczany



Marketing Specialist
Rafał Bobko



Technology Office Manager
Barbara Siwik



Aldehydes Department Manager
Paweł Polański



Senior Sales Specialist
Adam Rogala



Secretary
Beata Bajkiewicz



OXO Alcohols
Department Manager
Andrzej Stypułkowski



Sales Representative Germany,
Austria & Switzerland
Jacek Ogonowski



Sales Manager Western Europe
and the World
Waldemar Pawelczyk



Sales Manager Southern Europe
and the World
Monika Urbańczyk



Sales Manager Poland
and East-Central Europe
Jolanta Kamys



Sales Specialist
Anna Jamrozik



Sales Representative
Małgorzata Górczna



Sales Specialist
Katarzyna Łukasik



Sales Representative
Agnieszka Ciba



Sales Representative
Barbara Skrzypczyk-Scheit



Sales Representative
Tomasz Bednarz

MISSION / VISION

Mission of OXO Segment

To deliver chemical products meeting customers needs.

Strategic aim

Growth of sales and margins through market development, expanding port folio and product placement.

Vision of OXO Segment

We will become leading player in our industry. Our company will be a first choice supplier for the customer. We will achieve a highest value addend factor in our industry regardless of economic situation.

Activities

To introduce new generation plasticizers. To lengthen value chains. To perfect customer services employing innovative logistics solutions. To utilize new perspective market segments and markets. To optimize production and storage costs.



Agnieszka Kurpińska

Commercial Director of Oxoplast Business Unit

We owe the current market position of the OXO Segment to our business partners. That is why every day we strive to meet their requirements by ensuring high quality products, competitive sales conditions, efficient logistics and prospects for long-term cooperation. We constantly search for new markets and applications and work to extend our portfolio with specialty products and respond to market demand. We have accomplished many great things over the years but we are ready to face new challenges. We are changing ourselves for our partners to create a future - together.

Plasticizers

Oxoviflex®
Oxoplast Medica®
Oxoplast® O
Oxoplast® PH

MAIN APPLICATIONS

- PVC additive (for polymer flexibility),
- Coatings, rubber products, glues, sealants

INDUSTRY

- Construction
- Automotive
- Shoe production
- Wire & cable
- Packaging
- Medical devices

Aldehydes

n-Butyraldehyde
Isobutyraldehyd

Oxo Alcohols

2-Ethylhexanol
n-Butanol
Isobutanol
Octyl alcohol F

MAIN APPLICATIONS

- Plasticizers
- Solvents
- Acrylates
- Acetates
- Fuel additives

INDUSTRY

- Plasticizers
- Paints and varnishes
- Glues
- Fuels

PRODUCTION PROCESS



Bogusław Gaca

*Production Director
of Oxoplast Business Unit*

Together with my team we ensure that the products are the highest quality. This is a result of knowledge based on many years of experience. We have been manufacturing plasticizers since 1954 and OXO alcohols since 1986. Nowadays our main focus is the development, and our major goals include process optimisation and extension of the product range.



Barbara Siwik

Technology Office Manager

Integrated production cycle is our great advantage. I'm responsible that at every stage strict process conditions are met. My team supervises not only product quality but also selection of raw materials. We are also in charge of all issues connected with process and technology documentation of our plants.

PLASTICIZERS

PLASTICIZERS
SINCE 1954

- / Our experience in plasticizers dates back to **1954**
- / We utilize two separate plants
- / With 50 kT/year on-purpose plant, **we are number one European producer of non-phthalate DEHT** plasticizer which is traded under **Oxoviflex®** brand
- / We do not erase the past – we still offer **DEHP** – produced at our facility since **1963**
- / Yet we invest in future – **specialty esters and other OXO derivatives**



Leszek Górczany

*Esters Department
Manager*

We are proud of our great experience in plasticizers production of which beginnings dates back to 1954. The quality of esters manufactured at the plants I am responsible for depends on two issues: quality of raw material provided by the OXO Alcohols Department and sourced externally as well as involvement of my staff. I am proud to say that owing to our plasticizers, every day products used by millions of people all over the world are safer, flexible and more functional.



TONS PRODUCED

SINCE 1954



TOTAL
2,3
mln tons

CAPACITIES

50 kT/year

Oxoviflex®

36 kT/year

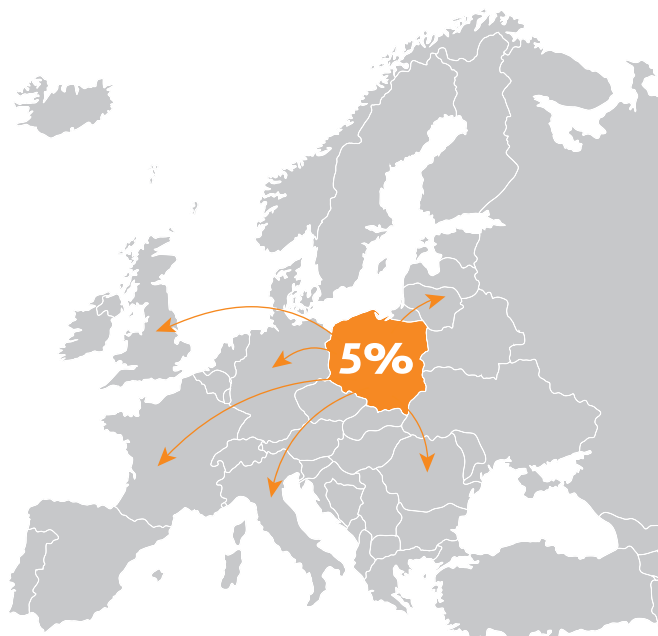
Oxoplast Medica®
Oxoplast® O
Oxoplast® PH



TOTAL
86
kT/year

MARKET SHARE IN EU

WITH REFERENCE TO DEHT, DINCH, DINP, DPHP



No. 1
in DEHT

5th
place

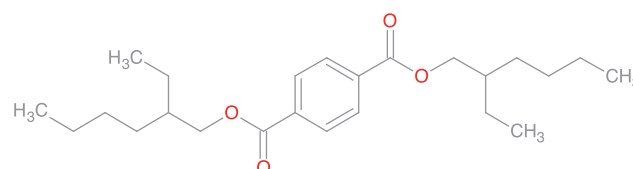




Oxoviflex®

Trade name:
Oxoviflex®
Chemical name:
Bis(2-ethylhexyl) terephthalate

CAS: 6422-86-2
Status REACH: DEHT
registered 06/09/2012



PLASTICIZERS

Oxoviflex® is our response to growing interest in non-phthalate plasticizers. It has been positively tested for usage in food packaging and child toys according to European regulation.

Oxoviflex® formulation is based on our 2-EH OXO alcohol and PTA which is also used in PET bottles manufacturing.

Oxoviflex® is completely safe in terms of CLP classification and in most cases it can substitute phthalate plasticizers. **Oxoviflex®** is REACH registered according to EC regulation No. 1907/2006.

IDENTIFIED USE:

- Paints & Lacquers
- Wires & Cables
- Plastic (PVC) additives
- Chemical Synthesis
- Automotive
- Pharmaceutics & Cosmetics
- Technical Gases
- Textiles
- Other

| Specification | Value | Test method |
|-------------------------------------|--|--|
| Colour, Pt-Co scale | max. 20 [°Hz] | DIN ISO 6271 |
| Flash point | min. 230 [°C] | ISO 2592 |
| Volatile matter content (150°C/2 h) | max. 0.20 [wt %] | Internal method of Grupa Azoty ZAK S.A. (GC) |
| Bis(2-ethylhexyl) terephthalate | min. 98.0 [wt %] | GC |
| Density at 20°C | min. 0.980 [g/cm ³] max. 0.985 [g/cm ³] | ISO 12185 |
| Free acids as phthalic acid | max. 0.01 [wt %] | ISO 1385/IV |
| Water content | max. 0.1 [wt %] | ISO 760 |



www.oxoplast.com/en/plasticizers/oxoviflex/

Oxoplast Medica®

Trade name:

Oxoplast Medica®

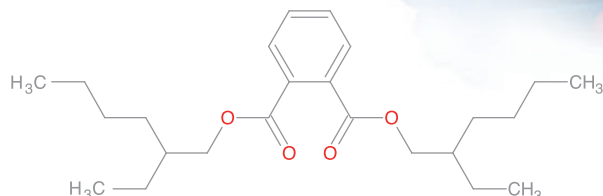
Chemical name:

Bis(2-ethylhexyl) phthalate

CAS: 117-81-7

Status REACH: DEHP

registered 20/09/2010



Oxoplast Medica® is our response to medical grade PVC processing where highest quality and extra safety is required especially for blood bags manufacturing. **Oxoplast Medica®** fulfils strict safety standards of European pharmacopeia and is certified for its quality. **Oxoplast Medica®** do not apply to registration according to EC regulation No. 1907/2006 because of its special application field.

| Specification | Value | Test method |
|---|--|---|
| Colour, Pt-Co scale | max. 20 [°Hz] | DIN ISO 6271 |
| Flash point | min. 206 [°C] | ISO 2592 |
| Volatile matter content (150°C/2 h) | max. 0.4 [wt %] | Internal method of Grupa Azoty ZAK S.A. |
| Di(2-ethylhexyl) phthalate content | min. 99.5 [wt %] | GC |
| Density at 20°C | min. 0.983 [g/cm ³] max. 0.986 [g/cm ³] | ISO 12185 |
| Free acids as phthalic acid | max. 0.010 [wt %] | ISO 1385/IV |
| Water content | max. 0.10 [wt %] | ISO 760 |
| Metals content | | |
| Cd | max. 0.1 [ppm] | No equivalent ICP-OES |
| Sn | max. 1.0 [ppm] | |
| Zn | max. 10 [ppm] | |
| Ba | max. 1.0 [ppm] | |
| Ca | max. 10 [ppm] | |
| Absorbance (260 nm; water extract) | max. 0.3 | No equivalent |
| Reducing substances (water extract; KMnO ₄) | max. 20 [ml] | According to Ph. Eur. 8th Edition |

PLASTICIZERS

Oxoplast Medica® is our response to medical grade PVC processing.

IDENTIFIED USE:

- Paints & Lacquers
- Wires & Cables
- Plastic (PVC) additives
- Chemical Synthesis
- Automotive
- Pharmaceutics & Cosmetics
- Technical Gases
- Textiles
- Other



Oxoplast® O

Trade name:

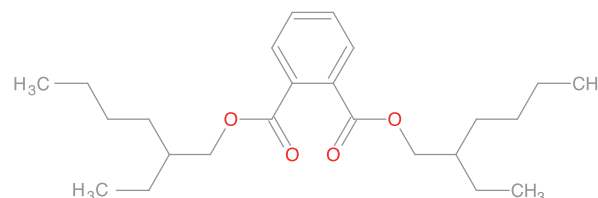
Oxoplast® O

Chemical name:

Bis(2-ethylhexyl) phthalate

CAS: 117-81-7

REACH Status: DEHP
registered 20/09/2010



PLASTICIZERS

Oxoplast® O has the longest production history within our plasticizers portfolio.

IDENTIFIED USE:

- Paints & Lacquers
- Wires & Cables
- Plastic (PVC) additives
- Chemical Synthesis
- Automotive
- Pharmaceutics & Cosmetics
- Technical Gases
- Textiles
- Other

For our European customers we have initiated REACH authorisation process due to safety concerns risen by European regulation authorities. We aim at providing our customers with full legal safety towards employing **Oxoplast® O** in their PVC processing and final products.

| Specification | Value | Test method |
|--------------------------------------|--|---|
| Colour, Pt-Co scale | max. 30 [°Hz] | DIN ISO 6271 |
| Flash point | min. 206 [°C] | ISO 2592 |
| Volatile matter content (150°C/2 h) | max. 0.4 [wt %] | Internal method of Grupa Azoty ZAK S.A. |
| Esters as di(2-ethylhexyl) phthalate | min. 99.5 [wt %] | ISO 1385/V |
| Di(2-ethylhexyl) phthalate content | min. 99.5 [wt %] | GC |
| Density at 20°C | min. 0.983 [g/cm ³] max. 0.986 [g/cm ³] | ISO 12185 |
| Free acids as phthalic acid | max. 0.010 [wt %] | ISO 1385/IV |
| Water content | max. 0.10 [wt %] | ISO 760 |



www.oxoplast.com/en/plasticizers/oxoplast-o/

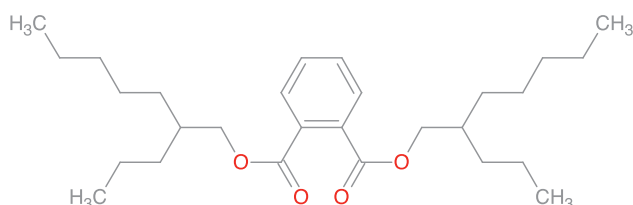
Oxoplast® PH

Trade name:

Oxoplast® PH

Chemical name:

Bis(2-propylheptyl) phthalate

CAS: 53306-54-0**REACH Status:** DPHP
registered 23/11/2010

Oxoplast® PH unique feature is low volatility thus it is highly recommended for high temperature applications such as automotive (cables, car interior trims).

Oxoplast® PH is also resistant to ambient conditions and suitable for roofing and exterior coatings. **Oxoplast® PH** is REACH registered according to EC regulation No. 1907/2006.

| Specification | Value | Test method |
|---|--|---|
| Colour, Pt-Co scale | max. 30 [°Hz] | DIN ISO 6271 |
| Flash point | min. 220 [°C] | ISO 2592 |
| Volatile matter content (150°C/2 h) | max. 0.4 [wt %] | Internal method of Grupa Azoty ZAK S.A. |
| Esters as bis(2-propylheptyl) phthalate | min. 99.5 [wt %] | ISO 1385/V |
| Density at 20°C | min. 0.960 [g/cm ³] max. 0.965 [g/cm ³] | ISO 12185 |
| Free acids as phthalic acid | max. 0.01 [wt %] | ISO 1385/IV |
| Water content | max. 0.1 [wt %] | ISO 760 |

PLASTICIZERS

Oxoplast® PH is a high molecular weight plasticizer (C10) used in PVC processing.

IDENTIFIED USE:

- Paints & Lacquers
- Wires & Cables
- Plastic (PVC) additives
- Chemical Synthesis
- Automotive
- Pharmaceutics & Cosmetics
- Technical Gases
- Textiles
- Other



OXO ALCOHOLS



- / We've been producing OXO alcohols since **1986**
- / Our **plant** was modernised in 1998 and **is one of the most modern in Europe**
- / Apart from OXO alcohols we supply their precursors i.e. n-Butyraldehyde & Isobutyraldehyde
- / We serve customers globally



Andrzej Stypułkowski

*OXO Alcohols
Department Manager*

My department is the heart of the OXO Segment. Since 1986 we have been producing OXO alcohols which are recognised for their quality in European chemical processing. Owing to reliable and hard work of my staff the facility after 30 years of operation runs in accordance to the highest technical standards. It translates directly into excellent quality of OXO alcohols we produce.



Andrzej Dorosz

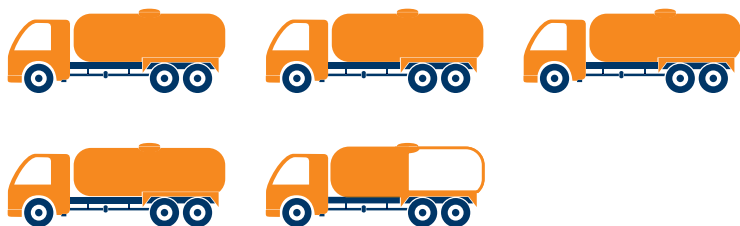
*WGS Department
Manager*

My department plays a special role as it is the first stage of OXO production chain. Together with my staff we feel the responsibility. Every day we put our hearts into our jobs because we know how much depends on it.



TONS PRODUCED

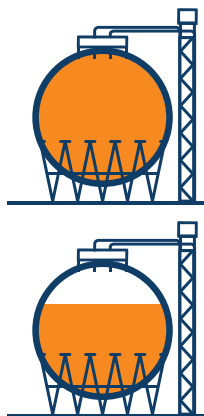
SINCE 1954



TOTAL
4,515
mln tons

CAPACITIES

170 kT/year
2-Ethylhexanol



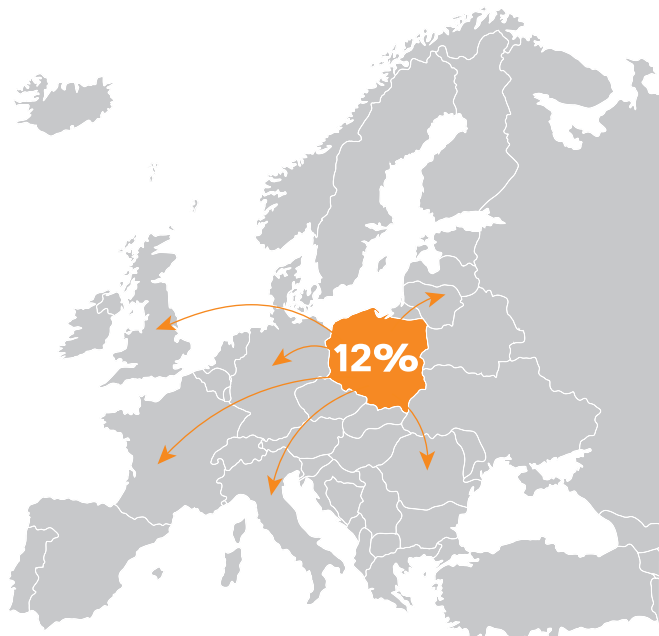
55 kT/year
n-Butanol
Isobutanol
Octyl alcohol F



TOTAL
225
kT/year

MARKET SHARE IN EU

WITH REFERENCE TO 2-EH AND BUTANOLS



No. 2
in 2-EH

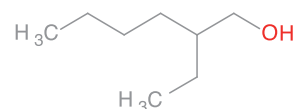
5th
place



2-Ethylhexanol

Trade name:
2-Ethylhexanol
Chemical name:
2-Ethylhexan-1-ol

CAS: 104-76-7
REACH Status: 2-Ethylhexanol
registered 28/09/2010



OXO ALCOHOLS

2-Ethylhexanol (2-EH)
is our main OXO alcohol.

It is produced according to strict process regime derived from our experience. We put an extra emphasis on its quality which is transferred to further processed products: plasticizers, acrylates, fuel additives (2-EHN) and other chemical products.

2-EH is REACH registered according to EC regulation No. 1907/2006.

IDENTIFIED USE:

- Paints & Lacquers
- Wires & Cables
- Plastic (PVC) additives
- Chemical Synthesis
- Automotive
- Pharmaceutics & Cosmetics
- Technical Gases
- Textiles
- Other

| Specification | Value | Test method |
|-----------------------------|--|----------------|
| 2-Ethylhexanol | min. 99.7 [wt %] | GC |
| Colour, Pt-Co scale | max. 5 [APHA] | ISO 6271 |
| Density at 20°C | min. 0.832 [g/cm ³] max. 0.834 [g/cm ³] | ISO 12185 |
| Acids as acetic acid | max. 0.01 [wt %] | ASTM D 1613 |
| Aldehydes as 2-ethylhexanal | max. 0.05 [wt %] | BS 4583 |
| Water content | max. 0.05 [wt %] | ISO 12937:2000 |



www.oxoplast.com/en/oxo-alcohols/2-ethylhexanol/

n-Butanol

Trade name:

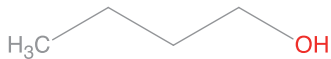
n-Butanol

Chemical name:

Butan-1-ol, n-Butanol

CAS: 71-36-3

REACH Status: n-Butanol
registered 02/11/2010



It is manufactured according to highest quality standards which guarantees our customers that all requirements concerning its further processing to acrylates, acetates and solvents and other chemical substances are met.

N-butanol is REACH registered according to EC regulation No. 1907/2006.

| Specification | Value | Test method |
|-----------------------------------|--|----------------|
| n-Butanol | min. 99.8 [wt %] | GC |
| Colour, Pt-Co scale | max. 5 [APHA] | ISO 6271 |
| Density at 20°C ¹ | min. 0.810 [g/cm ³] max. 0.812 [g/cm ³] | ISO 12185 |
| Acids as acetic acid ¹ | max. 0.005 [wt %] | ASTM D 1613 |
| Aldehydes as butanal ¹ | max. 0.05 [wt %] | BS 4583 |
| Water content | max. 0.05 [wt %] | ISO 12937:2000 |

¹These parameters are covered by the producer's guarantee, to be analysed in case of a claim only.

OXO ALCOHOLS

n-Butanol is our second most important OXO alcohol.

IDENTIFIED USE:

- Paints & Lacquers
- Wires & Cables
- Plastic (PVC) additives
- Chemical Synthesis
- Automotive
- Pharmaceutics & Cosmetics
- Technical Gases
- Textiles
- Other



Isobutanol

Trade name:

Isobutanol

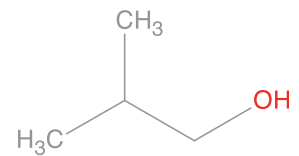
Chemical name:

2-Metylopropan-1-ol, isobutanol

CAS: 78-83-1

REACH Status: Isobutanol

registered 04/11/2010



OXO ALCOHOLS

Isobutanol is produced from our Isobutyraldehyde.

Our product is mainly used as solvent in many appreciated brands of paints, varnishes and resins.

Isobutanol is REACH registered according to EC regulation No. 1907/2006.

IDENTIFIED USE:

- Paints & Lacquers
- Wires & Cables
- Plastic (PVC) additives
- Chemical Synthesis
- Automotive
- Pharmaceutics & Cosmetics
- Technical Gases
- Textiles
- Other

| Specification | Value | Test method |
|----------------------------|--|----------------|
| Isobutanol | min. 99.8 [wt %] | GC |
| Colour, Pt-Co scale | max. 5 [APHA] | ISO 6271 |
| Density at 20°C | min. 0.802 [g/cm ³] max. 0.804 [g/cm ³] | ISO 12185 |
| Acids as acetic acid | max. 0.003 [wt %] | ASTM D 1613 |
| Aldehydes as butyraldehyde | max. 0.05 [wt %] | BS 4583 |
| Water content | max. 0.10 [wt %] | ISO 12937:2000 |



Octyl alcohol F

**Trade name:**

Octyl alcohol F

Chemical name:

1-Hexanol, 2-ethyl-, manuf.

of, by-products from, distn. residues

CAS: 68609-68-7**REACH Status:** Octyl alcohol F

registered 12/01/2012

Octyl alcohol F is a liquid with various colourations: from yellow through yellow-brown to greenish and with the specific odour.

Octyl alcohol F is REACH registered according to EC regulation No. 1907/2006.

| Specification | Value | Test method |
|--|----------------|-------------|
| 2-Ethylhexanol | max. 30 [wt %] | GC |
| High molecular weight compounds (>C ₈) | min. 70 [wt %] | GC |

OXO ALCOHOLS

IDENTIFIED USE:

- Paints & Lacquers
- Wires & Cables
- Plastic (PVC) additives
- Chemical Synthesis
- Automotive
- Pharmaceutics & Cosmetics
- Technical Gases
- Textiles
- Other



ALDEHYDES

/ On our plant, apart from OXO alcohols we supply their precursors
i.e. n-Butyraldehyde & Isobutyraldehyde

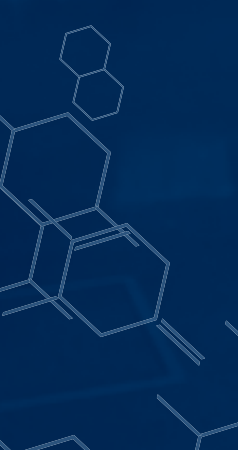
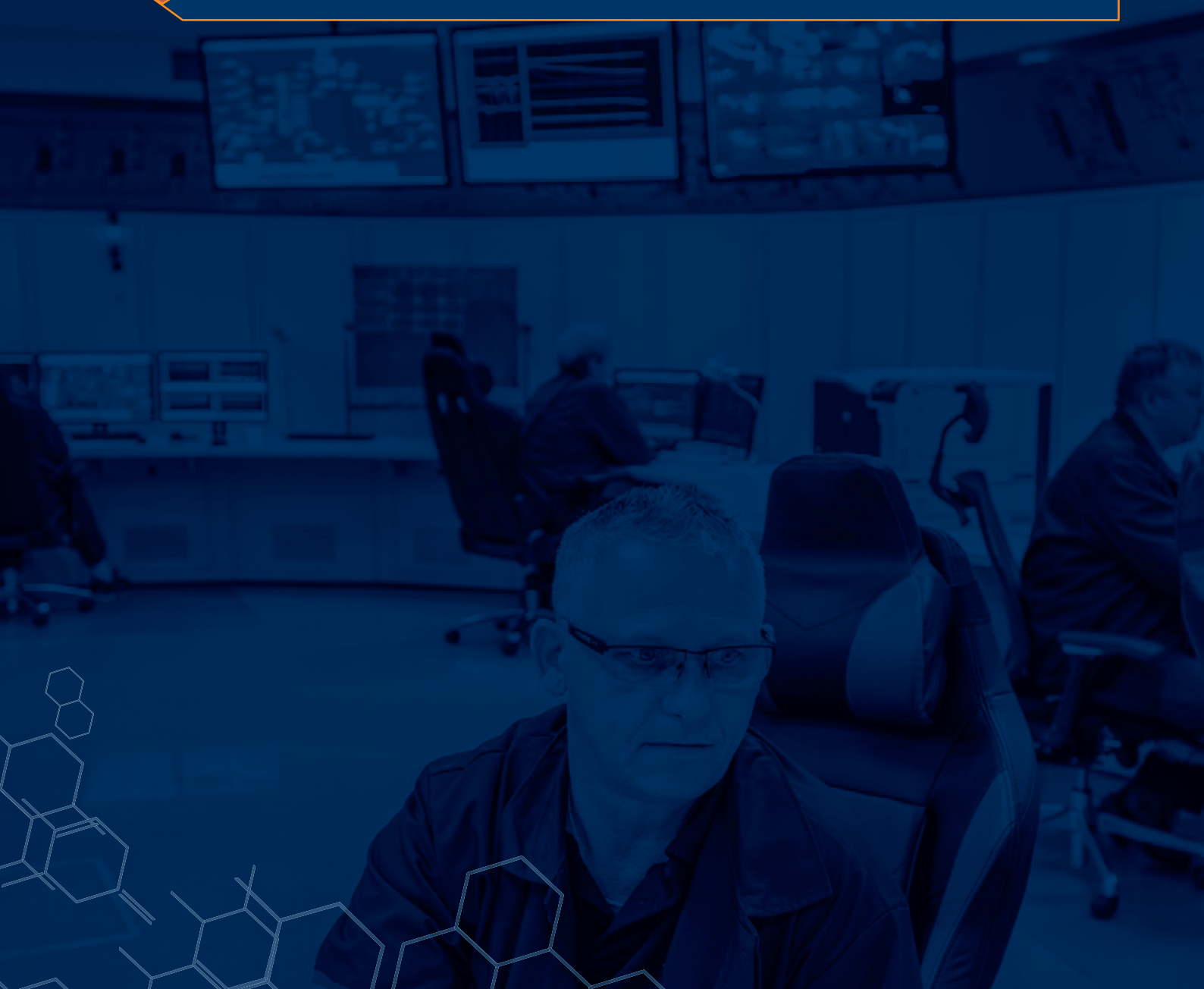
/ **111 kT of aldehydes produced since 1986**



Paweł Polański

Aldehydes
Department Manager

OXO synthesis starts in my department. In the presence of a rhodium catalyst a reaction of propylene and syngas hydroformylation to butyric aldehydes occurs. The high quality of all market products manufactured by the OXO Segment is ensured by my team's professional experience and dedicated work.



n-Butyraldehyde

Trade name:

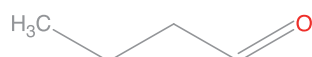
n-Butyraldehyde

Chemical name:

n-Butyraldehyde; Butanal

CAS: 123-72-8

REACH Status: n-Butyraldehyde registered 07/10/2010



Owing to its high quality our alcohols are recognised as leading products on the market. Apart from captive usage we offer our aldehyde to customers who process it and produce solvents, esters, acids, resins, etc.

n-Butyraldehyde is REACH registered according to EC regulation No. 1907/2006.

www.oxoplast.com/en/aldehydes/n-butyraldehyde/



Isobutyraldehyde

Trade name:

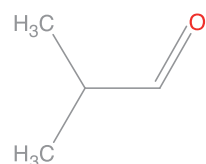
Isobutyraldehyde

Chemical name:

Isobutanal; 2-methylpropanal

CAS: 78-84-2

REACH Status: Isobutyraldehyde registered 11/08/2010



We process it to isobutanol. With its specific properties isobutyraldehyde is also used by our customers for production of resins, amines and specialty esters.

Isobutyraldehyde is REACH registered according to EC regulation No. 1907/2006.

www.oxoplast.com/en/aldehydes/isobutyraldehyde/



ALDEHYDES

n-Butyraldehyde is a main intermediate in our OXO alcohols (2-EH, NBA) production process.

IDENTIFIED USE:

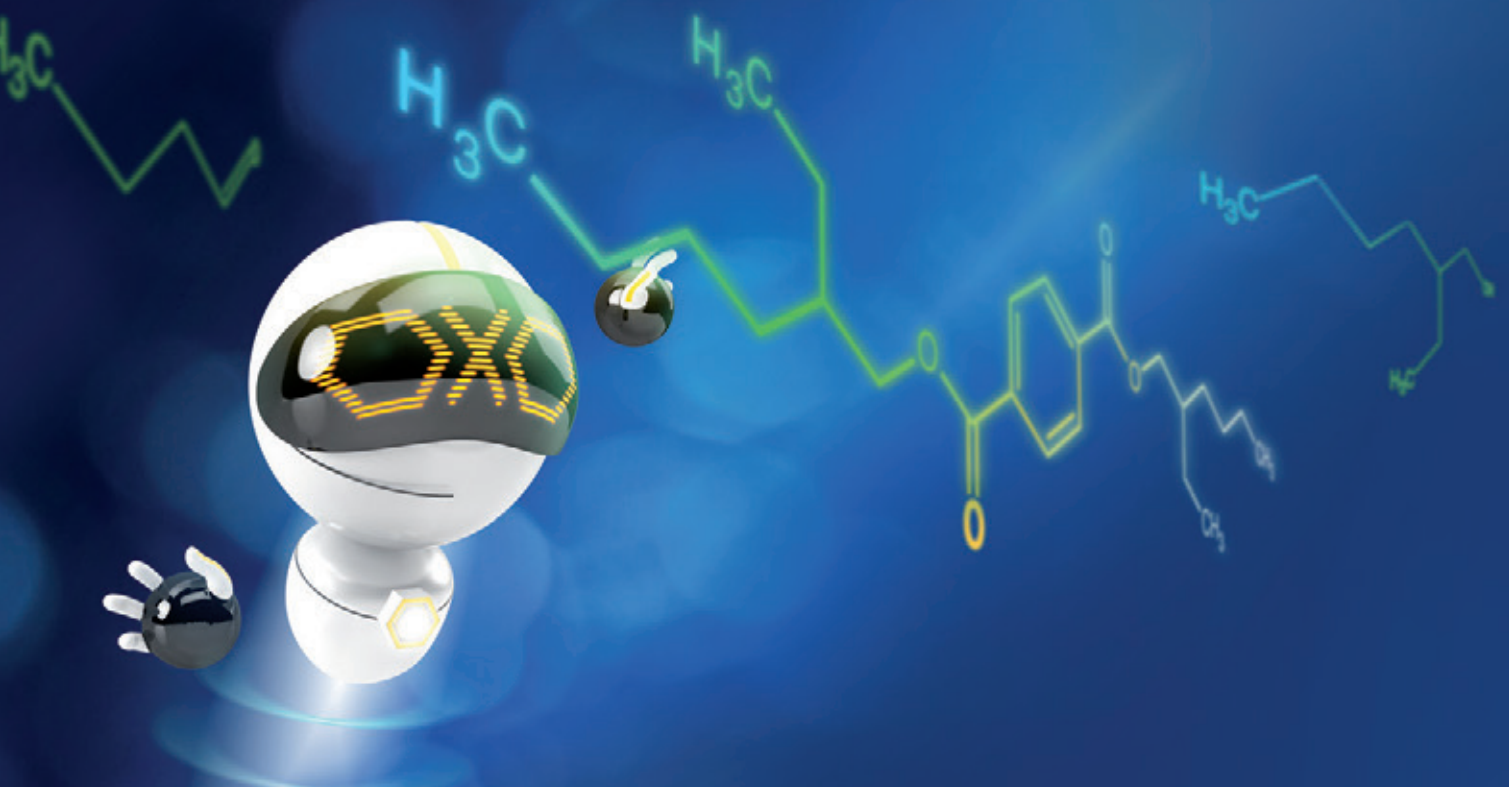
- Paints & Lacquers
- Wires & Cables
- Plastic (PVC) additives
- Chemical Synthesis
- Automotive
- Pharmaceutics & Cosmetics
- Technical Gases
- Textiles
- Other

Isobutyraldehyde

is a second intermediate in our OXO alcohols facility.

IDENTIFIED USE:

- Paints & Lacquers
- Wires & Cables
- Plastic (PVC) additives
- Chemical Synthesis
- Automotive
- Pharmaceutics & Cosmetics
- Technical Gases
- Textiles
- Other



CONTACTS

Grupa Azoty ZAK S.A.
Mostowa 30 A
47-220 Kędzierzyn-Koźle
Poland
tel.: +48 77 481 20 00
e-mail: oxoplast@grupaazoty.com

Oxoplast BU Commercial Director



Agnieszka Kurpińska
tel.: +48 77 481 25 53
fax: +48 77 481 22 79
e-mail: agnieszka.kurpinska@grupaazoty.com

www.oxoplast.com

Sales Manager Western Europe & World **Waldemar Pawelczyk**

tel.: +48 77 481 39 85
fax: +48 77 481 20 93
e-mail: waldemar.pawelczyk@grupaazoty.com

Sales Manager Poland & Central Eastern Europe

Jolanta Kamys
tel.: +48 77 481 35 18
fax: +48 77 481 23 06
e-mail: jolanta.kamys@grupaazoty.com

Sales Manager Southern Europe & World **Monika Urbańczyk**

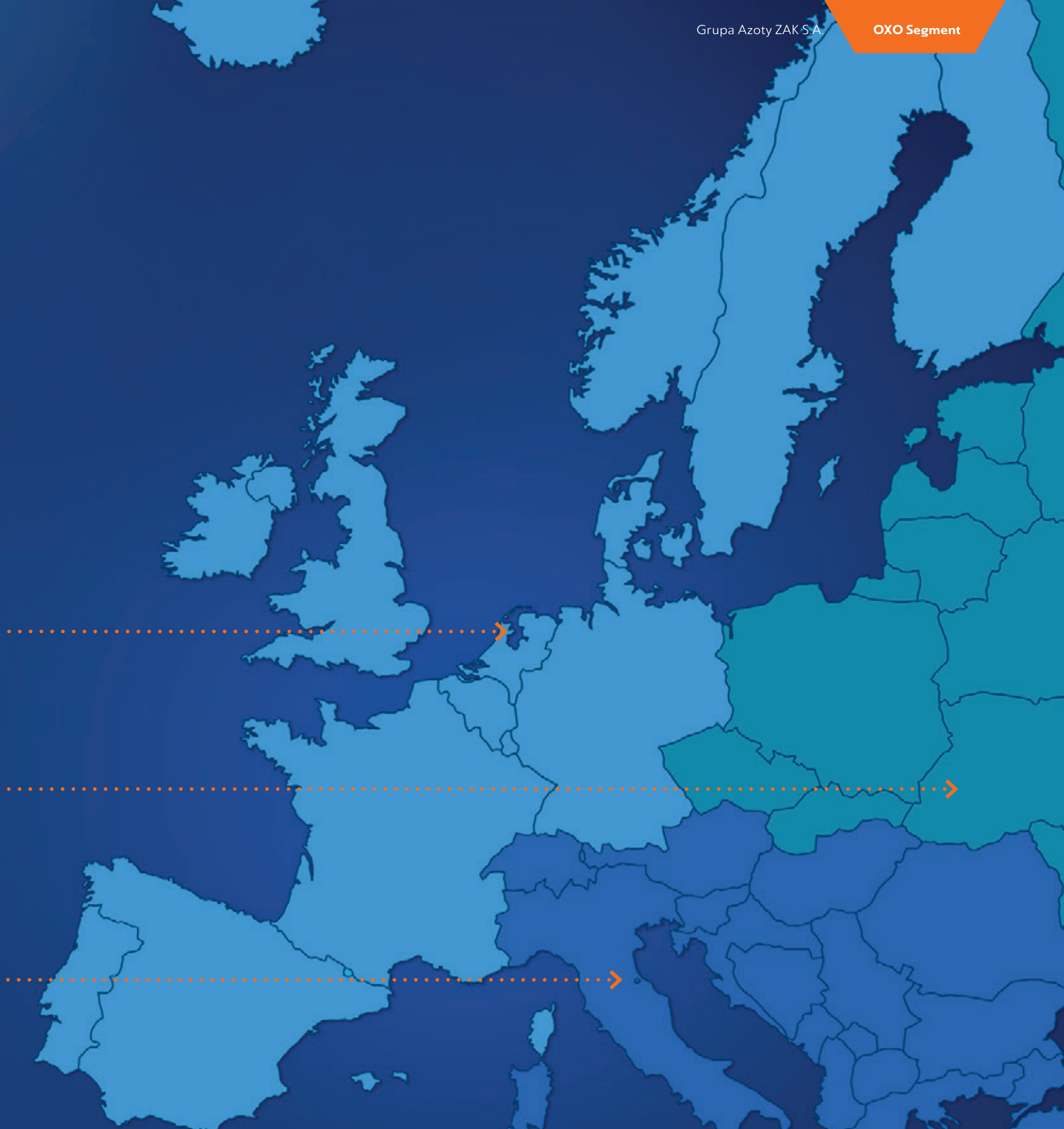
tel.: +48 77 481 22 50
fax: +48 77 481 23 06
e-mail: monika.urbanczyk@grupaazoty.com



Waldemar Pawelczyk

*Sales Manager Western Europe
and the World*

Together with my team I'm developing OXO Segment position on the West European and Global markets. I feel immense satisfaction when my direct contact with a customer results in long-lasting relationship. My goal is to make Grupa Azoty ZAK S.A. the first choice company for my business partners.

**Jolanta Kamys**

*Sales Manager Poland
and East-Central Europe*

I'm in charge of sales to Polish and East-Central European markets. I'm building relations which influence perception of Grupa Azoty ZAK S.A. We want to live up to the expectations of our business partners – this is our main challenge, especially that the domestic market is so close to us. Together with my colleagues we are ready to answer difficult questions and provide technical advice to our customers whenever necessary.

**Monika Urbańczyk**

*Sales Manager Southern Europe
and the World*

I put particular emphasis on positive business relations and creating bonds with our partners. My team is responsible for Global and South European market. We are driven by a common goal - we want to become the leader in our sector. And thanks to our partners who have trusted us and appreciated the potential of an experienced Polish company we're getting closer and closer to achieving our aim.



Grupa Azoty ZAK S.A.

Grupa Azoty ZAK S.A.
Mostowa 30 A
47-220 Kędzierzyn-Koźle
Poland
tel.: +48 77 481 20 00
e-mail: oxoplast@grupazoty.com

Oxoplast.com