The Stanislaw Pilat
INSTITUTE OF PETROLEUM PROCESSING
ul. Lukasiewicza 1, 31-429 Krakow

Additives and additive packages

for biofuels and hydrocarbon fuels


BUREAU VERITAS Certification

Certyfikat

INSTYTUT TECHNOLOGII NAFTY

ul. Łukasiewicza 1, 31-429 KRAKÓW

NORMY

ISO 9001:2000

ZAKRES CERTYFIKACJI

PRACE BADAWCZE I WDROŻENIOWE ORAZ USŁUGI BADAWCZE W ZAKRESIE PRZERÓBKI ROPY NAFTOWEJ, TECHNOLOGII WYTWARZANIA, DYSTRYBUCJI I STOSOWANIA PRODUKTÓW NAFTOWYCH I POKREWNYCH ORAZ OCHRONY ŚRODOWISKA. PRODUKCJA DOŚWIADCZALNA I MAŁOTONAŻOWA SPECYFIKÓW NAFTOWYCH.

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Ryszard Jankowski

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POLSKIE CENTRUM AKREDYTACJI

POLISH CENTRE FOR ACCREDITATION

PCA

Sygnatariusz EA MLA

EA MLA Signatory

CERTYFIKAT AKREDYTACJI

LABORATORIUM BADAWCZEGO

ACCREDITATION CERTIFICATE OF TESTING LABORATORY

Nr AB 102

Potwierdza się, że: / This is to confirm that:

INSTYTUT TECHNOLOGII NAFTY

ZAKŁAD DODATKÓW USZLACHETNIAJĄCYCH

ul. Łukasiewicza 1, 31-429 Kraków

spełnia wymagania normy PN-EN ISO/IEC 17025:2005

meets requirements of the PN-EN ISO/IEC 17025:2005 standard

Akredytowana działalność jest określona w Zakresie Akredytacji Nr AB 102

Accredited activity is defined in the Scope of Accreditation No AB 102

Akredytacja pozostaje w mocy pod warunkiem przestrzegania wymagań jednostki akredytującej określonych w kontrakcie Nr AB 102

This accreditation remains in force provided the Laboratory observes the requirements of Accreditation Body defined in the Contract No AB 102

Certyfikat akredytacji ważny do dnia 06.02.2011 r.

The certificate of accreditation is valid until 06.02.2011

Akredytacji udzielono dnia 20.03.1997 r.

Accreditation was granted on 20.03.1997

DYREKTOR POLSKIEGO CENTRUM AKREDYTACJI

KAROL HAUPTMANN

Warszawa, dnia 11 kwietnia 2007 roku

Our chief assets - accuracy and competence

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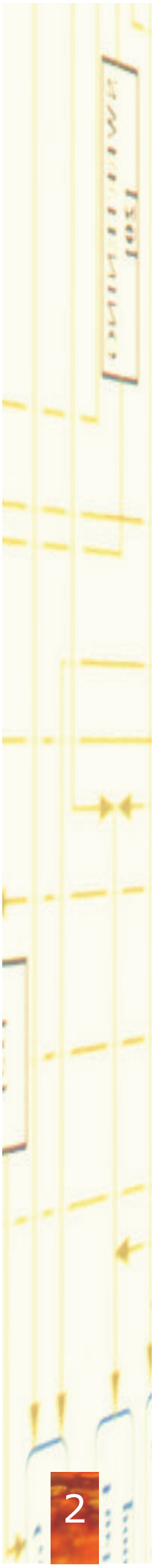

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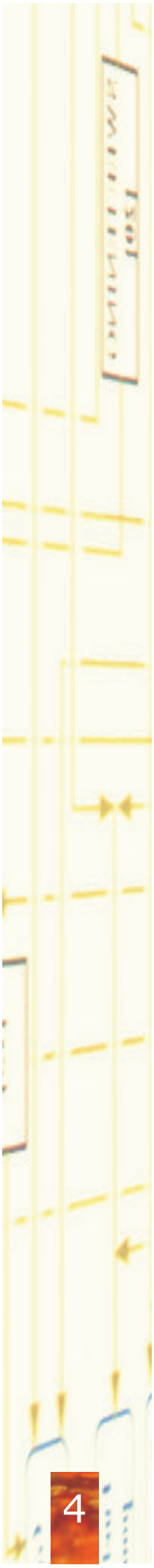
The catalogue comprises data of additives and additive packages for biofuels and hydrocarbon fuels available from the Institute of Petroleum Processing.

Additives and additive packages for biofuels

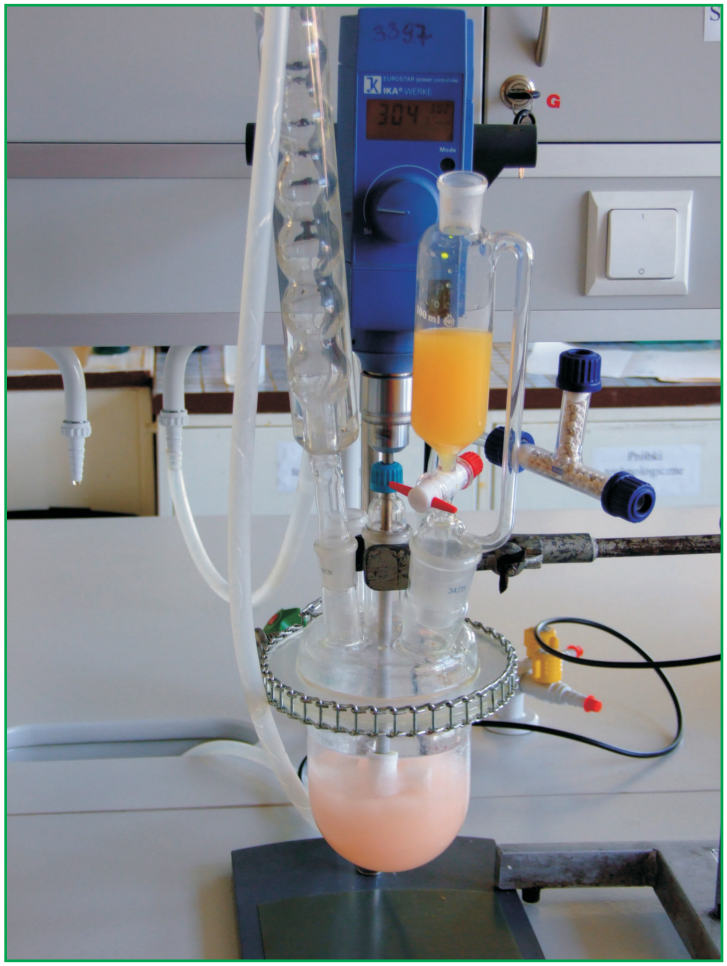
The multifunctional additives BIOXITEN® are specifically designed to upgrade biodiesel fuels (FAME) to meet requirements of EN 14214 standard.
The basic drawbacks of biodiesel fuels are low oxidation stability, susceptibility to microbial contamination and corrosiveness to metals. The use of the selected BIOXITEN® additives prevents this adverse influence of biodiesel characteristics on the fuel storage and transport conditions.
The multifunctional additives BIOXITEN® show clear improvement on resistance to oxidation and micro-organisms activity as well as corrosivity of biodiesel fuels. The application of the multifunctional additives BIOXITEN® should be adapted individually to the requirements of biodiesel fuel manufacturers and users.

Additives and additive packages for hydrocarbon fuels

The commercial use of hydrocarbon fuels requires compliance of their performance quality with the product specifications and the Fourth Edition of the Worldwide Fuel Charter (September 2006) requirements. In order to meet these requirements and improve the hydrocarbon fuels quality, it is necessary to use additive packages suitable for specific fuel.
The characteristics and performance of the additive packages is described in the second part of the catalogue. The application of the additive packages should be selected individually to different types of fuel.



PART I
Additives and additive packages for biofuels



BIOXITEN® 30

BIOXITEN® 30 additive contains marker which permits producers of biofuel with FAME to differ their products from the other products present on the market. Specifically designed composition of BIOXITEN® 30 ensures that this additive is compatible with other biofuel additives offered by ITN.
A treat rate of 5 to 50 mg/kg is recommended, depending on the particular fuel characteristics.

Appearance opaque dark brown liquid.

Typical Characteristics:

Density at 15 °C	979,2 kg/m^3
Kinematic viscosity at 20 °C	1,61 mm^2/s
Pour Point	below -45 °C
Flash Point	66 °C

For handling and toxicity information see a Material Safety Data Sheet, available from the Institute.

BIOXITEN® 40 additive is specifically designed to upgrade various blends of biodiesel fuel.
The additive exhibits antioxidant properties.
A treat rate of 700 mg/kg is recommended, depending on the particular FAME blend oxidation characteristics.

Appearance clear straw yellow liquid.

Typical Characteristics:

Density at 15 °C	911,6 kg/m^3
Kinematic viscosity at 20 °C	2,17 mm^2/s
Pour Point	-39 °C
Flash Point	67 °C

For handling and toxicity information see a Material Safety Data Sheet, available from the Institute.

BIOXITEN® 50

BIOXITEN® 50 additive is specifically designed to upgrade biodiesel fuel (FAME).
The additive exhibits biocidal and anticorrosive properties.
A treat rate of 300 mg/kg is recommended, depending on the particular fuel characteristics.

Appearance clear straw yellow liquid.

Typical Characteristics:

Density at 15 °C	1023 kg/m^3
Kinematic viscosity at 20 °C	216 mm^2/s
Pour Point	-39 °C
Flash Point	112 °C

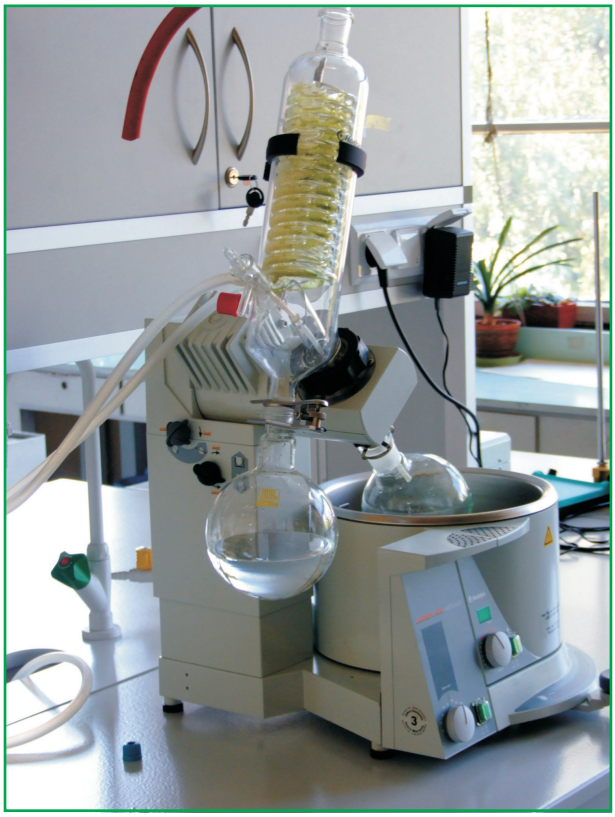
For handling and toxicity information see a Material Safety Data Sheet, available from the Institute.

BIOXITEN® 51 additive is specifically designed to upgrade biodiesel fuel (FAME).
The additive exhibits biocidal properties.
A treat rate of 300 mg/kg is recommended, depending on the particular fuel characteristics.

Appearance clear straw yellow liquid.

Typical Characteristics:

Density at 15 °C	913,7 kg/m^3
Kinematic viscosity at 20 °C	1,73 mm^2/s
Pour Point	below -45 °C
Flash Point	62 °C



For handling and toxicity information see a Material Safety Data Sheet, available from the Institute.

BIOXITEN® 60 additive is specifically designed to upgrade biodiesel fuel (FAME).
The additive exhibits antioxidant and biocidal properties.
A treat rate of 1400 mg/kg is recommended, depending on the particular fuel characteristics.

Appearance clear straw yellow liquid.

Typical Characteristics:

Density at 15 °C	908,5 kg/m^3
Kinematic viscosity at 20 °C	2,13 mm^2/s
Pour Point	below -45 °C
Flash Point	65 °C

For handling and toxicity information see a Material Safety Data Sheet, available from the Institute.

BIOXITEN® 61 additive is specifically designed to upgrade biodiesel fuel (FAME).
The additive exhibits biocidal, antioxidant, and anticorrosive properties.
A treat rate of 600 mg/kg is recommended, depending on the particular fuel characteristics.

Appearance clear yellow liquid.

Typical Characteristics:

Density at 15 °C	945,5 kg/m^3
Kinematic viscosity at 20 °C	9,25 mm^2/s
Pour Point	below -45 °C
Flash Point	72 °C

For handling and toxicity information see a Material Safety Data Sheet, available from the Institute.

PETROPAK® 42

PETROPAK® 42 additive is a multifunctional package for use in diesel fuels containing up to 20% (V/V) FAME.
PETROPAK® 42 enhances performance of biodiesel fuel B20 in the areas of detergency, corrosion inhibition, and antifoam properties.
The recommended treatment rate: 200 mg/kg.

Appearance opaque dark brown liquid.

Typical Characteristics:

Density at 15 °C	905 - 917 kg/m^3
Kinematic viscosity at 20 °C	5,00 - 6,00 mm^2/s
Pour Point	below -45 °C
Flash Point	66 °C

For handling and toxicity information see a Material Safety Data Sheet, available from the Institute.

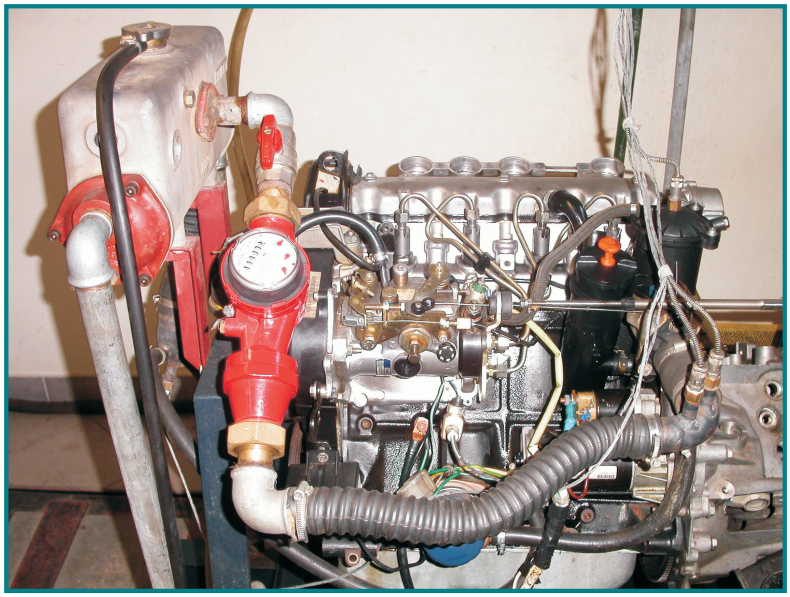
PART II
Additives and additive packages for hydrocarbon fuels

PETROSOL® 90 is a specially formulated package which is designed to upgrade ecological motor gasoline meeting requirements of 3rd and 4th category of the Fourth Edition of the Worldwide Fuel Charter (September 2006), in particular gasoline with oxygenates (ethanol, EETB).
PETROSOL® 90 provides outstanding fuel system and inlet valve cleanliness and minimised deposits contribution to combustion chamber of gasoline engines.
The recommended treatment rate for PETROSOL® 90 will depend on the fuel grade and the required performance level. Excellent performance is typically achieved with 500-600 mg/kg depending on requirements.

Appearance clear light yellow liquid.

Typical Characteristics:

Density at 15 °C	921,1 kg/m^3
Kinematic viscosity at 20 °C	13,6 mm^2/s
Pour Point	below -45 °C
Flash Point	61 °C



For handling and toxicity information see a Material Safety Data Sheet, available from the Institute.

PETROPAK® 40 additive is a multifunctional package for use in low sulphur diesel fuels, containing also up to 5% (V/V) FAME. PETROPAK® 40 enhances performance of diesel fuels in the areas of detergency, corrosion inhibition, antifoam properties, and emulsion control.
The recommended treatment rate: 300 mg/kg.

Appearance clear dark-orange liquid.

Typical Characteristics:

Density at 15 °C	903 - 913 kg/m^3
Kinematic viscosity at 20 °C	3,00 - 4,00 mm^2/s
Pour Point	below -45 °C
Flash Point	63 °C

For handling and toxicity information see a Material Safety Data Sheet, available from the Institute.

PETROPAK® 41

PETROPAK® 41 additive is a multifunctional package for use in low sulphur diesel fuels, containing also up to 5% (V/V) FAME. PETROPAK® 41 enhances performance of diesel fuels in the areas of detergency, corrosion inhibition, antifoam properties, and emulsion control.
PETROPAK® 41 is a very effective concentrate of additives.
The recommended treatment rate: 200 mg/kg .

Appearance opaque brown liquid.

Typical Characteristics:

Density at 15 °C	905 - 920 kg/m^3
Kinematic viscosity at 20 °C	5,50 - 6,00 mm^2/s
Pour Point	below -45 °C
Flash Point	62 °C

For handling and toxicity information see a Material Safety Data Sheet, available from the Institute.

PETROPAK® 50 additive is a multifunctional package for use in low sulphur diesel fuels, containing also up to 5% (V/V) FAME. PETROPAK® 50 enhances performance of diesel fuels in the areas of detergency, corrosion inhibition, antifoam properties, emulsion control, and lubricity.
The recommended treatment rate: 500 mg/kg.

Appearance clear brown liquid.

Typical Characteristics:

Density at 15 °C	912,9 kg/m^3
Kinematic viscosity at 20 °C	18,27 mm^2/s
Pour Point	-21 °C
Flash Point	71 °C

For handling and toxicity information see a Material Safety Data Sheet, available from the Institute.

PETROCET® 50

The cetane number improver package PETROCET® 50 is used for category 4 high quality diesel fuels meeting the requirements of the Worldwide Fuel Charter (September 2006).
PETROCET® 50 provides increase in cetane number of diesel fuel to the level of minimum 55 and superior fuel thermo oxidation stability.
A treat rate of 300 to 1000 mg/kg is recommended, depending on the cetane number of the base fuel and the cetane number desired for the finished fuel.

Appearance clear pale yellow liquid.

Typical Characteristics:

Density at 15 °C	963,5 kg/m^3
Kinematic viscosity at 20 °C	1,79 mm^2/s
Pour Point	below -45 °C
Flash Point	80 °C

For handling and toxicity information see a Material Safety Data Sheet, available from the Institute.

The cetane number improver package PETROCET® 55 is used for category 4 high quality diesel fuels meeting the requirements of the Worldwide Fuel Charter (September 2006).
PETROCET® 55 provides increase in cetane number of diesel fuel to the level of minimum 55 and improved detergency of diesel oils treated with PETROPAK® 40 or PETROPAK® 41 additive package.
A treat rate up to 1000 mg/kg is recommended, depending on the cetane number of the base fuel and the cetane number desired for the finished fuel.

Appearance clear pale yellow liquid.

Typical Characteristics:

Density at 15 °C	966,3 kg/m^3
Kinematic viscosity at 20 °C	2,04 mm^2/s
Pour Point	below -45 °C
Flash Point	83 °C

For handling and toxicity information see a Material Safety Data Sheet, available from the Institute.

KLARISOL® 160 additive is a multifunctional package for use in light heating oils.
KLARISOL® 160 modifies the fuel burning, reducing hazardous substances emissions from domestic boilers fed by light heating oils. KLARISOL® 160 provides also biocidal and anticorrosive properties.
The recommended treatment rate: 500 mg/kg.

Appearance clear dark-orange liquid.

Typical Characteristics:

Density at 15 °C	912,5 kg/m^3
Kinematic viscosity at 20 °C	2,29 mm^2/s
Pour Point	below -45 °C
Flash Point	66 °C

For handling and toxicity information see a Material Safety Data Sheet, available from the Institute.

KLARISOL® 161 additive is a multifunctional package for use in light heating oils with sulphur content of 10 to 50 mg/kg.
KLARISOL® 161 modifies the fuel burning, reducing hazardous substances emissions from domestic boilers fed by light heating oils. KLARISOL® 161 has proven performance in upgrading base light heating oils in the areas of corrosion inhibition, lubricity performance, and emulsion- antifoam control.
The recommended treatment rate: 200 mg/kg.

Appearance opaque dark orange liquid.

Typical Characteristics:

Density at 15 °C	913,9 kg/m^3
Kinematic viscosity at 20 °C	4,64 mm^2/s
Pour Point	-39 °C
Flash Point	68 °C

For handling and toxicity information see a Material Safety Data Sheet, available from the Institute.

KLARISOL® 171

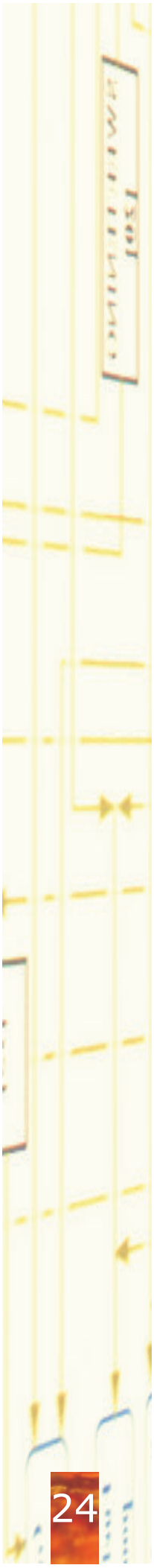
KLARISOL® 171 additive is a multifunctional package for use in light heating oils.
KLARISOL® 171 modifies the fuel burning, reducing hazardous substances emissions from domestic boilers fed by light heating oils. KLARISOL® 171 provides also improved resistance to corrosion and reduction in foaming characteristics of the fuel. KLARISOL® 171 package is a very effective concentrate of additives.
The recommended treatment rate: 200 mg/kg .

Appearance clear dark orange liquid.

Typical Characteristics:

Density at 15 °C	912,5 kg/m^3
Kinematic viscosity at 20 °C	2,25 mm^2/s
Pour Point	below -45 °C
Flash Point	62 °C

For handling and toxicity information see a Material Safety Data Sheet, available from the Institute.

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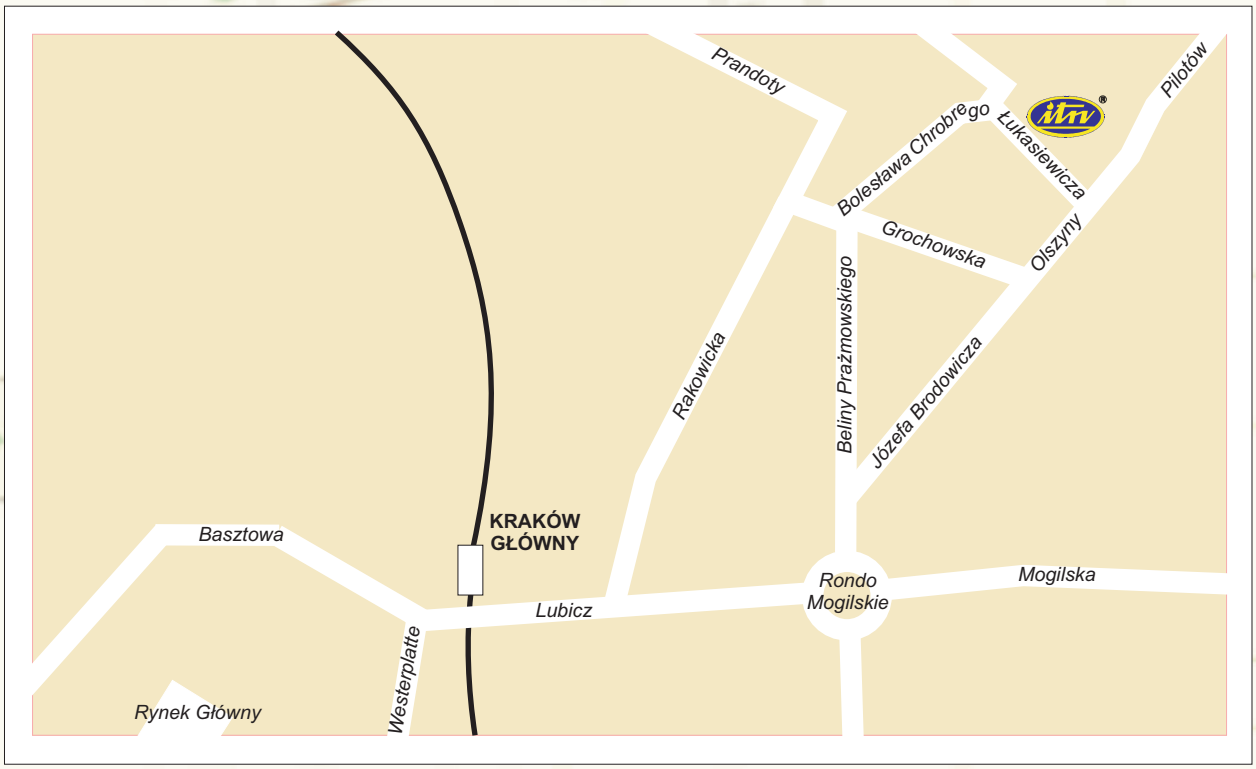

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