



OLPET



OLPET[®]

BY



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GREENCHEMICALS POLICY

OUR GOAL

is to develop and promote improved Flame Retardant solutions!
Environmentally friendly: Halogen free, with low dosage, dust free, migration free.

OUR FLAME RETARDANTS PRODUCTS:

Masterbatches, powder blends, compacted blends, cold extruded pellets, dropped beads.



MASTERBATCHES



POWDER BLENDS



COMPACTED BLENDS



COLD EXTRUDED PELLETS



LIQUID DISPERSIONS

MAIN ACTIVITIES:

- XPS, EPS, X-EPS
- XPE, XPU
- Engineering Thermoplastics
- Reactive flame retardants

OTHER PRODUCTS:

- Antioxidants
- Uv
- Processing aids
- Color masterbatches



GREENCHEMICALS is very active in the substitution of SVHC molecules and provides optimized solutions considering:

- Fire Performance and thermal stability
- Superior Environmental and health profile (more sustainable)
- Compatibility with polymeric matrix
- Cost/Performance

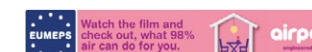
GREENCHEMICALS Srl complies with **REACH, CLP, SVHC, Food Contact, RoHS** regulations and is determined to pursue the continuous improvement in all aspects of its work.

QUALITY MANAGEMENT SYSTEM

Greenchemicals' decision to adopt a Quality Management System (QMS) of **ISO 9001** is to improve the ability to integrate and coordinate all activities associated with the quality.

To allow a better Family management, GreenChemicals, since the beginning, supports **smart working, part time** and **flexible working time**.

MEMBERSHIP:





OLPET IS THE REGISTERED TRADEMARK OF A SERIES OF POLYESTER POLYOLS OBTAINED FROM THE DEPOLYMERIZATION PROCESS OF PET FLAKES.

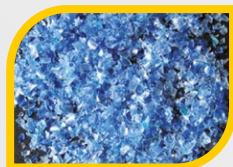
PET WASTE

Pet waste is composed by:

- **PET FLAKES** clear, light blue, green, dark, color blend (1) → *Highly recyclable*
- **PET FLAKES** undersized or powder (2) → *Recyclable with difficulties*
- **PET FROM INDUSTRIAL WASTE** (3) → *Highly recyclable*
- **PET COUPLED** with other polymers (4) → *Limited recyclability*
- **PET SELECTION PLANTS** (5) → *Limited recyclability*
- **PETG** → *Limited recyclability*



1



2



3



4



5

PET MECHANICAL RECYCLING

EXTRUSION PROCESS

	PLUS	MINUS
LOW VOLUMES Modular 1500/3000 MTs/y	- Cost reduction - Fast melting	- Low volumes - Higher impact for fix costs
LOWER COSTS	- Less expensive plants	
CONTINUOS PROCESS	- Space against time - Splitting of problems - Fast melting and mixing - Mechanical and shear energy added	- Limited for chemical reaction
METALS	- Removal during dosing system	
VOLATILES	- No problem	
INORGANICS	- High P very good	
OTHER POLYMERS		- Not possible
PROPERTIES	- Polymer with high properties	

PET CHEMICAL RECYCLING

	PLUS	MINUS
HIGH VOLUMES > 1000 MTs	- Fix costs for high volumes	- Collection of waste - High energy for melting and mixing - High environmental impact plant (solvent, energy...)
HIGH COSTS		- Only for big realities
BATCH PROCESS	- Every Kg is at same stage	- More than 1 problem together - Less flexibility
METALS		- It will be a continuous step in a batch process
VOLATILES	- No problem	
INORGANICS	- No problem	- Limited for P and expensive
OTHER POLYMERS	- No problem, but expensive	
PROPERTIES	- Oligomers	

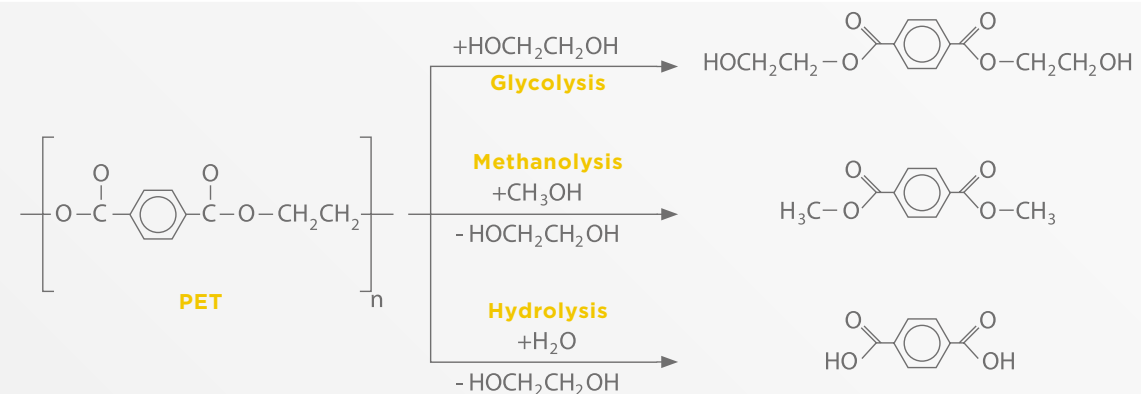
INNOVATIVE HYBRID

MECHANICAL CHEMICAL RECYCLING

	PLUS	MINUS
LOW VOLUMES Modular 1500/3000 MTs/y	- Cost reduction - Fast melting and mixing	- Low volumes - Higher impact for fix costs
LOWER COSTS	- Less expensive plants	
CONTINUOS PROCESS	- Space against time - Splitting of problems - Mechanical and shear energy added to P, T, Catalyst - Very good and intimate mixing	- Less control of reaction - Bulk process - Dangerous for exothermal reactions
METALS	- During dosing system	
VOLATILES	- No problem	
INORGANICS	- High P very good	
OTHER POLYMERS	- Possible with additional step	
PROPERTIES	- Oligomers	

THE IDEA BEHIND... FROM PET TO

OLPET®

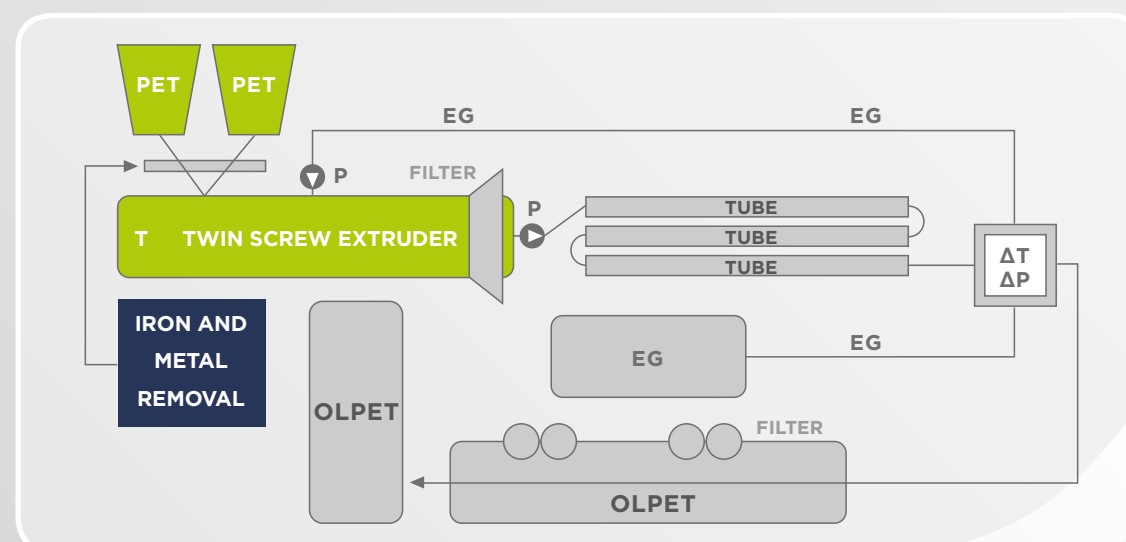


BETH, monomer or dimer and PET oligomer OLPET

FROM DIRTY PET TO OLPET



FROM PET TO OLPET



OLPET HISTORY



- 2017: THE IDEA AND FEASIBILITY ANALYSIS
- FEB 2018: THE PATENT
- MAR-SEP 2018: LITERATURE SEARCH AND R&D
- OCT 2018 - JULY 2019: PLANT CONSTRUCTION
- JULY 2019 - NOV 2019: START-UP AND TRIAL PERIOD
- DEC 2019 - JAN 2020: PRODUCTION

OLPET®

It is a series of polyols formulations with different molecular weights and viscosity.

OLPET

From 2 to 15 BETH units;
Mw: 250÷3000 u.m.a.;
μ: 10÷20000 cps;
From liquid like water to viscous fluid, easy to pump and transport

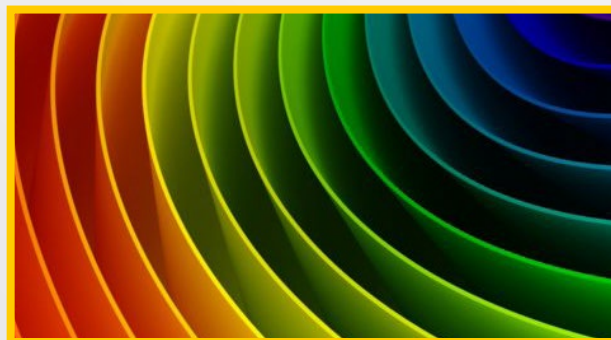
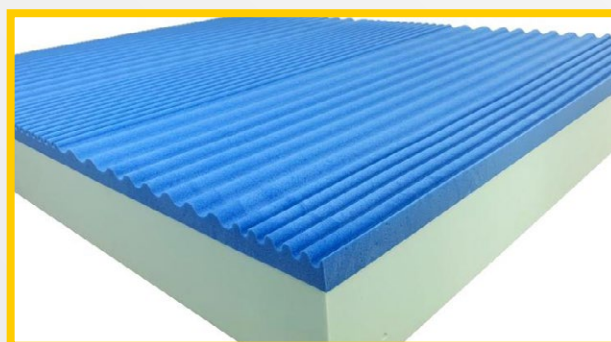
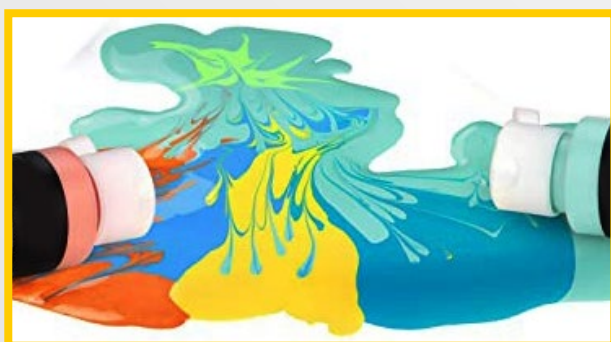
Color depends from starting PET and can be decolored.



OLPET® CAN BE UP TO 100% RECYCLED MATERIAL

OLPET APPLICATIONS

- REACTION WITH MONOMERS TO PET
- COPOLYMERIZATION WITH HFR FOR GETTING HALOGEN FREE POLYMERIC FLAME RETARDANTS: GC EXTEROL
- REACTION WITH ISOCYANATE TO POLYURETHANES
- REACTION WITH MALEIC ANHYDRIDE TO POLYESTER RESINS
- REACTION WITH FATTY ACID OR BENZOIC ACID TO PLASTICIZERS
- POLYESTER COATINGS
- ADHESIVES



CONCLUSIONS

- CHEMICAL MECHANICAL RECYCLING WILL ALLOW MORE FLEXIBLE RECYCLING
- IT WILL HELP THE RECYCLING OF PLASTICS THAT ARE DIFFICULT TO REUSE TODAY
- IT IS A CONTINUOUS PROCESS
- IT WILL GIVE A SECOND LIFE TO PET HEAVILY CONTAMINATED (EVEN BY OTHER POLYMERS) OR WITH TOO LOW DENSITY
- DEPOLYMERIZATION PRODUCTS CAN HAVE A SECOND LIFE, AS LIQUID INTERMEDIATES OR LIQUID PRODUCTS

FROM THE CHEMICAL-MECHANICAL RECYCLING PROCESS WE CAN OBTAIN DIFFERENT TYPES OF

OLPET®

GC OLPET® P 5050 100% Recycled

Polyester Polyol with 50% Aromatic Recycled PET

GC OLPET® P 5050 is a hydroxylated aromatic polyester with high hydroxyl number obtained by the depolymerization of recycled PET. GC OLPET® P 5050 has high concentration of recycled PET. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact.

GC OLPET® P 5050 has numerous applications. It can be used: in combination with isocyanates as raw material in resins and polyurethanes rigid foam; as plasticizer; as a base for numerous reactive flame retardants. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	460-510
Viscosity @ 25 °C, cps	10000 ± 2500
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® P 5050 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information.

GC OLPET® P 5050 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight.

GC OLPET® P 5050 should be protected against moisture.

PACKAGING:

Standard packaging size of GC OLPET® P 5050 is drums. Packaging on request.

GC OLPET® NP 5050 100% Recycled

Polyester Polyol with 50% Aromatic Recycled PET

GC OLPET® NP 5050 is a hydroxylated aromatic polyester with high hydroxyl number obtained by the depolymerization of recycled PET. GC OLPET® NP 5050 has high concentration of recycled PET. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact.

GC OLPET® NP 5050 has numerous applications. It can be used: in combination with isocyanates as raw material in resins and polyurethanes rigid foam; as plasticizer; as a base for numerous reactive flame retardants. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	460-510
Viscosity @ 25 °C, cps	9000 ± 2500
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® NP 5050 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information. GC OLPET® NP 5050 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight. GC OLPET® NP 5050 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® NP 5050 is drums. Packaging on request.

GC OLPET® TP 4060 100% Recycled

Polyester Polyol with 60% Aromatic Recycled PET

GC OLPET® TP 4060 is a hydroxylated aromatic polyester with high hydroxyl number obtained by the depolymerization of recycled PET. GC OLPET® TP 4060 has high concentration of recycled PET. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact.

GC OLPET® TP 4060 has numerous applications. It can be used: in combination with isocyanates as raw material in resins and polyurethanes rigid foam; as plasticizer; as a base for numerous reactive flame retardants. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	360-410
Viscosity @ 25 °C, cps	16000 ± 3000
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® TP 4060 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information. GC OLPET® TP 4060 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight. GC OLPET® TP 4060 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® TP 4060 is drums. Packaging on request.

GC OLPET® P 5050 D20 80% Recycled

Polyester Polyol with 40% Aromatic Recycled PET

GC OLPET® P 5050 D20 is an aromatic polyester polyol obtained by the depolymerization of PET. GC OLPET® P 5050 D20 has very high concentration of recycled PET. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact.

GC OLPET® P 5050 D20 has numerous applications. It can be used: in combination with isocyanates as raw material in resins and polyurethanes rigid foam; as plasticizer; as a base for numerous reactive flame retardants. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	420-470
Viscosity @ 25 °C, cps	7000 ± 1500
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® P 5050 D20 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information. GC OLPET® P 5050 D20 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight. GC OLPET® P 5050 D20 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® P 5050 D20 is drums. Packaging on request.

GC OLPET® P 5050 C20 80% Recycled

Polyester Polyol with 40% Aromatic Recycled PET

GC OLPET® P 5050 C20 is an aromatic polyester polyol obtained by the depolymerization of PET. GC OLPET® P 5050 C20 has very high concentration of recycled PET. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact.

GC OLPET® P 5050 C20 has numerous applications. It can be used: in combination with isocyanates as raw material in resins and polyurethanes rigid foam; as plasticizer; as a base for numerous reactive flame retardants. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	390-440
Viscosity @ 25 °C, cps	4500 ± 1500
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® P 5050 C20 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information. GC OLPET® P 5050 C20 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight. GC OLPET® P 5050 C20 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® P 5050 C20 is drums. Packaging on request.

GC OLPET® NP 5050 D20 80% Recycled

Polyester Polyol with 40% Aromatic Recycled PET

GC OLPET® NP 5050 D20 is an aromatic polyester polyol obtained by the depolymerization of PET. GC OLPET® NP 5050 D20 has very high concentration of recycled PET. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact.

GC OLPET® NP 5050 D20 has numerous applications. It can be used: in combination with isocyanates as raw material in resins and polyurethanes rigid foam; as plasticizer; as a base for numerous reactive flame retardants. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	420-470
Viscosity @ 25 °C, cps	7000 ± 1500
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® NP 5050 D20 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information.
GC OLPET® NP 5050 D20 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight.
GC OLPET® NP 5050 D20 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® NP 5050 D20 is drums.
Packaging on request.

GC OLPET® NP 5050 C20 80% Recycled

Polyester Polyol with 40% Aromatic Recycled PET

GC OLPET® NP 5050 C20 is an aromatic polyester polyol obtained by the depolymerization of PET. GC OLPET® NP 5050 C20 has very high concentration of recycled PET. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact. GC OLPET® NP 5050 C20 has numerous applications. It can be used: in combination with isocyanates as raw material in resins and polyurethanes rigid foam; as plasticizer; as a base for numerous reactive flame retardants. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	390-440
Viscosity @ 25 °C, cps	4500 ± 1500
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® NP 5050 C20 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information.
GC OLPET® NP 5050 C20 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight.
GC OLPET® NP 5050 C20 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® NP 5050 C20 is drums.
Packaging on request.

GC OLPET® NP 5050 PC5 95% Recycled

Polyester Polyol with more than 45% Aromatic Recycled PET

GC OLPET® NP 5050 PC5 is an aromatic polyester polyol obtained by the depolymerization of PET. GC OLPET® NP 5050 PC5 has very high concentration of recycled PET. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact.

GC OLPET® NP 5050 PC5 has numerous applications. It can be used: in combination with isocyanates as raw material in resins and polyurethanes rigid foam; as plasticizer; as a base for numerous reactive flame retardants. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	435-485
Viscosity @ 25 °C, cps	5500 ± 1500
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® NP 5050 PC5 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information.
GC OLPET® NP 5050 PC5 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight.
GC OLPET® NP 5050 PC5 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® NP 5050 PC5 is drums.
Packaging on request.

GC OLPET® P 5050 PC5 95% Recycled

Polyester Polyol with more than 45% Aromatic Recycled PET

GC OLPET® P 5050 PC5 is an aromatic polyester polyol obtained by the depolymerization of PET. GC OLPET® P 5050 PC5 has very high concentration of recycled PET. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact. GC OLPET® P 5050 PC5 has numerous applications. It can be used: in combination with isocyanates as raw material in resins and polyurethanes rigid foam; as plasticizer; as a base for numerous reactive flame retardants. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	435-485
Viscosity @ 25 °C, cps	8000 ± 3000
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® P 5050 PC5 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information.
GC OLPET® P 5050 PC5 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight.
GC OLPET® P 5050 PC5 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® P 5050 PC5 is drums.
Packaging on request.

FLAME RETARDED

OLPET®

GC OLPET® P 5050 HFR TF50 50% Recycled

Mixture of Halogen Free Flame Retardants and Recycled PET

GC OLPET® P 5050 HFR TF50 is an aromatic polyester polyol with hydroxyl terminals obtained by the depolymerization of PET added with a mixture of halogen free flame retardants. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact. GC OLPET® P 5050 HFR TF50 is a flame retardant system and raw material for resins, it has excellent results in combination with isocyanates in polyurethanes. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Liquid
Hydroxyl value, mg KOH / g	240-290
Viscosity @ 25 °C, cps	<250
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® P 5050 HFR TF50 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information. GC OLPET® P 5050 HFR TF50 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight. GC OLPET® P 5050 HFR TF50 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® P 5050 HFR TF50 is drums. Packaging on request.

GC OLPET® NP 5050 HFR T50 50% Recycled

Mixture of Halogen Free Flame Retardant and Recycled PET

GC OLPET® NP 5050 HFR T50 is an aromatic polyester polyol with hydroxyl terminals obtained by the depolymerization of PET added with a halogen free flame retardant. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact. GC OLPET® NP 5050 HFR T50 is a flame retardant system and raw material for resins, it has excellent results in combination with isocyanates in polyurethanes. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	240-290
Viscosity @ 25 °C, cps	<500
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® NP 5050 HFR T50 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information. GC OLPET® NP 5050 HFR T50 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight. GC OLPET® NP 5050 HFR T50 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® NP 5050 HFR T50 is drums. Packaging on request.

GC OLPET® TP 4060 HFR T50 50% Recycled

Mixture of Halogen Free Flame Retardant and Recycled PET

GC OLPET® TP 4060 HFR T50 is an aromatic polyester polyol with hydroxyl terminals obtained by the depolymerization of PET added with a halogen free flame retardant. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact. GC OLPET® TP 4060 HFR T50 is a flame retardant system and raw material for resins, it has excellent results in combination with isocyanates in polyurethanes. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	190-240
Viscosity @ 25 °C, cps	3000 ± 1000
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® TP 4060 HFR T50 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information. GC OLPET® TP 4060 HFR T50 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight. GC OLPET® TP 4060 HFR T50 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® TP 4060 HFR T50 is drums. Packaging on request.

GC OLPET® TP 4060 HFR TF50 50% Recycled**Mixture of Halogen Free Flame Retardants and Recycled PET**

GC OLPET® TP 4060 HFR TF50 is an aromatic polyester polyol with hydroxyl terminals obtained by the depolymerization of PET added with a mixture of halogen free flame retardants. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact. GC OLPET® TP 4060 HFR TF50 is a flame retardant system and raw material for resins, it has excellent results in combination with isocyanates in polyurethanes. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	190-240
Viscosity @ 25 °C, cps	300-1000
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® TP 4060 HFR TF50 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information. GC OLPET® TP 4060 HFR TF50 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight. GC OLPET® TP 4060 HFR TF50 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® TP 4060 HFR TF50 is drums. Packaging on request.

GC OLPET® P 5050 HFR R50 50% Recycled**Mixture of Halogen Free Flame Retardant and Recycled PET**

GC OLPET® P 5050 HFR R50 is an aromatic polyester polyol with hydroxyl terminals obtained by the depolymerization of PET added with a halogen free flame retardant. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact. GC OLPET® P 5050 HFR R50 is a flame retardant system and raw material for resins, it has excellent results in combination with isocyanates in polyurethanes. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	240-290
Viscosity @ 25 °C, cps	3500 ± 1000
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® P 5050 HFR R50 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information. GC OLPET® P 5050 HFR R50 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight. GC OLPET® P 5050 HFR R50 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® P 5050 HFR R50 is drums. Packaging on request.

GC OLPET® P 5050 HFR TF25 75% Recycled**Mixture of Halogen Free Flame Retardants and Recycled PET**

GC OLPET® P 5050 HFR TF25 is an aromatic polyester polyol with hydroxyl terminals obtained by the depolymerization of PET added with a mixture of halogen free flame retardants. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact. GC OLPET® P 5050 HFR TF25 is a flame retardant system and raw material for resins, it has excellent results in combination with isocyanates in polyurethanes. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	375-425
Viscosity @ 25 °C, cps	300-1000
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® P 5050 HFR TF25 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information. GC OLPET® P 5050 HFR TF25 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight. GC OLPET® P 5050 HFR TF25 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® P 5050 HFR TF25 is drums. Packaging on request.

GC OLPET® P 5050 HFR R20 80% Recycled**Mixture of Halogen Free Flame Retardant and Recycled PET**

GC OLPET® P 5050 HFR R20 is an aromatic polyester polyol with hydroxyl terminals obtained by the depolymerization of PET added with a halogen free flame retardant. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact. GC OLPET® P 5050 HFR R20 is a flame retardant system and raw material for resins, it has excellent results in combination with isocyanates in polyurethanes. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	360-410
Viscosity @ 25 °C, cps	8000 ± 2000
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® P 5050 HFR R20 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information. GC OLPET® P 5050 HFR R20 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight. GC OLPET® P 5050 HFR R20 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® P 5050 HFR R20 is drums. Packaging on request.

GC OLPET® P 5050 FRA T50 50% Recycled

Mixture of Halogenated Flame Retardant and Recycled PET

GC OLPET® P 5050 FRA T50 is an aromatic polyester polyol with hydroxyl terminals obtained by the depolymerization of PET added with a halogenated flame retardant. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact. GC OLPET® P 5050 FRA T50 is a flame retardant system and raw material for resins, it has excellent results in combination with isocyanates in polyurethanes. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	240-290
Viscosity @ 25 °C, cps	1000 ± 500
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® P 5050 FRA T50 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information. GC OLPET® P 5050 FRA T50 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight. GC OLPET® P 5050 FRA T50 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® P 5050 FRA T50 is drums. Packaging on request.

GC OLPET® P 5050 FRA T20 80% Recycled

Mixture of Halogenated Flame Retardant and Recycled PET

GC OLPET® P 5050 FRA T20 is an aromatic polyester polyol with hydroxyl terminals obtained by the depolymerization of PET added with a halogenated flame retardant. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact. GC OLPET® P 5050 FRA T20 is a flame retardant system and raw material for resins, it has excellent results in combination with isocyanates in polyurethanes. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	360-410
Viscosity @ 25 °C, cps	4500 ± 1000
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® P 5050 FRA T20 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information. GC OLPET® P 5050 FRA T20 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight. GC OLPET® P 5050 FRA T20 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® P 5050 FRA T20 is drums. Packaging on request.

GC OLPET® NP 5050 HFR R50 50% Recycled

Mixture of Halogen Free Flame Retardant and Recycled PET

GC OLPET® NP 5050 HFR R50 is an aromatic polyester polyol with hydroxyl terminals obtained by the depolymerization of PET added with a halogen free flame retardant. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact. GC OLPET® NP 5050 HFR R50 is a flame retardant system and raw material for resins, it has excellent results in combination with isocyanates in polyurethanes. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	240-290
Viscosity @ 25 °C, cps	3000 ± 1000
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® NP 5050 HFR R50 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information. GC OLPET® NP 5050 HFR R50 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight. GC OLPET® NP 5050 HFR R50 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® NP 5050 HFR R50 is drums. Packaging on request.

GC OLPET® NP 5050 HFR R20 80% Recycled

Mixture of Halogen Free Flame Retardant and Recycled PET

GC OLPET® NP 5050 HFR R20 is an aromatic polyester polyol with hydroxyl terminals obtained by the depolymerization of PET added with a halogen free flame retardant. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact. GC OLPET® NP 5050 HFR R20 is a flame retardant system and raw material for resins, it has excellent results in combination with isocyanates in polyurethanes. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	360-410
Viscosity @ 25 °C, cps	6000 ± 1500
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® NP 5050 HFR R20 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information. GC OLPET® NP 5050 HFR R20 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight. GC OLPET® NP 5050 HFR R20 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® NP 5050 HFR R20 is drums. Packaging on request.

GC OLPET® NP 5050 FRA T50 50% Recycled**Mixture of Halogenated Flame Retardant and Recycled PET**

GC OLPET® NP 5050 FRA T50 is an aromatic polyester polyol with hydroxyl terminals obtained by the depolymerization of PET added with a halogenated flame retardant. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact.

GC OLPET® NP 5050 FRA T50 is a flame retardant system and raw material for resins, it has excellent results in combination with isocyanates in polyurethanes.

It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	240-290
Viscosity @ 25 °C, cps	700 ± 400
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® NP 5050 FRA T50 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information.

GC OLPET® NP 5050 FRA T50 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight.

GC OLPET® NP 5050 FRA T50 should be protected against moisture.

PACKAGING:

Standard packaging size of GC OLPET® NP 5050 FRA T50 is drums.
Packaging on request.

GC OLPET® NP 5050 FRA T20 80% Recycled**Mixture of Halogenated Flame Retardant and Recycled PET**

GC OLPET® NP 5050 FRA T20 is an aromatic polyester polyol with hydroxyl terminals obtained by the depolymerization of PET added with a halogenated flame retardant. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact.

GC OLPET® NP 5050 FRA T20 is a flame retardant system and raw material for resins, it has excellent results in combination with isocyanates in polyurethanes.

It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	360-410
Viscosity @ 25 °C, cps	2500 ± 1000
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® NP 5050 FRA T20 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information.

GC OLPET® NP 5050 FRA T20 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight.

GC OLPET® NP 5050 FRA T20 should be protected against moisture.

PACKAGING:

Standard packaging size of GC OLPET® NP 5050 FRA T20 is drums.
Packaging on request.

GC OLPET® NP 5050 HFR RF50 50% Recycled**Mixture of Halogen Free Flame Retardants and Recycled PET**

GC OLPET® NP 5050 HFR RF50 is an aromatic polyester polyol with hydroxyl terminals obtained by the depolymerization of PET added with a mixture of halogen free flame retardants. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact.

GC OLPET® NP 5050 HFR RF50 is a flame retardant system and raw material for resins, it has excellent results in combination with isocyanates in polyurethanes.

It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	240-290
Viscosity @ 25 °C, cps	4500 ± 1500
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® NP 5050 HFR RF50 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information.

GC OLPET® NP 5050 HFR RF50 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight.

GC OLPET® NP 5050 HFR RF50 should be protected against moisture.

PACKAGING:

Standard packaging size of GC OLPET® NP 5050 HFR RF50 is drums.
Packaging on request.

GC OLPET® NP 5050 HFR RF25 75% Recycled**Mixture of Halogen Free Flame Retardants and Recycled PET**

GC OLPET® NP 5050 HFR RF25 is an aromatic polyester polyol with hydroxyl terminals obtained by the depolymerization of PET added with a mixture of halogen free flame retardants. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact.

GC OLPET® NP 5050 HFR RF25 is a flame retardant system and raw material for resins, it has excellent results in combination with isocyanates in polyurethanes.

It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	375-425
Viscosity @ 25 °C, cps	5500 ± 1500
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® NP 5050 HFR RF25 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information.

GC OLPET® NP 5050 HFR RF25 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight.

GC OLPET® NP 5050 HFR RF25 should be protected against moisture.

PACKAGING:

Standard packaging size of GC OLPET® NP 5050 HFR RF25 is drums.
Packaging on request.

GC OLPET® P 5050 HFR RF50 50% Recycled

Mixture of Halogen Free Flame Retardants and Recycled PET

GC OLPET® P 5050 HFR RF50 is an aromatic polyester polyol with hydroxyl terminals obtained by the depolymerization of PET added with a mixture of halogen free flame retardants. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact. GC OLPET® P 5050 HFR RF50 is a flame retardant system and raw material for resins, it has excellent results in combination with isocyanates in polyurethanes. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	240-290
Viscosity @ 25 °C, cps	6500 ± 1500
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® P 5050 HFR RF50 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information. GC OLPET® P 5050 HFR RF50 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight. GC OLPET® P 5050 HFR RF50 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® P 5050 HFR RF50 is drums. Packaging on request.

GC OLPET® P 5050 HFR RF25 75% Recycled

Mixture of Halogen Free Flame Retardants and Recycled PET

GC OLPET® P 5050 HFR RF25 is an aromatic polyester polyol with hydroxyl terminals obtained by the depolymerization of PET added with a mixture of halogen free flame retardants. The use of recycled PET in place of virgin resin typically results in lower cost, reduced energy consumption and environmental impact. GC OLPET® P 5050 HFR RF25 is a flame retardant system and raw material for resins, it has excellent results in combination with isocyanates in polyurethanes. It can be used alone or mixed with other polyols (polyesters or polyethers).

PHYSICAL-CHEMICAL PROPERTIES:

Appearance	Viscous Liquid
Hydroxyl value, mg KOH / g	375-425
Viscosity @ 25 °C, cps	9000 ± 2500
Humidity, %	≤0,5



HANDLING AND STORAGE: The processing and use of GC OLPET® P 5050 HFR RF25 requires adequate technical and professional knowledge. Please consult safety data sheet for further handling, storage and toxicity information. GC OLPET® P 5050 HFR RF25 has to be stored in tightly sealed original container in a cool and well-ventilated area, away from direct sunlight. GC OLPET® P 5050 HFR RF25 should be protected against moisture.

PACKAGING: Standard packaging size of GC OLPET® P 5050 HFR RF25 is drums. Packaging on request.



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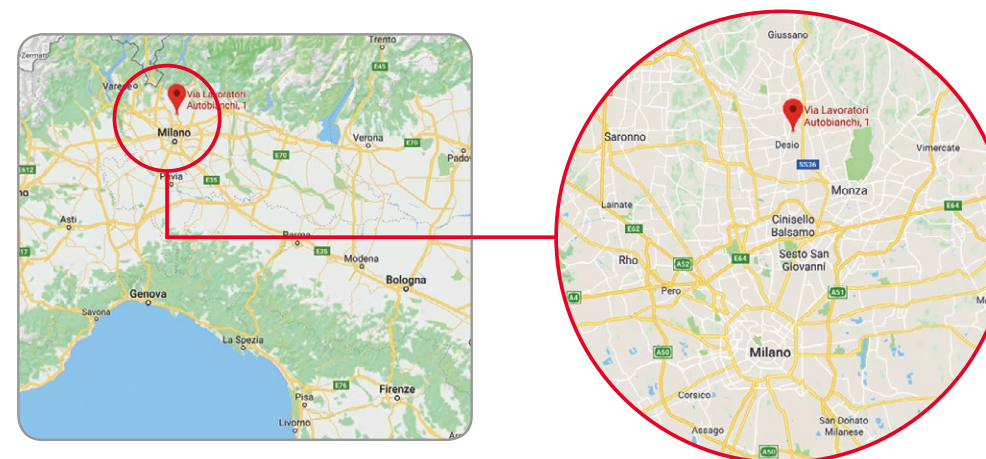
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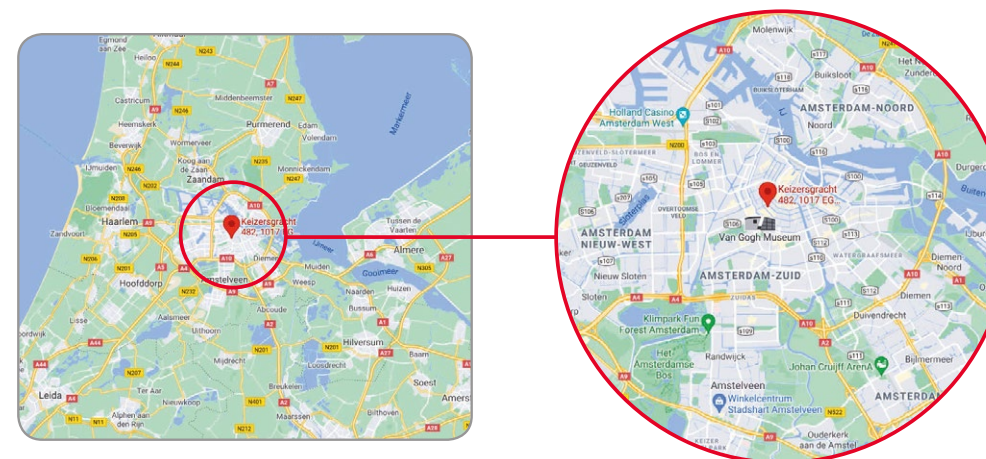
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