

## ADDITIVES FOR **PVC**

ANTIOXIDANTS • FLAME RETARDANTS • ACID SCAVENGERS  
UV ABSORBERS/LIGHT STABILIZERS • PROCESSING AIDS/STABILIZERS

# Index

WHO WE ARE ..... **Pag. 02**

ANTIOXIDANTS ..... **Pag. 05**

FLAME RETARDANTS ..... **Pag. 06**

ACID SCAVENGERS ..... **Pag. 07**

UV ABSORBERS / LIGHT STABILIZERS ..... **Pag. 08**

PROCESSING AIDS / STABILIZERS ..... **Pag. 09**

CONTACT US ..... **Pag. 12**

# Who We Are

Greenchemicals S.r.l. is an Italian company highly specialized in flame retardant additives, with a particular focus on the development of halogen-free formulations and those with low environmental impact. Greenchemicals S.r.l. has always been considered a reliable global partner in the field of plastic additives.

Greenchemicals' products comply with REACH, CLP, SVHC, Food contact, ROHS requirements, if applicable.

## ABOUT GREENCHEMICALS

- Founded in 2010 by Micaela Lorenzi
- **Headquarters in Desio – Italy;** fully owned companies: **Polichem S.r.l.** (Garlasco, ITALY) and **Greenchemicals SA** (Lugano, SWITZERLAND)



- Specialized in flame retardant formulations, it represents a reliable partner for **plastic additives** worldwide

## MAIN FIELDS OF APPLICATION:

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

## OTHER PRODUCTS:

- Antioxidants
- Uv
- Processing aids
- Color masterbatches

## GC - VISION

Develop and promote performing solutions:

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



## QUALITY MANAGEMENT SYSTEM

Greenchemicals decided to adopt Quality Management System (QMS) in compliance with ISO 9001 STANDARD to improve all activities associated with the quality.

Greenchemicals has always supported agile working methods such as smart working, part time and flexible work schedules in order to allow for a better family management.



## GC - PHYSICAL FORMS

- Masterbatches
- Powder Blends
- Compacted Blends
- Cold Extruded Pellets
- Liquid Dispersions

In 2024 Greenchemicals acquires

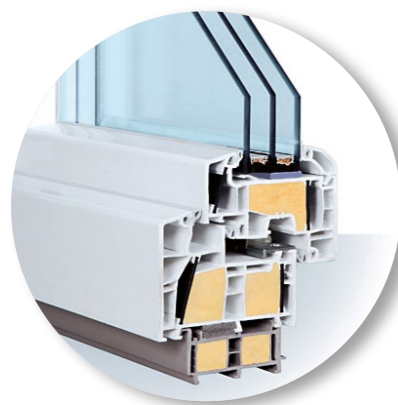


## MEMBERSHIP:



# Additives for PVC

## THE RANGE



PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
<b>GC AOX 168</b> Tris(2,4-di-tert-butylphenyl) phosphite  CAS n. 31570-04-4 <b>PHYSICAL FORM:</b> GR, PW		<b>PVC - Polyolefins - Engineering Thermoplastics.</b>  Organophosphite antioxidant suitable for use in a lot of polymers such as polyolefins, polycarbonate, ABS and polyesters.	<b>M.P./S.R Viscosity</b> 183-187°C ----- <b>TGA:</b> 5% @ 239°C 10% @ 250°C 25% @ 272°C
<b>GC AOX 245</b> Triethyleneglycol-bis[3-(3-tert-butyl-4-hydroxy-5-methylphenyl)propionate]  CAS n. 36443-68-2 <b>PHYSICAL FORM:</b> PW		<b>PVC - Polyurethanes - Engineering Thermoplastics.</b>  Effective in styrene polymers, particularly impact-modified polystyrenes, ABS, MBS, SB as well as in POM homo- and co-polymers. It is also very useful for the stabilization of polyurethanes, polyamides, thermoplastic polyesters, PVC and other polymers.	<b>M.P./S.R Viscosity</b> 76-80°C ----- <b>TGA:</b> 5% @ 297°C 10% @ 312°C 25% @ 332°C
<b>GC AOX 626</b> Bis (2,4-Di-T-Butylphenyl) Pentaerythritol Diphosphite  CAS n. 26741-53-7 <b>PHYSICAL FORM:</b> GR, PW		<b>PVC - Polyolefins - Engineering Thermoplastics.</b>  Phosphite ester antioxidant suitable for PE, PP, PS, PA, PC and ABS.	<b>M.P./S.R Viscosity</b> 160-180°C ----- <b>TGA:</b> 5% @ 159°C 10% @ 215°C 25% @ 267°C
<b>GC AOX 1076</b> Octadecyl-3-(3',5'-di-tert-butyl-4'-hydroxyphenyl) propionate  CAS n. 2082-79-3 <b>PHYSICAL FORM:</b> GR, PW		<b>PVC - Engineering Thermoplastics.</b>  Excellent stabilizer for polyolefins, impact modified styrenics, block co-polymers, elastomers, adhesives, PVC and polyurethanes.	<b>M.P./S.R Viscosity</b> 50-55°C ----- <b>TGA:</b> 5% @ 260°C 10% @ 278°C 25% @ 302°C
<b>GC AOX 1135</b> Reaction mass of isomers of: C7-9-alkyl 3-(3,5-di-tert-butyl-4-hydroxyphenyl) propionate  CAS n. 144429-84-5 <b>PHYSICAL FORM:</b> LIQ		<b>PVC - Polyurethanes.</b>  PUR, Polyol.	<b>TGA:</b> 1% @ 160°C 10% @ 200°C
<b>GC AOX 1315</b> Benzenepropanoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, C13,15-branched and linear alkyl esters  CAS n. 171090-93-0 <b>PHYSICAL FORM:</b> LIQ		<b>PVC - PU foam.</b>	<b>M.P./S.R Viscosity</b> 56°C

Please feel free to contact us for any other substance not mentioned in this list.

# Flame Retardants

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
<b>GC AT ZERO PVC</b> Phosphorus, Nitrogen and Zinc/Aluminum organic components  <b>PHYSICAL FORM:</b> PW		GC AT ZERO PVC is a mixture of phosphorus, nitrogen and Zn/Al components, developed to replace antimony trioxide in PV compound and spreads.	<b>M.P./S.R Viscosity</b> °C: min 158
<b>GC CP 70</b> Paraffin waxes and Hydrocarbon waxes, chloro  <b>CAS n.</b> 63449-39-8 <b>PHYSICAL FORM:</b> PW		<b>Rubber - PVC and Plastic Products - Paints - Coatings, Adhesives - Polyolefins - Textiles &amp; Fabrics.</b>  It can be used as flame retardant additive for ink, as modifier for paper industry, as plasticizer or as surface treatment agent and lubricant.	<b>M.P./S.R Viscosity</b> 90-115°C
<b>GC FOS 35</b> Isopropylated Triaryl phosphate  <b>CAS n.</b> 68937-41-7 <b>PHYSICAL FORM:</b> LIQ		<b>PVC - Polyurethanes - PVC - Epoxy resins - Vinyl Polymers.</b>	<b>M.P./S.R Viscosity</b> 42-50 cps
<b>GC FOS 65</b> Isopropylated Triaryl phosphate  <b>CAS n.</b> 68937-41-7 <b>PHYSICAL FORM:</b> LIQ		<b>PVC - Polyolefins - Engineering Thermoplastics.</b>  PVC, Phenolic, PU, Epoxy resins.	<b>M.P./S.R Viscosity</b> 64-76 cps
<b>GC FOS 95</b> Isopropylated Triaryl phosphate  <b>CAS n.</b> 68937-41-7 <b>PHYSICAL FORM:</b> LIQ		<b>PVC - Polyurethanes - PVC - Epoxy Resins - Vinyl Polymers.</b>	<b>M.P./S.R Viscosity</b> 95-114 cps
<b>GC FOS 95 PLUS</b> Isodecyl Diphenyl Phosphate  <b>WITHOUT TPP</b> <b>PHYSICAL FORM:</b> LIQ		GC FOS 95 PLUS is widely used for PC, PVC, PVA, CA, CAB, CN, EC, epoxy, phenolic resin, acrylic resin.	<b>M.P./S.R Viscosity</b> Viscosity@25°C, mPa.s: 20 - 30
<b>GC RDP</b> Reaction mass of 3-[(diphenoxyphosphoryl)oxy]phenyl triphenyl 1,3-phenylene bis(phosphate) and tetraphenyl 1,3-phenylene bis(phosphate) <b>EC n.</b> 701-337-2 <b>PHYSICAL FORM:</b> LIQ		<b>PVC - Polyurethanes - Engineering Thermoplastics.</b>  PC/ABS, PPO/HIPS, TPU, PU.	<b>M.P./S.R Viscosity</b> 500-800 cps a 80°C  <b>TGA:</b> 2% @ 290°C 5% @ 325°C 10% @ 360°C
<b>GC RDP L</b> Reaction mass of 3-[(diphenoxyphosphoryl)oxy]phenyl triphenyl 1,3-phenylene bis(phosphate) and tetraphenyl 1,3-phenylene bis(phosphate) <b>EC n.</b> 701-337-2 <b>PHYSICAL FORM:</b> LIQ		<b>Engineering resins such as PC, PPO/HIPS and PC/ABS.</b>  Furthermore, for technical thermoplastics in general, and for polyurethane systems.	<b>M.P./S.R Viscosity</b> Viscosity, mPas(25°C): 500 -800

# Flame Retardants

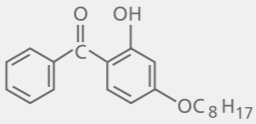
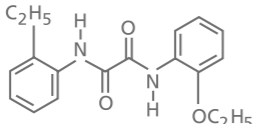
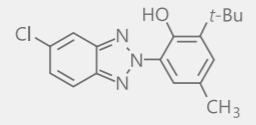
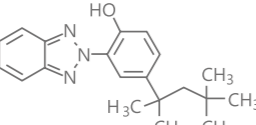
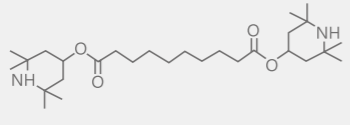
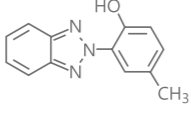
PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
<b>GC TRIOSSIDO DI ANTIMONIO</b> Antimony Trioxide  <b>CAS n.</b> 1309-64-4 <b>PHYSICAL FORM:</b> PW		<b>PVC - Polyolefins - Polyurethanes - Engineering Thermoplastics.</b>  Synergist for brominated flame retardant suitable for plastics and textiles.	<b>M.P./S.R Viscosity</b> 656°C
<b>GC ZINCO BORATO</b> Zinc Borate  <b>CAS n.</b> 138265-88-0 <b>PHYSICAL FORM:</b> GR, PW		<b>PVC - Polyolefins - Polyurethanes - Engineering Thermoplastics.</b>  Synergist suitable for PVC, Polyolefins, PA, Rubber. Specially suitable for Film.	<b>M.P./S.R Viscosity</b> 890°C  <b>TGA:</b> 1% @ 282°C 5% @ 388°C 10% @ 425°C

# Acid Scavengers

<b>GC HT 4</b> Hydrotalcite  <b>PHYSICAL FORM:</b> PW		<b>PVC.</b>  GC HT 4 is an inorganic filler, which is a very effective acid scavenger that used in flame retardant formulations act as a synergist and as a smoke suppressant.
---	--	--

Please feel free to contact us for any other substance not mentioned in this list.

# UV Absorbers / Light Stabilizers

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
<b>GC CHIM 81</b> Octabenzene  <b>CAS n.</b> 1843-05-6 <b>PHYSICAL FORM:</b> PW, FLAKES		<b>Polyolefines – PVC - Styrenics.</b>  Benzophenone based UVA , suitable for PO, PS, PVC, elastomers. Particularly efficient in combination with HALS.	<b>M.P./S.R Viscosity</b> 47-50°C ----- <b>TGA:</b> 5% @ 220°C 10% @233°C 25% @ 255°C
<b>GC UV-312</b> N-(2-ethoxyphenyl)-N'-(2-ethylphenyl) oxamide  <b>CAS n.</b> 23949-66-8 <b>PHYSICAL FORM:</b> GR, PW		Oxanilide UV absorber with highly effective light stabilizer for a variety of plastics and other organic substrates including unsaturated polyesters, PVC and PVC plastisol.	<b>M.P./S.R Viscosity</b> 124-127°C ----- <b>TGA:</b> 5% @ 202°C 10% @ 205°C 25% @ 236°C
<b>GC UV-326</b> 2-(5-Chloro-2H-benzotriazol-2-yl)-6-(1,1-dimethylethyl)-4-methylphenol  <b>CAS n.</b> 3896-11-5 <b>PHYSICAL FORM:</b> GR, PW		Suitable for polymers processed at high temperatures such as polycarbonates, polyalkylene terephthalates, polyacetals, polyamides, polyphenylene sulfide, polyphenylene oxide, aromatic copolymers, thermoplastic polyurethane and polyurethane fibers, as well as for polyvinylchloride, styrene homo- and copolymers.	<b>M.P./S.R Viscosity</b> 137-141°C ----- <b>TGA:</b> 5% @ 202°C 10% @ 205°C 25% @ 236°C
<b>GC UV-329</b> 2-(2H-benzotriazol-2-yl)-4-(1,1,3,3,-tetramethylbutyl)phenol  <b>CAS n.</b> 3147-75-9 <b>PHYSICAL FORM:</b> GR, PW		UV absorber belonging to the benzotriazole class suitable for a variety of plastics and other organic substrates.	<b>M.P./S.R Viscosity</b> 102-108°C ----- <b>TGA:</b> 5% @ 202°C 10% @ 205°C 25% @ 236°C
<b>GC UV LS 770</b> Bis(2,2,6,6-tetramethyl-4-piperidyl) sebacate  <b>CAS n.</b> 52829-07-9 <b>PHYSICAL FORM:</b> GR, PW		<b>PVC - Polyolefins - Engineering Thermoplastics.</b>  Low Molecular weight hindered amine light stabilizer. Suitable for Polyolefins, Polystyrene and styrenic based copolymers, Polyurethane, PVC but also engineering plastics.	<b>M.P./S.R Viscosity</b> 81-85°C ----- <b>TGA:</b> 1% @ 203°C 5% @ 221°C 10% @ 242°C
<b>GC UV P</b> 2-(2H-benzotriazol-2-yl)-p-cresol  <b>CAS n.</b> 2440-22-4 <b>PHYSICAL FORM:</b> PW		UV absorber of the benzotriazole class suitable for styrene homopolymers and copolymers, engineering plastics such as polyesters and acrylic resins, polyvinyl chloride and other polymers containing halogens and copolymers (such as vinylidene), acetals and cellulose esters.	<b>M.P./S.R Viscosity</b> 128-133°C ----- <b>TGA:</b> 5% @ 163°C 10% @ 178°C 50% @ 197°C

Please feel free to contact us for any other substance not mentioned in this list.

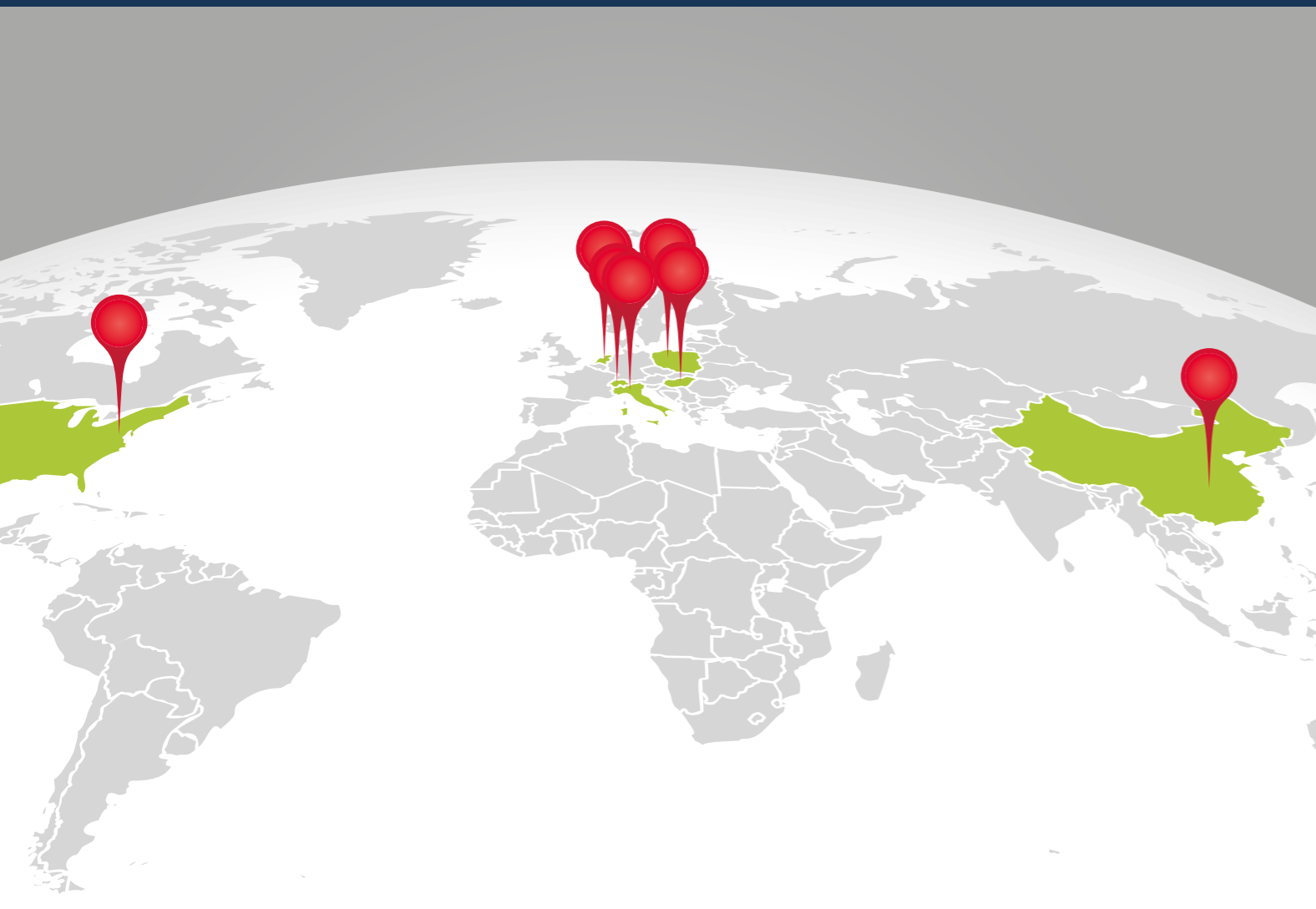
# Processing Aids / Stabilizers

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
<b>GC DGM 95</b> Distilled Glycerol Monostearate  <b>CAS n.</b> 123-94-4 <b>PHYSICAL FORM:</b> PASTILLES		It can be used in plastic sector as anti-static, anti-fog or lubricant. It is a good emulsifier, dispersant, stabilizer and anti-aging starch.	
<b>GC GMS 40</b> Stearic acid, monoester with glycerol (Conc. ≥40%)  <b>CAS n.</b> 123-94-4		<b>Plasticizer.</b>	<b>M.P./S.R Viscosity</b> 60°C
<b>GC GMS 90</b> Stearic acid, monoester with glycerol (Conc. ≥90%)  <b>CAS n.</b> 123-94-4		<b>Plasticizer.</b>	<b>M.P./S.R Viscosity</b> 66,7°C
<b>GC NA ABS (Sodio Alcan solfonato)</b> Sulfonic acids, C14-17-sec-alkane, sodium salts  <b>CAS n.</b> 97489-15-1 <b>PHYSICAL FORM:</b> GR	$H_3C-(CH_2)_m-CH(CH_2)_n-CH_3$ $ $ $SO_3Na$  $m + n = 11 - 4$ Average chain length: C15,2	Anionic surfactants for the detergent, chemical- technical and cosmetic industry with excellent wetting behavior.	<b>M.P./S.R Viscosity</b> > 350°C
<b>GC STEARATO DI BARIO</b> Fatty acids, C16-18, barium salts  <b>CAS n.</b> 91002-07-2		<b>Drying lubricants and dusting agents for Rubbers.</b>  Stabilization and lubricant of PVC compounds, it is used in combination with other metal stearates to form primary stabilizers. Employed also as an acid acceptor and release and anti-blocking agent.	
<b>GC STEARATO DI CALCIO</b> Fatty acids, C16-18, calcium salts  <b>CAS n.</b> 85251-71-4 <b>PHYSICAL FORM:</b> PW		It is an acid scavenger, release agent and lubricant in plastics industry, water repellent and anti-compacting agent. Compared to waxes, it has a relatively high softening point, and, consequently, do not become greasy at higher temperatures. Stabilization and lubricant of PVC compounds, it is used in combination with other metal stearates to form primary stabilizers. Employed also as an acid acceptor and release and anti-blocking agent.	<b>M.P./S.R Viscosity</b> 140-160°C
<b>GC STEARATO DI MAGNESIO</b> Stearic acid, magnesium salts  <b>PHYSICAL FORM:</b> PW		Very good water repellent properties. The product is characterized by a very high fineness, therefore a lower dosage can be used, and very good free-flowing properties. Stabilization and lubricant of PVC compounds, it is used in combination with other metal stearates to form primary stabilizers. Employed also as an acid acceptor and release and anti-blocking agent.	<b>M.P./S.R Viscosity</b> 130-150°C
<b>GC STEARATO DI ZINCO</b> Fatty acids, C16-18, zinc salts  <b>CAS n.</b> 97489-15-1 <b>PHYSICAL FORM:</b> PW		Stabilization and lubricant of PVC compounds, it is used in combination with calcium or other metal stearates to form primary stabilizers. Employed also as an acid acceptor and release and anti-blocking agent.	<b>M.P./S.R Viscosity</b> 120°C



# Where We Are in the world

# Contact Us!



## HEADQUARTERS (ITALY):

**GREENCHEMICALS - Desio (MB)**  
info@greenchemicals.green  
salesteam@greenchemicals.green

**POLICHEM - Garlasco (PV)**  
visintin@greenchemicals.green

## THE NETHERLANDS

**Amsterdam**  
info@greenchemicals.green

## USA

**Wilmington - Delaware**  
andras.nagy@greenchemicals.green

## SWITZERLAND

**Lugano**  
info@greenchemicals.green

## HUNGARY

andras.nagy@greenchemicals.green

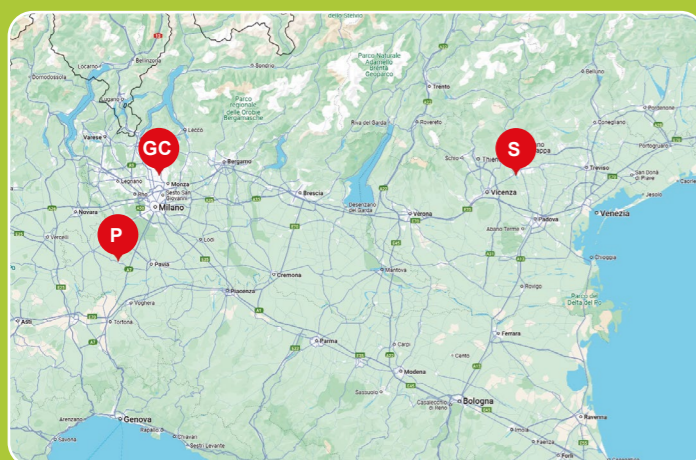
## CHINA

steve.zhang@greenchemicals.green

## POLAND

dariusz.koloszyc@greenchemicals.green

## Where We Are in Italy:



**GREENCHEMICALS Srl**  
**HEADQUARTERS**  
Via Laboratori Autobianchi, 1  
20832 Desio (MB), IT

**POLICHEM**  
Production site and laboratory  
Viale G. Natta, 12 - 27026 Garlasco (PV), IT

**SETA**  
Production site  
Via A. Velo, 4 - 35014 Fontaniva (PD), IT

info@greenchemicals.green

salesteam@greenchemicals.green

Tel. +39 0362 1547305

[www.greenchemicals.eu](http://www.greenchemicals.eu)





## ADDITIVES FOR **PVC**

---