

PLASTIC ADDITIVES

FR

UV

AOX

FLAME RETARDANTS • UV ABSORBERS / HALS / LIGHT STABILIZERS
ANTIOXIDANTS • NUCLEATING & CLARIFYING AGENTS • PROCESSING AIDS

Index

WHO WE ARE	Pag. 02
QUALITY MANAGEMENT SYSTEM	Pag. 03
MEMBERSHIP	Pag. 03

MECHANISMS:

FLAME RETARDANTS	Pag. 04
ANTIOXIDANTS	Pag. 06
UV ABSORBERS	Pag. 07

PRODUCT RANGE:

FLAME RETARDANTS	Pag. 09
ANTIOXIDANTS	Pag. 19
UV ABSORBERS / LIGHT STABILIZERS	Pag. 22
HALS	Pag. 25
PROCESSING AIDS / STABILIZERS	Pag. 27
PEROXIDES	Pag. 28
ONE SHOT FORMULATIONS	Pag. 29
OPTICAL BRIGHTENERS	Pag. 30
SMA	Pag. 30

WHERE WE ARE	Pag. 32
CONTACT US	Pag. 33

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:

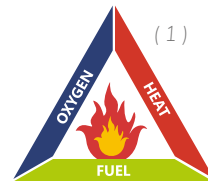
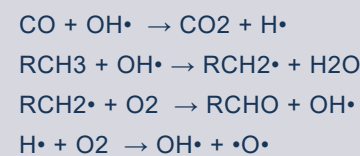


Flame Retardant Mechanism

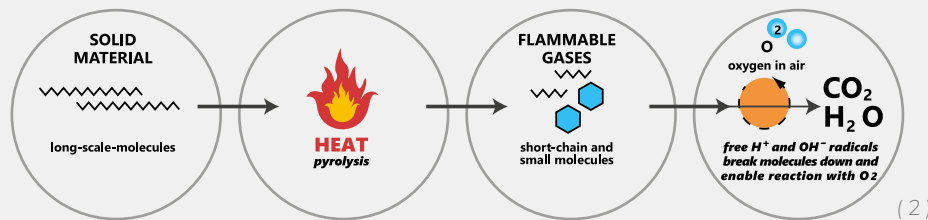
Flame retardants are substances which may reduce flammability of materials by interaction with the fire cycle (FIGURE 1) in order to prevent, delay or stop it. Flame retardants act at different stages, depending on their chemical basis.

COMBUSTION

Combustion is a chemical reaction of oxidation that involves heat, flames and smoke/gases with generation of high energy radicals.



The fire starts with an ignition source put on a combustible item. Solid materials do not burn directly, they are degraded by heat due to Pyrolysis: polymer's long-chain molecules are decomposed into smaller ones, with the emission of flammable gases in the Gas Phase and the formation of inert carbonised material in the Condensed Phase, char. (FIGURE 2) In the gas phase visible flames are generated by reaction of flammable gases with oxygen. High energy exothermic chemical reactions take place and generate heat energy that supports combustion.



FLAME RETARDANTS

Flame retardants prevent or even suppress the process of combustion during a particular phase of the fire cycle: heating, decomposition, ignition, flame spread.

Flame retardant action can be physical or chemical (FIGURE 3).

MECHANISM	WAY	EFFECT
WATER VAPOR	PHYSICAL	Cooling Release of water vapor
GAS PHASE	CHEMICAL	Release of inert gases
CHAR	CHEMICAL / PHYSICAL	Cooling Char Layer
INTUMESCENT	CHEMICAL / PHYSICAL	Cooling Expanded Char Layer
DRIPPING	CHEMICAL	Polymer Chain Scission

CHEMICAL REACTION CAN OCCUR:

- In the gas phase by cooling the system and reducing flammable gases.
- In the condensed phase by generation of a char layer providing a barrier against the heat source

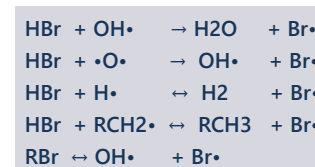
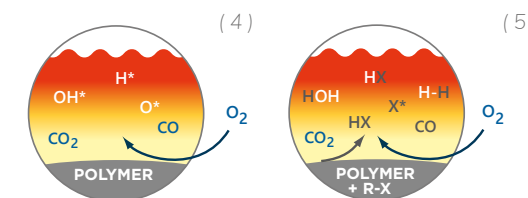
PHYSICAL ACTION CAN TAKE PLACE BY:

- Cooling:** release of water that cools the underlying substance
- Coating:** formation of solid or gaseous layer that protects material
- Dilution:** dilution of the fuel by formation of non-combustible gas

Mechanism:

1. GAS PHASE

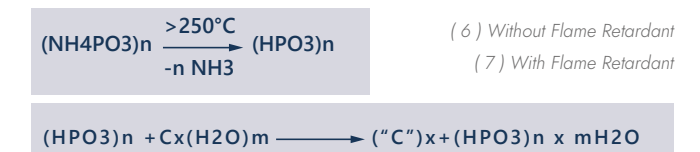
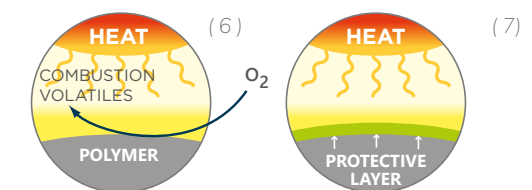
Brominated flame retardants interrupt the radical chain mechanism of the combustion process in the gas phase thanks to generation of lower energy halogen radicals and dilution of flammable gases.



(4) Without Flame Retardant
(5) With Halogenated Flame Retardant

2. CHAR

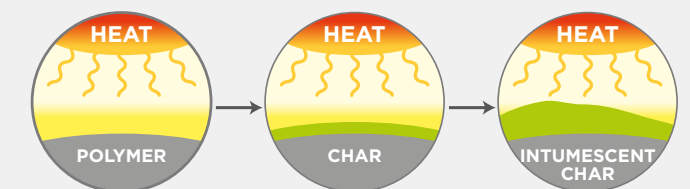
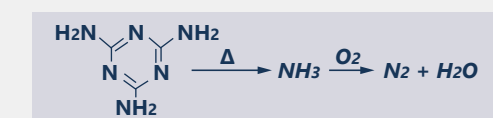
Flame retardancy is obtained by formation of a solid charred surface layer of phosphorus compounds. The flame retardant is transformed into phosphoric acid by thermal degradation in the condensed phase, and water is released from the substrate in the solid phase developing protective layer: char.



3. INTUMESCENT

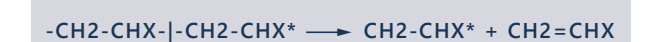
Intumescent mechanism provides efficient flame retardancy to polymers who do not contain heteroatoms in the chain. Char layer is not sufficient and a foaming agent is required to obtain a voluminous protective layer. Intumescent flame retardant systems consist of:

- Carbon agent
- Acid based on phosphorous
- Compound containing nitrogen



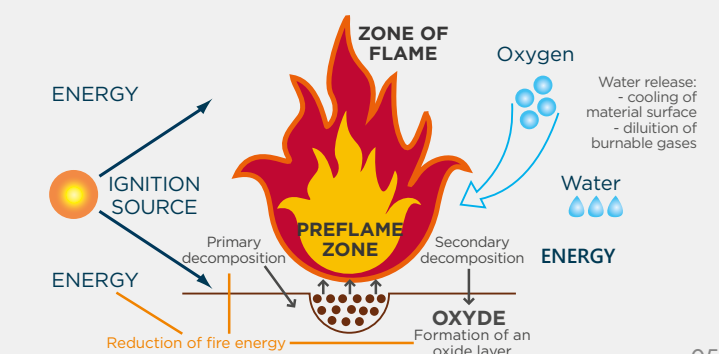
4. DRIPPING

Flame retardant decomposes into radical species that cut polymers chains and cause dripping of the polymer. The reaction is endothermic.



5. WATER VAPOUR

Flame retardancy is provided by water release. Endothermic reaction cools material surface and dilute burnable gases with formation of a charred layer.

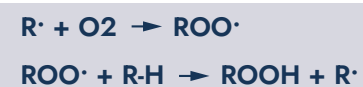


Antioxidants

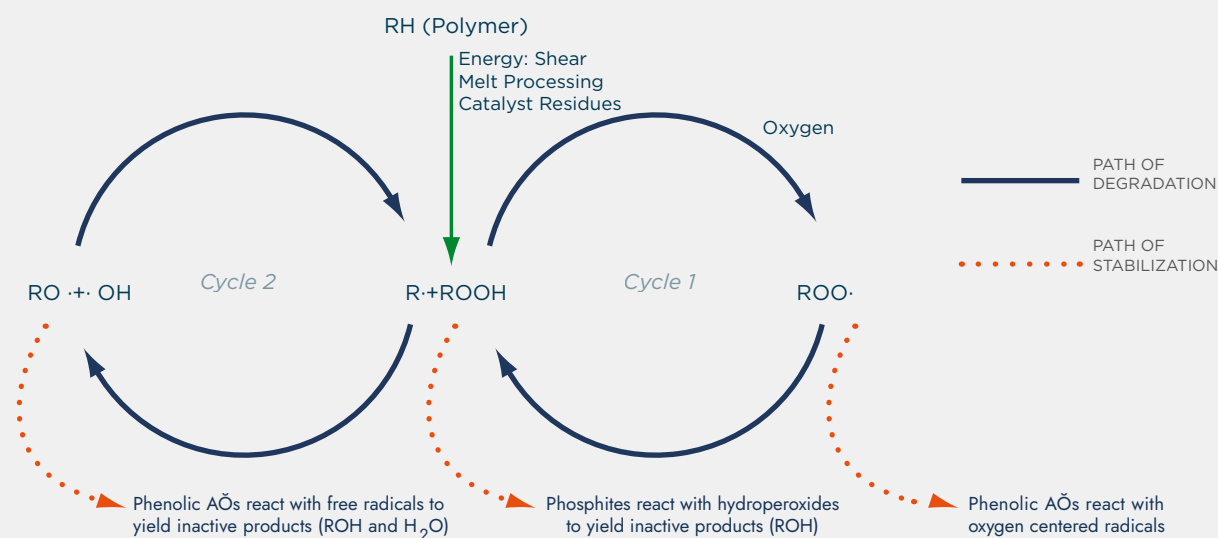
ANTIOXIDANTS CYCLE

Weathering of polymers is caused by absorption of UV lights, which results in radical initiated auto-oxidation by contact with atmospheric oxygen and generation of free radicals such as R^\cdot , RO^\cdot , ROO^\cdot , HO^\cdot .

These free radicals further react with atmospheric oxygen to produce more and more free radicals.

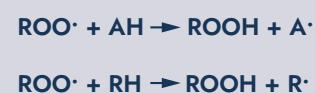


Antioxidants inhibit the formation of free radicals, enhancing the stability of polymers against light and heat, by termination of the oxidation reactions that involve polymers:



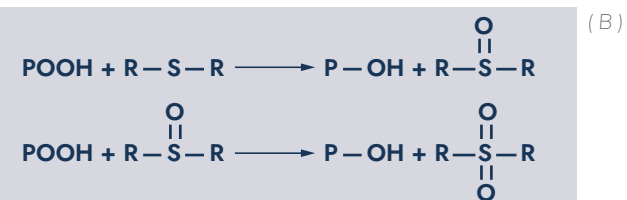
PRIMARY

Hydrogen-donating antioxidants (AH), such as hindered phenols, quinone based compounds, piperidinoxyl based compounds and secondary aromatic amines, inhibit oxidation by competing with organic substrate (RH) for peroxy radicals, thereby interfering with the chain propagation step.



SECONDARY

Secondary antioxidants based on phosphites (A) or sulphides like dialkyldithiocarbamates, dialkyldithiophosphates and thiobisphenolates (B) prevent peroxide radicals formation as they decompose hydroperoxides.



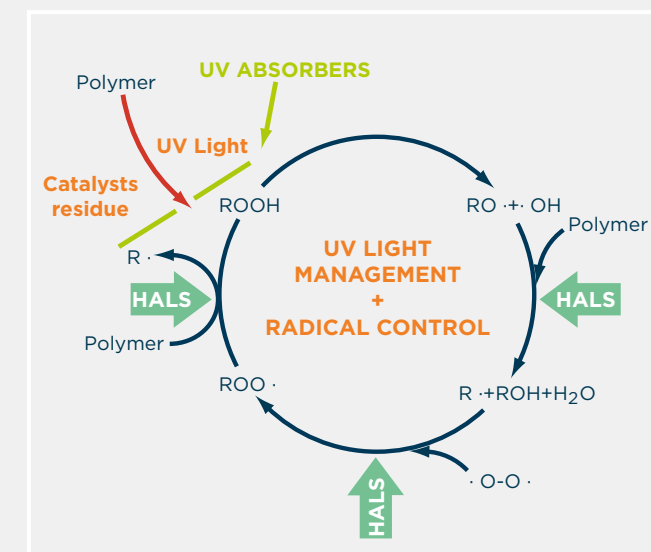
Uv Absorbers / Light Stabilizers

UV STABILIZERS

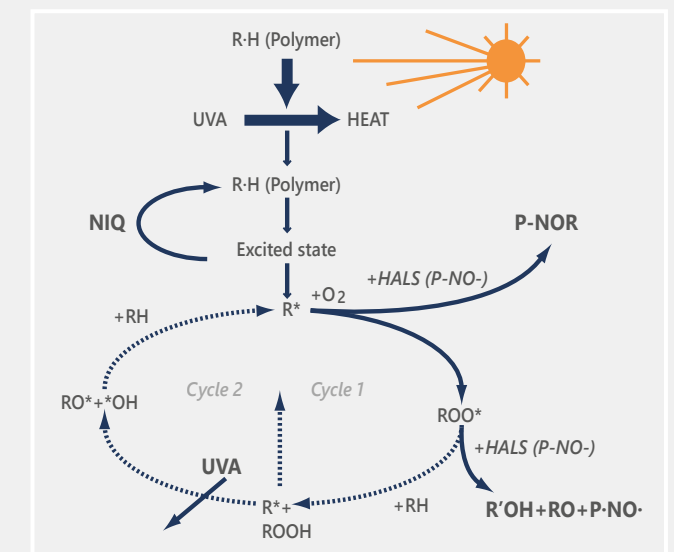
UV stabilizers are chemical compounds capable of interfering with the physical and chemical processes of light-induced degradation.

They prevent the formation of free radicals that can be generated by interaction of UV radiation with tertiary carbon bonds in polymer chain structures or with aromatic rings.

They can act in different ways:



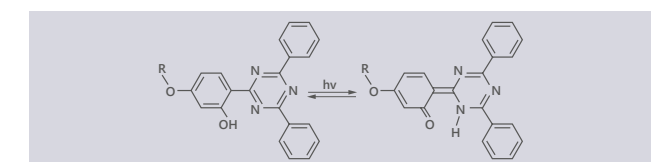
(1) Photo-oxidation



(2) Light stabilizer mechanism

UV ABSORBERS

UV absorbers act by absorbing the UV radiation and dissipating the resulting energy in a non-photosensitizing way, such as heat, by intramolecular proton transfer.

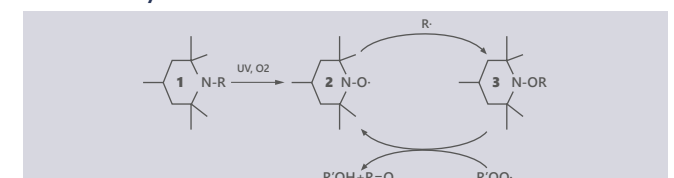


QUENCHERS

They are energy transfer agents, they deactivate excited states of chromophoric groups in polymers before bond scission can occur, by energy transfer process or chemical and/or physical deactivation.

HINDERED AMINES

They are derivatives of 2,2,6,6-tetramethylpiperidine and they slow down the photochemically initiated degradation reaction through a cyclic process. They scavenge radicals by the formation of nitroxyl radicals ($R-O^\cdot$) that combine with free radicals in polymers generating aminoether molecules. These will then react with peroxides regenerating the nitroxyl radicals.

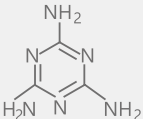
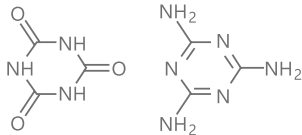
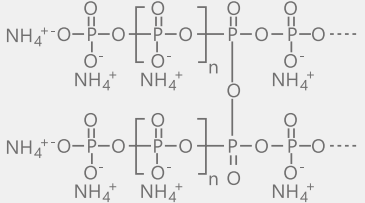
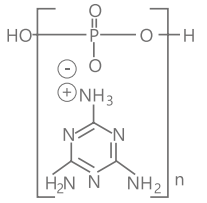
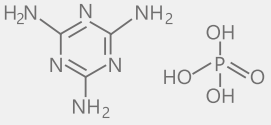
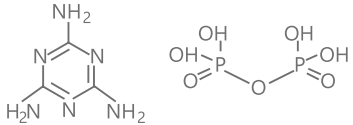
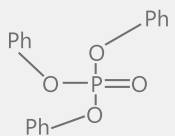
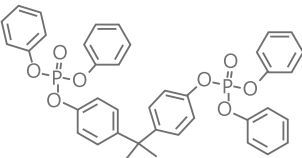


Plastic Additives

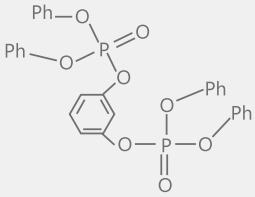
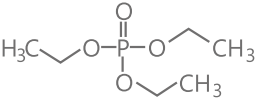
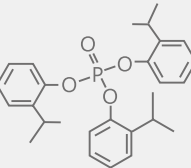
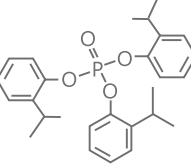
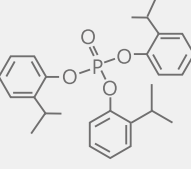
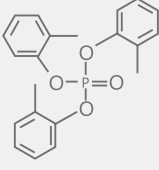
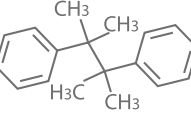
THE RANGE



Halogen Free Flame Retardants

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
GC MELAMMINA Melamine CAS n. 108-78-1 PHYSICAL FORM: GR, PW		Polyolefins - Polyurethanes. PP, PE, PU, Textile, Coatings.	M.P./S.R Viscosity 354°C
GC MC series & GC MCA granular Melamine Cyanurate CAS n. 37640-57-6 PHYSICAL FORM: GR, PW		Engineering Thermoplastics. PA, Polyesters.	M.P./S.R Viscosity Decomposition T. > 350°C ----- TGA: 1% @ 305°C 2% @ 320°C 5% @ 340°C
GC APP II Ammonium Polyphosphate CAS n. 68333-79-9 PHYSICAL FORM: GR, PW		Polyolefins- Polyurethanes - Engineering Thermoplastics. PA, PP, PU, Polyesters.	M.P./S.R Viscosity Decomposition T. > 275°C
GC MPP Melamine Polyphosphate CAS n. 218768-84-4 PHYSICAL FORM: GR,PW		Polyurethanes - Engineering Thermoplastics. PA, Epoxy, PU, Polyesters.	M.P./S.R Viscosity Decomposition T. > 300°C ----- TGA: 1% @ 355°C 2% @ 370°C 5% @ 385°C
GC MP Melamine Phosphate CAS n. 41583-09-9 PHYSICAL FORM: GR, PW		Polyolefins- Polyurethanes - Engineering Thermoplastics. PA, Epoxy, PU, PP, Polyesters.	M.P./S.R Viscosity Decomposition T. > 300°C ----- TGA: 1% @ 215°C 2% @ 235°C 5% @ 260°C
GC MPF Melamine Pyrophosphate CAS n. 15541-60-3 PHYSICAL FORM: GR, PW		Polyolefins- Polyurethanes - Engineering Thermoplastics. PA, Epoxy Resins, PU, Polyesters, PP.	M.P./S.R Viscosity Decomposition T. > 300°C ----- TGA: 0,5% @ 300°C 5% @ 350°C
GC TPP Triphenyl Phosphate CAS n. 115-86-6 PHYSICAL FORM: FLAKES, PW		Engineering Thermoplastics. PC/ABS, PPO/HIPS, PVC, RUBBER, Epoxy Resin, Phenolic Resin, Acetalic Resin.	M.P./S.R Viscosity 47,5-49,5°C ----- TGA: 1% @ 198°C 5% @ 231°C 10% @ 247°C
GC BDP Bisphenol A bis(diphenylphosphate) CAS n. 5945-33-5 PHYSICAL FORM: LIQ		Polyurethanes - Engineering Thermoplastics. PC, PC/ABS, ABS, SAN, Polyesters, PPO, PU.	M.P./S.R Viscosity 120 cps a 80°C ----- TGA: 1% @ 255°C 5% @ 372°C 10% @ 398°C

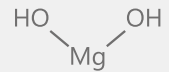
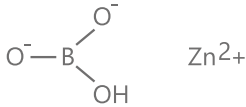
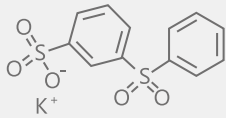
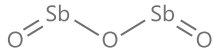
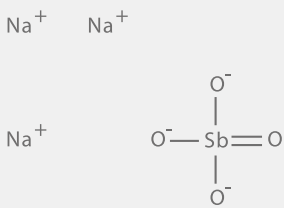
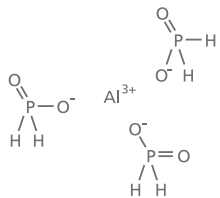
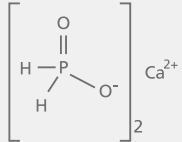
Halogen Free Flame Retardants

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
GC RDP Reaction mass of 3-[[diphenoxyphosphoryl]oxy]phenyl triphenyl 1,3-phenylene bis (phosphate) and tetraphenyl 1,3-phenylene bis(phosphate) EC n. 701-337-2 PHYSICAL FORM: LIQ		Polyurethanes - Engineering Thermoplastics. PC/ABS, PPO/HIPS, TPU, PU.	M.P./S.R Viscosity 500-800 cps a 80°C ----- TGA: 2% @ 290°C 5% @ 325°C 10% @ 360°C
GC TEP Triethyl Phosphate CAS n. 78-40-0 PHYSICAL FORM: LIQ		Polyurethanes. PU.	M.P./S.R Viscosity 5 mPa.s5 mPa.s
GC FOS 65 Isopropylated Triaryl phosphate CAS n. 68937-41-7 PHYSICAL FORM: LIQ		Polyolefins - Engineering Thermoplastics. PVC, Phenolic, PU, Epoxy resins.	M.P./S.R Viscosity 64-76 cps ----- TGA: 1% @ 197°C 5% @ 217°C 10% @ 235°C
GC FOS 35 Isopropylated Triaryl phosphate CAS n. 68937-41-7 PHYSICAL FORM: LIQ		Polyurethanes - PVC - Epoxy resins - Vinyl polymers.	M.P./S.R Viscosity 42-50 cps
GC FOS 95 Isopropylated Triaryl phosphate CAS n. 68937-41-7 PHYSICAL FORM: LIQ		Polyurethanes - PVC - Epoxy resins - Vinyl polymers.	M.P./S.R Viscosity 95-114 cps
GC FOS 95 PLUS Isodecyl Diphenyl Phosphate NEW PHYSICAL FORM: LIQ		PC, PVC, PVA, CA, CAB, CN, EC, epoxy, phenolic resins, acrylic resins.	M.P./S.R Viscosity Viscosity @25°C ----- 20 - 30 mPa.s
GC TCP Tricresyl Phosphate CAS n. 1330-78-5 PHYSICAL FORM: LIQ		Polyolefins. PE, PVC, Rubber, Wire&cables.	M.P./S.R Viscosity 55-70 mPa.s
GC DICUMENE 90 Dicumene CAS n. 1889-67-4 PHYSICAL FORM: PW		Polyolefins - Engineering Thermoplastics. FR synergist.	M.P./S.R Viscosity 100-110°C

Halogen Free Flame Retardants

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
NOFIA HM1100, HM9000, HM7000 & HM5000 Polyphosphonate CAS n. 68664-06-02 PHYSICAL FORM: GR, PW		PET - PTT - PBT - PLA - PC - TPU - TPEE.	M.P./S.R Viscosity Decomposition T. > 350°C
NOFIA CO6000 Polyphosphonate-co-carbonate CAS n. 77226-90-5 PHYSICAL FORM: GR		PC - PC blends.	
NOFIA OL1000 Phosphonate Oligomer CAS n. 68664-06-02 PHYSICAL FORM: GR		UP - Epoxy - Polyurethane and Polyurea.	
GC DOPO 9,10-Dihydro-9-oxa-10-phosphaphenanthrene 10-oxide CAS n. 35948-25-5 PHYSICAL FORM: PW, FLAKES		Engineering Thermoplastics. Epoxy, PU, PA, Polyesters. Reactive Flame Retardant.	M.P./S.R Viscosity 117-120°C
GC DOPO HQ 10-(2,5-Dihydroxyphenyl)-10H-9-oxa-10-phospha-phenantfbrene-10-oxide CAS n. 99208-50-1 PHYSICAL FORM: PW		Epoxy resins, Engineering polymers. Reactive Flame Retardant.	M.P./S.R Viscosity 245°C
GC RE DDP 2-(10-oxo-10H-9-oxa-10-phosphaphenanthren-10-ylmethyl)succinic acid CAS n. 63562-33-4 PHYSICAL FORM: PW		PU - PA - Polyesters. Reactive phosphorous flame retardant for PU, PA, Polyesters.	M.P./S.R Viscosity 197°C
GC P LINK 3-(hydroxyphenylphosphinyl)propanoic acid CAS n. 14657-64-8 PHYSICAL FORM: PW		PE - PA. Reactive phosphorous flame retardants for PE, PA and Polyesters polymerization.	M.P./S.R Viscosity 158-162°C
GC HFR 693 Hexaphenoxycyclotriphosphazene CAS n. 1184-10-7 PHYSICAL FORM: PW		PC - PC/ABS - Polyesters. HF polymeric system for PC, PC/ABS and Polyesters.	M.P./S.R Viscosity 110-117°C

Halogen Free Flame Retardants

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
GC MAGNESIO IDROSSIDO Magnesium Hydroxide CAS n. 1309-42-8 PHYSICAL FORM: GR, PW, MB		PP - PE - PS - PA - PET.	M.P./S.R Viscosity 350°C ----- TGA: 1% @ 362°C 5% @ 388°C 10% @ 404°C
GC ZnBO3 - 4 GC ZnBO3 - 8 Zinc Borate CAS n. 138265-88-0 PHYSICAL FORM: PW, COMPACTED		Polyolefins - Polyurethanes-Engineering Thermoplastics. Synergist suitable for PVC, Polyolefins, PA, Rubber. GC ZnBO3 - 8: especially suitable for films.	M.P./S.R Viscosity 890°C ----- TGA: 1% @ 282°C 5% @ 388°C 10% @ 425°C
GC KSS Reaction mass of dipotassium 3,3'-sulphonylbis(benzenesulphonate) and potassium 3-(phenylsulphonyl) benzene sulphonate EC n. 915-932-1 PHYSICAL FORM: PW		Engineering Thermoplastics. Flame retardant suitable for transparent PC at very low dosage.	TGA: 1% @ 425°C 5% @ 452°C 10% @ 468°C
GC TRIOSSIDO DI ANTIMONIO Antimony Trioxide CAS n. 1309-64-4 PHYSICAL FORM: PW		Polyolefins - Polyurethanes - Engineering Thermoplastics. Synergist for brominated flame retardant suitable for plastics and textiles.	M.P./S.R Viscosity 656°C
GC NATO Sodium Antimonate CAS n. 15432-85-6 PHYSICAL FORM: PW		Synergist for brominated flame retardant, low acidity, indicated for PC and Polyesters.	M.P./S.R Viscosity Melting point: 600°C 100 kPa
GC FOS AL Aluminium phosphinate CAS n. 7784-22-7 PHYSICAL FORM: PW		Engineering polymers - TPU - PU - PBT - PET - TPE - PA + GF - Polyolefins. Non-halogenated flame retardant based on inorganic hypophosphite.	
GC FOSCA Calcium phosphinate CAS n. 7789-79-9 PHYSICAL FORM: PW		Polyolefins - Engineering polymers. Active phosphorous flame retardants.	

Flame Retardants - New Solutions

PRODUCT NAME	DESCRIPTION	M.P.
GC AT ZERO PA NEW PHYSICAL FORM: PW	GC AT ZERO PA is a mixture of phosphorus, nitrogen and Zn/Al components, developed to replace Antimony Trioxide in PA UL94 V0 compounds.	Melting point Min. 158°C
GC AT ZERO PVC NEW PHYSICAL FORM: PW	GC AT ZERO PVC is a mixture of phosphorus, nitrogen and Zn/Al components, developed to replace antimony trioxide in PVC compound and spreads.	Melting point Min. 158°C
GC AT ZERO ABS Series NEW PHYSICAL FORM: PW	GC AT ZERO ABS is a mixture of phosphorus, nitrogen and Zn/Al components, developed to replace antimony trioxide in ABS UL94 V0 compounds.	Melting point Min. 158°C
GC PP FLAM V0 CHAR NEW PHYSICAL FORM: PW	GC PP FLAM V0 CHAR is a cost effective halogen free intumescent flame retardant blend, based on ammonium polyphosphate. GC PP FLAM V0 CHAR is formulated together with thermal stabilizers and compatibilizers, to give very good dispersion and thermal stability.	Melting point Melt temperature: 135°C
GC PP FLAM V0 NEW PHYSICAL FORM: PW	GC PP FLAM V0 is a cost effective halogen free intumescent flame retardant blend, based on ammonium polyphosphate. GC PP FLAME V0 is formulated together with thermal stabilizers and compatibilizers, to give very good dispersion and thermal stability.	Melting point Melt temperature: 135°C
GC FLAME PP V0 PIÚ NEW PHYSICAL FORM: PW	It is a cost effective halogen free intumescent flame retardant blend, based on ammonium polyphosphate. The formulation is a combination of N/P molecules, well balanced, in order to obtain a perfect intumescent mechanism. GC PP FLAM V0 PLUS has been formulated with synergist to reduce the final loading level.	Melting point Melt temperature: 135°C
GC HFFR 11G NEW PHYSICAL FORM: GR	This additive offers excellent compatibility with the polymer matrix, strong resistance to extraction, and contributes to improved light and thermal stability.	Melting point Melting range: 108 - 123°C

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

PRODUCT NAME	APPLICATIONS	DESCRIPTION
GC DRIPP HF 70 Low Halogen Content PHYSICAL FORM: PW, MB	PP V2.	GC DRIPP HF 70 is very low halogen formulation for PP V2. Very low dosage, Br content in the compound can respect 900ppm limit. Also in masterbatch.
GC PP HF 200 Intumescent System HALOGEN FREE PHYSICAL FORM: PW, MB	PP VO - PE - TPR - TPU. 	Efficient halogen free intumescent blend. Reduced loading level, good dispersion.
GC PP HF 1000 Intumescent System HALOGEN FREE PHYSICAL FORM: PW	PP VO - PE - TRP - TPU. 	Efficient intumescent blend based on phosphorus and nitrogen.
GC PW VO PAP 12 PHYSICAL FORM: PW, COMPACTED	PA. 	GC PW VO PAP12 is a halogen free flame retardant formulation based on light phosphorous working with different fire extinguishing mechanisms together, in order to provide the best performance/loading level results. GC PW VO PAP 12 does not affect colorability and has excellent temperature resistance. It is suitable for PA 6 and PA 66. Recommended dosage is 15-20%.
GC PW VO PAP 14 PHYSICAL FORM: PW, COMPACTED	PA. 	GC PW VO PAP14 is a halogen free flame retardant formulation based on light phosphorous working with different fire extinguishing mechanisms together, in order to provide the best performance /loading level results. GC PW VO PAP 14 does not affect colorability and has excellent temperature resistance. It is suitable for PA 6 and PA 66. Recommended dosage is 15-20%.
GC PW VO PAP 40 ST PHYSICAL FORM: PW	PA. 	GC PW VO PAP40 ST is a halogen free flame retardant formulation based on light phosphorous, working with different fire extinguishing mechanisms together, in order to provide the best performance/loading level results. GC PW VO PAP 40 ST does not affect colorability and has excellent temperature resistance. GC PW VO PAP 40 ST is suitable for PA 6 and PA 66. GC PW VO PAP 40 ST is the formulation that allows to have the best performance of all PAP solutions.
ISODRIPP PA MC25 45 HALOGEN FREE PHYSICAL FORM: GR, PW, MB, COMPACTED	PA. 	Concentrated masterbatch of melamine cyanurate on PA base.
MB PA P RED 50 Red phosphorous masterbatch PHYSICAL FORM: MB	Engineering Thermoplastics. PA, Polyesters. Red phosphorous masterbatch for PA.	CHEMICAL FORMULA: 

PRODUCT NAME	APPLICATIONS	DESCRIPTION
MB PP P RED 60 Red phosphorous masterbatch PHYSICAL FORM: MB	Polyolefins. PP, PE. Red phosphorous masterbatch for PP.	CHEMICAL FORMULA: 
MB PE P RED 70 Red phosphorous masterbatch PHYSICAL FORM: MB	Polyolefins. PP, PE. Red phosphorous masterbatch for PE.	CHEMICAL FORMULA: 
GC HFT PC 90 HALOGEN FREE PHYSICAL FORM: PW	PC VO Transparent. 	Halogen free blend based on new P3 products for low thickness PC, keeping transparency below in 1,6 mm.
GC ABS FLAM VO HALOGEN FREE PHYSICAL FORM: GR, PW, MB, COMPACTED	ABS VO. 	Halogen Free blend for ABS, appication ABS.
GC PBT FLAM VO HALOGEN FREE PHYSICAL FORM: PW	PBT, PBT VO. 	Halogen free blend for polyesters. It keeps mechanical properties for a long time.
MB PE TRIX 80 / 90 PHYSICAL FORM: MB	Polyolefins.	Masterbatch containing antimony trioxide, also on EVA base.
GC PAPA LINK  PHYSICAL FORM: PW	Unfilled polyamide.	Reactive halogen free flame retardant for unfilled polyamide. Its formulation is perfectly balanced to reach UL 94 VO at all thickness. It is recommended to replace melamine-based flame retardant.
GC PAP LINK 12 GC PAP LINK 14 GC PAP LINK 40 PHYSICAL FORM: PW, GR and NDB	30% glass fiber reinforced polyamide.	Reactive halogen free flame retardant for reinforced polyamide. Its formulation is perfectly balanced to reach UL 94 VO at all thickness.

Brominated Flame Retardants

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
GC DPE 81 Decabromodiphenyl ethane1 CAS n. 84852-53-9 PHYSICAL FORM: GR, PW		Polyolefins - Engineering Thermoplastics. High efficiency, dioxine free, multi-function for PE, PP, HIPS, PA, PBT, EPOXY, PHE.	M.P./S.R Viscosity 350°C ----- TGA: 1% @ 332°C 5% @ 365°C 10% @ 378°C
GC BDDP 68 Tetrabromobisphenol A bis (2,3-dibromopropyl ether) CAS n. 21850-44-2 PHYSICAL FORM: GR, PW		Polyolefins - Engineering Thermoplastics. Good thermal stability, high efficiency PP, HIPS, ABS.	M.P./S.R Viscosity 113-117°C ----- TGA: 1% @ 299°C 5% @ 312°C 10% @ 321°C
GC BT 67 Ethylenbistetrabromo Phthalimide CAS n. 32588-76-4 PHYSICAL FORM: GR, PW		Polyolefins - Engineering Thermoplastics. HIPS, PBT, PET, TPR, good thermal stability, UV stability, no blooming, excellent wet electrical properties.	M.P./S.R Viscosity 460°C ----- TGA: 1% @ 336 °C 5% @ 417°C 10% @ 430°C
GC PHT Tetrabromophtalic Anhydride CAS n. 632-79-1 PHYSICAL FORM: PW		Polyurethanes - Engineering Thermoplastics. Rigid PU, Epoxy, PS, PHE, high fr efficiency.	M.P./S.R Viscosity 280°C ----- TGA: 1% @ 202 °C 5% @ 228°C 10% @ 240°C
GC FR TRI 70 Tris(tribromoneopentyl)phosphate CAS n. 19186-97-1 PHYSICAL FORM: GR, PW		Polyolefins - Engineering Thermoplastics. PP, HIPS, ABS, XPS, alloy, UV and light stability, non blooming.	M.P./S.R Viscosity 181°C ----- TGA: 1% @ 332°C 5% @ 365°C 10% @ 378°C
GC B 52 Phenoxy-terminated carbonate oligomer of tetrabisohenol A CAS n. 94334-64-2 PHYSICAL FORM: PW		Engineering Thermoplastics. PET, PBT, PC, ABS, PC / ABS, thermal and UV stability, excellent electrical properties.	M.P./S.R Viscosity 190-210°C ----- TGA: 1% @ 376°C 5% @ 412°C 10% @ 426°C
GC B 58 Tribromylphenyl terminated carbonate oligomer of tetrabromobisphenol A CAS n. 71342-77-3 PHYSICAL FORM: PW		Engineering Thermoplastics. PET, PBT, PC, ABS, PC / ABS, thermal and UV stability, excellent electrical properties.	M.P./S.R Viscosity 210-230°C ----- TGA: 1% @ 356°C 5% @ 407°C 10% @ 425°C
GC FR245 66 2,4,6-tris(2,4,6-tribromophenoxy) -1,3,5-triazine CAS n. 25713-60-4 PHYSICAL FORM: GR, PW		Engineering Thermoplastics. HIPS, ABS, good flow, good impact, good UV and thermal stability, non-blooming.	M.P./S.R Viscosity 230°C ----- TGA: 1% @ 351°C 5% @ 385°C 10% @ 400°C

Brominated Flame Retardants

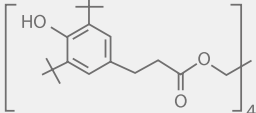
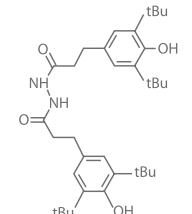
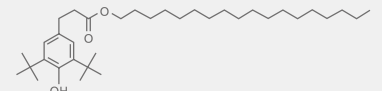
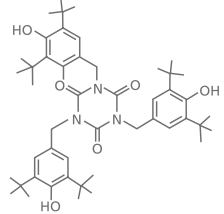
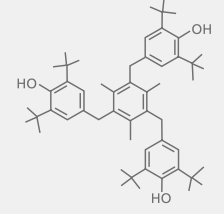
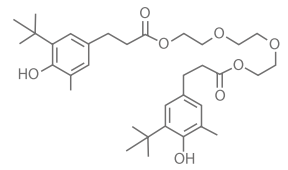
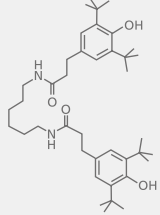
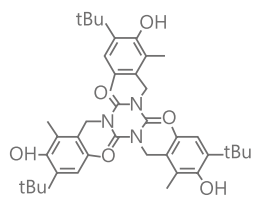
PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
GC BPS 67, GC BPS 310 Brominated polystyrene CAS n. 88497-56-7 PHYSICAL FORM: GR		Engineering Thermoplastics. PA, PBT, PET, good CTI, good thermal stability, non-blooming.	M.P./S.R Viscosity 265-320°C ----- TGA: 2% @ 340°C 5% @ 375°C 10% @ 384°C
GC BDMP 66 SF Reaction mass of 1,1'-(isopropylidene)bis[3,5-dibromo-4-(2,3-dibromo-2-methylpropoxy)benzene] and 1,3-dibromo-2-(2,3-dibromo-2-methylpropoxy)-5-[2-[3,5-dibromo-4-(2,3,3-tribromo-2-methylpropoxy)phenyl]propan-2-yl]benzene EC n. 944-461-4 PHYSICAL FORM: PW		EPS - XPS. Good FR efficiency.	M.P./S.R Viscosity 113°C -----
GC PHT DILO Reaction products of tetrabromophthalic anhydride with 2,2'-oxydiethanol and methyloxirane CAS n. 77098-07-8 PHYSICAL FORM: LIQ		Rigid Polyurethane Foam, Urethane Elastomers and Coatings with high bromine content.	M.P./S.R Viscosity Viscosity @25°C, CP DILO HV: 70000-120000 DILO MV: 30000-70000 DILO LV: 15000 – 30000
GC BDDP 65 S Bis[3,5-dibromo-4-(2,3-dibromopropoxy)phenyl] sulphone CAS n. 42757-55-1 PHYSICAL FORM: PW		PP - PE - PS - ABS - Rubber. Flame retardant with white color, outstanding thermal and UV stability, non blooming, excellent wet electrical properties.	M.P./S.R Viscosity 110°C ----- TGA: 2% @ 262°C 5% @ 295°C 10% @ 306°C
GC TBBPA 59 Tetrabromobisphenol A CAS n. 79-94-7 PHYSICAL FORM: PW		Engineering Thermoplastics. Epoxy resin, good flow and compatibility, no blooming.	M.P./S.R Viscosity 180°C ----- TGA: 1% @ 227°C 5% @ 254°C 10% @ 270°C
GC D3BO 65 Tris (2,3-dibromopropyl) isocyanurate CAS n. 52434-90-9 PHYSICAL FORM: PW		Polyolefins - Engineering Thermoplastics. PP, HIPS, ABS. Good thermal stability, high efficiency.	M.P./S.R Viscosity 105-115°C ----- TGA: 1% @ 110°C 5% @ 172°C 10% @ 208°C
GC MHBR Melamine Hydrobromide CAS n. 29305-12-2 PHYSICAL FORM: PW		Effective flame retardant for PP V2 with low halogen content requirements.	
GC LH TIME PLUS PHYSICAL FORM: PW - Also available: compacted		GC LH TIME PLUS is a flame retardant formulation, with low content of bromine, developed for polystyrene foams application. Recommended dosage for GC LH TIME PLUS is 1-5%. These dosages allow to obtain a compound with bromine content lower than 0,2%.	

Halogenated Flame Retardant Formulations

PRODUCT NAME	APPLICATIONS	DESCRIPTION
MB SAN / EVA DETO 41	SAN - ABS - PC/ABS V0.	MB SAN DETO 41 is a masterbatch in a matrix of SAN or EVA that is heat-stable and synergized with a high content of bromine, making it the perfect candidate for processing at high temperature and stress conditions.
PHYSICAL FORM: MB		
MB PE DPE 90	Polyolefins.	MB PE DPE 90 is an extremely thermal stable, halogenated and synergized masterbatch, with high bromine content, which makes it the perfect candidate for high temperature and stressfull processes.
PHYSICAL FORM: MB		

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

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
GC AOX 1010 Tetrakismethylen(3,5-di-t-butyl-4-hydroxycinnamate) methane		Polyolefins - Engineering Thermoplastics. Phenolic antioxidant, suitable for PA, PO and ABS.	M.P./S.R Viscosity 110-125°C ----- TGA: 5% @ 350°C 10% @ 365°C 25% @ 387°C
GC AOX 1024 1,2-bis (3,5-di-t-butyl-4-hydroxyhydro cinnamoyl) hydrazine		Polyolefins - Engineering Thermoplastics. Phenolic chelating antioxidant and metal deactivator, suitable for PO, PA, Elastomers.	M.P./S.R Viscosity 221-232°C ----- TGA: 5% @ 284°C 10% @ 295°C 50% @ 330°C
GC AOX 1076 Octadecyl 3-(3',5'-di-tert-butyl-4'-hydroxyphenyl)propionate		PVC - Engineering Thermoplastics. Excellent stabilizer for polyolefins, impact modified styrenics, block co-polymers, elastomers, adhesives, PVC and polyurethanes.	M.P./S.R Viscosity 50-55°C ----- TGA: 5% @ 260°C 10% @ 278°C 25% @ 302°C
GC AOX 3114 1,3,5-tris(3,5-di-t-butyl-4-hdroxybenzyl) -1,3,5-triazine-2, 4,6 (1H,3H,5H)-trione		Styrenics and Polyolefins (Fibers). Phenolic antioxidant with low extraction properties. Suitable for fibers and PO.	M.P./S.R Viscosity 218-223°C ----- TGA: 5% @ 305°C 10% @ 319°C 25% @ 337°C
GC AOX 330 1,3,5-Trimethyl-2, 4, 6-tris-(3,5-di-tert-butyl-4-hydroxybenzyl)benzene		Adhesives - Elastomers - PA - Polyolefins - Polyesters - PS - PUR. Phenolic antioxidant with low extraction properties.	M.P./S.R Viscosity 240-250°C ----- TGA: 5% @ 316°C 10% @ 350°C 25% @ 385°C
GC AOX 245 Triethyleneglycol-bis[3-(3+butyl-4-hydroxy -5-methylpheyyl)propionate]		PVC - Polyurethanes - Engineering Thermoplastics. 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.	M.P./S.R Viscosity 76-80°C ----- TGA: 5% @ 297°C 10% @ 312°C 25% @ 332°C
GC AOX 1098 N,N'-hexamethylenebis[3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionamide]		PA - PU - Elastomers. Excellent antioxidant for polyamide fibers, molded articles and films. It can be added prior to polymerization, to protect polymer color properties during manufacturing, shipping or thermal fixation.	M.P./S.R Viscosity 156-162°C ----- TGA: 5% @ 330°C 10% @ 342°C 25% @ 375°C
GC AOX 1790 1,3,5-tris(4-tert-butyl-3-hydroxy-2,6-dimethylbenzyl)-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione		Polyurethanes- Polyolefins - Engineering Thermoplastics. PU, PA, PET, ABS, Polyolefins.	M.P./S.R Viscosity 159-163°C ----- TGA: 1% @ 202°C 5% @ 333°C 10% @ 349°C

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
GC AOX 80 3,9-Bis[1,1-dimethyl-2-[(3-tert-butyl-4-hydroxy-5-methylphenyl)propionyloxy]ethyl]-2,4,8,10-tetraoxaspiro[5.5]undecane CAS n. 90498-90-1 PHYSICAL FORM: GR, PW		Polyolefins - HIPS - ABS - Engineeering plastics - TPU - Unsaturated elastomers.	M.P./S.R Viscosity 115-125°C
GC AOX 1315 Benzenepropanoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-,C13,15- branched and linear alkyl esters CAS n. 171090-93-0 PHYSICAL FORM: LIQ		PU foam.	M.P./S.R Viscosity 56°C
GC AOX 1135 Reaction mass of isomers of: C7-9-alkyl 3-(3,5-di-tert-butyl-4-hydroxyphenyl) propionate CAS n. 144429-84-5 PHYSICAL FORM: LIQ		Polyurethanes. PUR, Polyol.	TGA: 1% @ 160°C 10% @ 200°C
GC AOX 697 2,2'-Oxalyldiamidobis[ethyl-3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate] CAS n. 70331-94-1 PHYSICAL FORM: GR, PW		Polyurethanes - Polyolefins- Engineering Thermoplastics. Phenolic chelating antioxidant, suitable for PO, PU, PA, ABS.	M.P./S.R Viscosity 174-180°C ----- TGA: 10% @ 326°C 20% @ 338°C 30% @ 345°C
GC AOX 5057 Benzenamine, N-phenyl-, reaction products with 2, 4, 4-trymethylpentene CAS n. 68411-46-1 PHYSICAL FORM: PW		Polyolefins - Polyurethanes. EVA, PUR, Polyol.	
GC AOX 1726 4,6-Bis(Dodecylthiomethyl)-o-cresol CAS n. 110675-26-8 PHYSICAL FORM: PW		Polyolefins - Polyurethanes. SBS, SIS, PUR.	M.P./S.R Viscosity 28°C
GC AOX 1520 4,6-Bis[(Octylthio)methyl]-o-cresol CAS n. 110553-27-0 PHYSICAL FORM: LIQ		Elastomers - Silant Adhesives - Lubricants - Polyolefins -Polyurethanes. BR, NBR, SBR, SBS.	M.P./S.R Viscosity About 14°C
GC AOX 565 2,6-Di-tert-butyl-4-(4,6-bis(octylthio)-1,3,5-triazin-2-ylamino)phenol CAS n. 991-84-4 PHYSICAL FORM: GR, PW		Adhesives and Elastomers. Elastomers and styrenic block co-polymers such as SBS and SIS. It also used in adhesives, EPDM, ABS, HIPS, PA and Polyolefins.	M.P./S.R Viscosity 91-96°C ----- TGA: 1% @ 268°C 10% @ 28°C

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
GC AOX DSTP Diocetadecyl 3-3'-thiodipropionate CAS n. 693-36-7 PHYSICAL FORM: GR, PW		Polyolefins - Engineering Thermoplastics. Thiosynergist antioxidant, suitable for PA, PO, PET and ABS.	
GC AOX DLTP Di-lauryl-3,3'-thiodipropionate CAS n. 123-28-4 PHYSICAL FORM: GR, PW		Polyolefins - Engineering Thermoplastics. Thiosynergist antioxidant, suitable for PA, PO, Polyester and ABS.	
GC AOX DTDTP Esterification products of 3,3'-thiodipropionic acid and C13- (branched) alcohols EC n. 955-320-1 PHYSICAL FORM: LIQ	 R=C ₁₂ H ₂₅ = Branched aliphatic chain	ABS PP PE and PVC, excellent compatibility with resin. Liquid secondary stabilizer and antioxidant. GC AOX DTDTP is very efficient used in combination with phenolic antioxidant. GC AOX DTDTP is soluble in most common aprotic organic solvents but it is insoluble in water.	
GC AOX 412S Pentaerythrityl tetrakis (3-laurylthiopropionate) CAS n. 29598-76-3 PHYSICAL FORM: GR, PW		Polyolefins - Engineering Thermoplastics. Thiosynergist antioxidant suitable for ABS, BR, PC, PE, PP, PS.	
GC AOX 168 Tris(2,4-di-tert-butylphenyl)phosphite CAS n. 31570-04-4 PHYSICAL FORM: GR, PW		PVC - Polyolefins - Engineering Thermoplastics. Organophosphite antioxidant suitable for use in numerous polymers such as polyolefins, polycarbonate, ABS and polyesters.	
GC AOX 626 Bis (2,4-Di-T-Butylphenyl) Pentaerythritol Diphosphite CAS n. 26741-53-7 PHYSICAL FORM: GR, PW		PVC - Polyolefins - Engineering Thermoplastics. Phosphite ester antioxidant suitable for PE, PP, PS, PA, PC and ABS.	
GC AOX P PEP-36 Bis(2,6-di-ter-butyl-4-methylphenyl)-pentaerythritol diphosphite CAS n. 80693-00-1 PHYSICAL FORM: PW		ABS - Engineeering plastics Polyolefins - PS. Organophosphite antioxidant with excellent process stability and colour protection at high temperatures.	

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

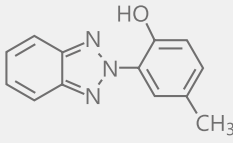
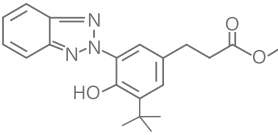
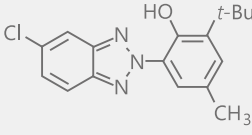
UV Absorbers / Light Stabilizers

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
GC UV-3049 2,2-Dihydroxy-4,4-dimethoxy benzophenone CAS n. 131-54-4 PHYSICAL FORM: PW		Engineering Thermoplastics - Coatings. Efficient UV absorber for polyester film, which it protects from premature damage, particularly under severe exposure conditions.	
GC UV-3050 2,2',4,4'-Tetrahydroxybenzophenone CAS n. 131-55-5 PHYSICAL FORM: PW		Polyurethanes - Engineering Thermoplastics. UV absorber very suitable for applications in which an optimum filter effect up to the boundary with visible light is desired. It is used in linear polyesters or optical articles, PU sysems and Alkyd resins.	
GC CHIM 81 Octabenzone CAS n. 1843-05-6 PHYSICAL FORM: PW, FLAKES		Polyolefines – PVC - Styrenics. Benzophenone based UVA , suitable for PO, PS, PVC, elastomers. Particularly efficient in combination with HALS.	M.P./S.R Viscosity 47-50°C ----- TGA: 5% @ 220°C 10% @233°C 25% @ 255°C
GC UV-1 Ethyl 4-[[[(methylphenylamino)methylene] amino]benzoate CAS n. 57834-33-0 PHYSICAL FORM: LIQ		Polyurethanes. UV absorber especially applicable in PU system such as microcellular and integral skin foam, rigid, semirigid and flexible PU foam. Also applicable in some adhesives, elastomers and sealants.	M.P./S.R Viscosity 2000 – 3000 cps at 25°C
GC UV-3030 2-Propenoic acid, 2-cyano -3,3-diphenyl-, 2,2-bis(2-cyano-1-oxo-3,3- diphenyl-2-propenyl)oxymethyl-1,3-propanediyl ester CAS n. 178671-58-4 PHYSICAL FORM: PW, FLAKES		Engineering Thermoplastics. UV absorber provides completely transparent polycarbonate parts with excellent protection from yellowing, while maintaining the clarity and natural colour of PC, ABS, ASA.	M.P./S.R Viscosity 175-178°C ----- TGA: 1% @ 250°C 2% @ 350°C
GC UV-3638 2,2-(1,4-phenylene)bis((4H-3,1-benzoxazine-4-one) CAS n. 18600-59-4 PHYSICAL FORM: PW		Engineering Thermoplastics. UV absorber for engineering plastics, especially for PET, PBT.	M.P./S.R Viscosity 310°C
GC UV-3039 2-Ethylhexyl 2-cyano-3,3-diphenylpropenoate CAS n. 6197-30-4 PHYSICAL FORM: LIQ		Engineering Thermoplastics. Liquid cyanoacrylate UV absorber particularly suitable for the stabilization of PVC-p and PVC plastisols. It can also be used in PUR, polyesters and PMMA.	
GC UV-80 Ethyl 2-cyano-3-(4-hydroxy-3-methoxyphenyl)prop-2-enoate CAS n. 13373-29-0 PHYSICAL FORM: GR, PW		Polyolefins - Coatings - Engineering thermoplastics. UV absorber with UV absorption at 380-400nm, especially used in sunglasses lenses resins of TAC, PC, PMMA, also used in adhesives, paint and solvent-based systems.	M.P./S.R Viscosity 110-113°C

UV Absorbers / Light Stabilizers

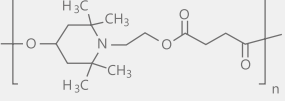
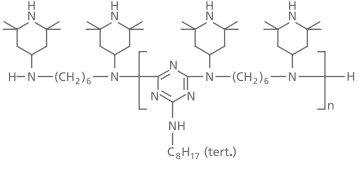
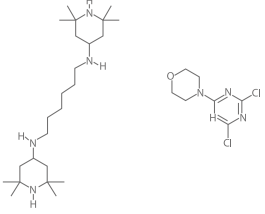
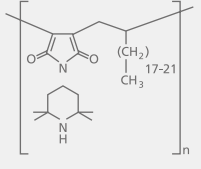
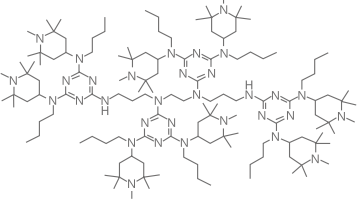
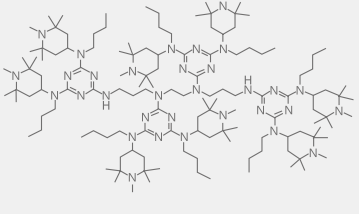
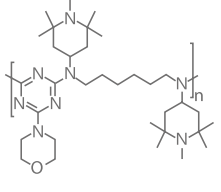
PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
GC UV-1164 2-[4,6-Bis(2,4-dimethylphenyl)- 1,3,5-triazin-2-yl]-5-(octyloxy)phenol CAS n. 2725-22-6 PHYSICAL FORM: GR, PW		Polyolefins Engineering Thermoplastics. Triazine based UVA particularly suitable for olefin polymers in thin and thick applications. Applicable in PA, PET, PBT, ABS, PMMA and other engineering thermoplastics.	M.P./S.R Viscosity 88-92°C
GC UV-1577 2-[(4,6-Diphenyl-1,3,5-triazin-2-yl)- 5-[(hexyl)oxy]-phenol CAS n. 147315-50-2 PHYSICAL FORM: GR, PW		Engineering Thermoplastics. Triazine based UVA particularly suitable for PC and PET. Applicable in polyalkene terephthalates and naphthalates, linear and branched PC, modified polyphenylene ether compounds, and various high performance plastics. Can also be used in polymer blends & alloys, such as PC/ABS, PC/PBT, PPE/IPS, PPE/PA.	M.P./S.R Viscosity 147-151°C
GC UV-1579 2-(2-Hydroxy-4-methoxyphenyl)-4,6-diphenyl-1,3,5-triazine CAS n. 106556-36-9 PHYSICAL FORM: GR, PW		Engineering Thermoplastics. UV absorber mainly used in PET fiber (Terylene). It can both protect PET fiber itself and dyestuff. It is recommended to be used in dip-dyeing of PET fiber, especially in processing of heat treating.	
GC NIQ 84 A 2,2'-Thiobis(4-tert-octylphenolato)-n-butylamine nickel(II) CAS n. 14516-71-3 PHYSICAL FORM: PW		Polyolefins. Nickel Quencher, UV stabilizer developed for outdoor applications in polyolefins.	M.P./S.R Viscosity 245-280°C
GC UV-312 N-(2-ethoxyphenyl)-N'-(2-ethylphenyl) oxamide CAS n. 23949-66-8 PHYSICAL FORM: GR, PW		Polyamides - PVC - PU. Oxanilide UV absorber. Particularly resistant to discoloration induced by metal ions, e.g. from polymerisation catalyst residues, fillers and other ingredients in plastics. Highly effective light stabilizer for a variety of plastics and other organic substrates including Polyamides, PVC and PVC plastisol, unsaturated polyesters.	M.P./S.R Viscosity 125-130°C
GC UV-360 2,2'-Methylenebis(6-(2H-benzotriazol-2-yl)-4-(1,1,3,3-tetramethylbutyl)phenol) CAS n. 103597-45-1 PHYSICAL FORM: PW		Polyolefins - Polyurethanes - Engineering Thermoplastics. UV absorber containing benzotriazole, suitable for POM, PMMA, PC, PA, PBT, PET, Elastomers.	M.P./S.R Viscosity 195°C ----- TGA: 1% @ 333°C 2% @ 350°C
GC UV-329 2-(2H-benzotriazole-2-yl)-4-(1,1,3,3-tetramethylbutyl)phenol CAS n. 3147-75-9 PHYSICAL FORM: GR, PW		Engineering Thermoplastics. UV absorber belonging to the benzotriazole class suitable for a variety of plastics and other organic substrates.	M.P./S.R Viscosity 102-108°C
GC UV-234 2-[2-hydroxy-3,5-di(1,1-dimethylbenzyl)phenyl]-2H-benzotriazole CAS n. 70321-86-7 PHYSICAL FORM: PW		Polyolefins - Engineering Thermoplastics. UV absorber containing benzotriazole, suitable for PS, PET, TPE, PA, POM, PC.	M.P./S.R Viscosity 137-141°C ----- TGA: 1% @ 264°C 2% @ 280°C 5% @ 302°C

UV Absorbers / Light Stabilizers

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
GC UV-P 2-(2H-benzotriazol-2-yl)-p-cresol		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.	M.P./S.R Viscosity 128-132°C ----- TGA: 5% @ 163°C 10% @ 178°C 50% @ 197°C
GC UV-1130 A mixture of: α-3-(3-(2H-benzotriazol-2-yl)-5-tert-butyl-4-hydroxyphenyl) propionyl-ω-hydroxypoly (oxyethylene); α-3-(3-(2H-benzotriazol-2-yl)-5-tert-butyl-4-hydroxyphenyl) propionyl-ω-3-(3-(2H-benzotriazol-2-yl)-5-tert-butyl-4-hydroxyphenyl) propionyloxypoly(oxyethylene)		Coatings. A liquid benzotriazole-based UV absorber for coatings, printing and packaging, adhesives and sealants. It is universally applicable in solvent and water-based coatings including UV-curable systems.	M.P./S.R Viscosity 7400 (+/-2%) mPa.s
GC UV-326 2-(5-Chloro-2H-benzotriazol-2-yl)-6-(1,1-dimethylethyl)-4-methylphenol		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.	M.P./S.R Viscosity 137-142°C ----- TGA: 5% @ 202°C 10% @ 205°C 25% @ 236°C

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

Hals

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
GC UV LS 622 Butanedioic acid, dimethyl ester, polymer with 4-hydroxy -2,2,6,6-tetramethyl-1-piperidine ethanol		Polyolefins - Engineering Thermoplastics. Polymeric hindered amine light stabilizer. Suitable for Polyolefins, unsaturated Polyesters, Acrylics, Styrene, vinyl Polymers and Polyurethanes, including Plastisol, Elastomers, Adhesives and Sealants.	M.P./S.R Viscosity 50-70°C ----- TGA: 0,1% @ 200°C 0,4% @ 250°C 1,1% @ 275°C
GC UV LS 944 Poly [[6-[(1,1,3,3-tetramethylbutyl)amino]-s-triazine-2,4-diyl]-[(2,2,6,6-tetramethyl-4-piperidyl)imino]-hexamethylene-[(2,2,6,6-tetramethyl-4-piperidyl)imino]]		Polyolefins - Polyurethanes - Engineering Thermoplastics. Oligomeric, sterically hindered amine light stabilizer, particularly suitable for the protection of polyolefins, including co-polymers and blends of polypropylene with elastomers. Excellent performance in the stabilization of thin articles such as fibers, tapes and films. Suitable for EVA, POM, PU, PVC, XPE.	M.P./S.R Viscosity 100-135°C ----- TGA: 0,2% @ 275°C 1,0% @ 300°C 3,7% @ 325°C
GC UV HALS 9449 Poly[[6-[(1,1,3,3-tetramethylbutyl)amino]-1,3,5-triazine-2,4-diyl]-[(2,2,6,6-tetramethyl-4-piperidyl)imino]-1,6-hexandiyl[(2,2,6,6-tetramethyl-4-piperidyl)imino]]		Polyolefins. Oligomeric, sterically hindered amine light stabilizer particularly suitable for the protection of polyolefins. It withstand well manufacturing processes at high temperatures.	M.P./S.R Viscosity 275-300°C
GC UV LS 3346 1,6-Hexanediamine, N,N'-bis(2,2,6,6-tetramethyl-4-piperidinyl)-, polymer with 2,4-dichloro-6-(4-morpholinyl)-1,3,5-triazine		Polyolefins - Polyurethanes - Engineering Thermoplastics. Hindered amine light stabilizer with broad compatibility. With both HALS and triazine function group, especially applicable in PE and PP agricultural film, PP fiber, molded polyolefin application. It can be also used in PE/PP film and tape, injection & rotational molding, POM, PA, ASA, PBT, ABS, HIPS, PMMA and PU.	M.P./S.R Viscosity 100-125°C ----- TGA: 10% @ 340°C
GC UV-5050H Alkenes, C20-24 -, polymers with maleic anhydride, reaction products with 2,2,6,6-tetramethyl-4-piperidinamine		Polyolefins - Polyurethanes - Engineering Thermoplastics. Oligomeric sterically hindered amine light stabilizer. It can be used in all Polyolefins. Particularly suitable for water-cooled tape production, films containing PPA and TiO2 and agricultural applications. It can also be used in PVC, PA and TPU as well as in ABS.	
GC UV LS 119 HALS 119-88% CAS n. 106990-43-6 HALS 622-12% CAS n. 65447-77-0 PHYSICAL FORM: GR		PP - PE - blends with EVA - PE - EEA - Polyolefins - Elastomers.	
GC UV LS 119 P N,N',N'',N'''-tetrakis(4,6-bis(butyl-(N-methyl-2,2,6,6-tetramethylpiperidin-4-yl)amino)triazin-2-yl)-4,7-diazadecane-1,10-diamine		Elastomers - Polyolefins. Oligomeric sterically hindered amine light stabilizer. It can be used in all Polyolefins. particularly effective in Polypropylene, Polyethylene, -olefin copolymers, and blends with EPR, ERR, PE, EVA, EAA, EVOH and filled PP.	M.P./S.R Viscosity 115-150°C
GC UV LS 3529 1,6-Hexanediamine, N,N'-bis(2,2,6,6-tetramethyl-4-piperidinyl)-, polymers with morpholine-2,4,6-trichloro-1,3,5-triazine reaction products, methylated		Polyolefins - Engineering Thermoplastics. HALS used in PE and PP agricultural films, artificial turf, injection&rotational molding. PP fiber, POM, PA, PBT, ASA, ABS, HIPS, Rigid & flexible PVC, PMMA and PUR.	M.P./S.R Viscosity 95-120°C ----- TGA: 10% @ 350°C

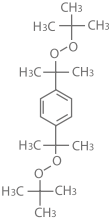
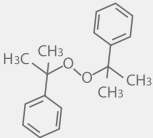
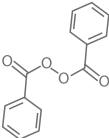
PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
GC UV LS 2020 1,6-Hexanediamine, N,N'-bis(2,2,6,6-tetramethyl-4-piperidiny)-polymer with 2,4,6-trichloro-1,3,5-triazine, reaction products with N-butyl-1-butanamine and N-butyl-2,2,6,6-tetramethyl-4-piperidinamine CAS n. 192268-64-7 PHYSICAL FORM: GR		Polyolefins - cross-linked Polyethylene Olefin copolymers such EVA. Oligomeric sterically hindered amine light stabilizer. Highly effective light stabilizer for Polyolefins , olefin copolymers such as EVA as well as blends of Polypropylene with elastomers. Suitable for in Polyacetals, Polyamides, flexible and rigid PVC, PVC blends, Polyurethanes.	M.P./S.R Viscosity 120-150°C
GC UV LS 770 Bis(2,2,6,6-tetramethyl-4-piperidyl) sebacate CAS n. 52829-07-9 PHYSICAL FORM: GR, PW		Polyolefins - Engineering Thermoplastics. Low Molecular weight hindered amine light stabilizer. Suitable for Polyolefins, Polystyrene and styrenic based copolymers, PVC, Polyurethane but also engineering Plastics.	M.P./S.R Viscosity 81-85°C ----- TGA: 1% @ 203°C 5% @ 221°C 10% @ 242°C
GC UV-4050H N,N'-Bis(2,2,6,6-tetramethyl-4-piperidyl)-N,N'-diformylhexamethylenediamine CAS n. 124172-53-8 PHYSICAL FORM: GR		Polyolefins - Engineering Thermoplastics. Light stabilizer used in polyolefins, ABS and nylons. It is highly compatible with pigments.	M.P./S.R Viscosity 155-158°C
GC UV LS 292 Reaction mass of bis(1,2,2,6,6-pentamethyl-4-piperidyl) sebacate and methyl 1,2,2,6,6-pentamethyl-4-piperidyl sebacate CAS n. 1065336-91-5 PHYSICAL FORM: LIQ		Elastomers - Sealant/Adhesives - Coatings. Low Molecular weight hindered amine light stabilizer. Applicable in wide range of polymers and applications : Polyurethanes, Sealants, Adhesives, Elastomers, unsaturated Polyesters, Acrylics, vinyl polymers (PVB,PVC), Styrene homo and copolymers, liquid color concentrates, and other organic substrates.	
GC UV LS 123 Bis-(1-octyloxy-2,2,6,6-tetramethyl-4-piperidiny)l sebacate CAS n. 129757-67-1 PHYSICAL FORM: LIQ		Coatings. HALS, especially used in automotive, industrial coatings/decorative paints and wood stains or varnishes.	

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

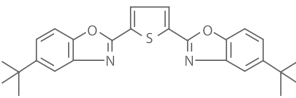
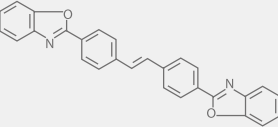
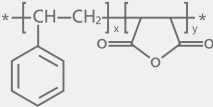
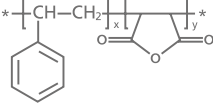
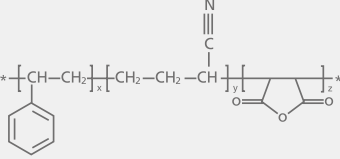
PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
GC STEARATO DI BARIO Fatty acids, C16-18, barium salts CAS n. 91002-07-2 PHYSICAL FORM: PW, FLAKES		Drying lubricants and dusting agents for Rubbers.	
GC STEARATO DI ZINCO Fatty acids, C16-18, zinc salts CAS n. 91051-01-3 PHYSICAL FORM: 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.	M.P./S.R Viscosity 120°C
GC STEARATO DI CALCIO Fatty acids, C16-18, calcium salts CAS n. 85251-71-4 PHYSICAL FORM: 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.	M.P./S.R Viscosity 140-160°C
GC STEARATO DI MAGNESIO Stearic acid, magnesium salts PHYSICAL FORM: 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.	M.P./S.R Viscosity 130-150°C
GC GMS 40 Stearic acid, monoester with glycerol (Conc. ≥40%) PHYSICAL FORM: PEARLS, FLAKES		Plasticizer.	M.P./S.R Viscosity 60°C
GC GMS 90 Stearic acid, monoester with glycerol (Conc. ≥90%) CAS n. 123-94-4 PHYSICAL FORM: MICROGRANULES		Plasticizer.	M.P./S.R Viscosity 66,7°C
GC DGM 95 Dystilled Glycerol Monostearate CAS n. 123-94-4 PHYSICAL FORM: 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.	
GC NA ABS (Sodio Alcan solfonato) Sulfonic acids, C14-17-sec-alkane, sodium salts CAS n. 97489-15-1 PHYSICAL FORM: GR	$\text{H}_3\text{C}-(\text{CH}_2)_m-\text{CH}(\text{SO}_3\text{Na})-(\text{CH}_2)_n-\text{CH}_3$ m + n = 11 - 4 Average chain length: C15,2	Anionic surfactants for the detergent, chemical-technical and cosmetic industry with excellent wetting behavior.	M.P./S.R Viscosity > 350°C

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
GC ULTRASTAB PHYSICAL FORM: MB		PO, PE, PP. GC ULTRASTAB is a masterbatch containing a very strong stabilization package, especially studied for use during recycling of post-consume polymers. It can inactivate the decomposition products such as radicals derived for example from flame retardants. It also contains an additive that helps to reduce frictions.	
GC ULTRASTAB ETP PHYSICAL FORM: MB		PBT, PET, PC, Engineering Polymers. GC ULTRASTAB ETP is a masterbatch containing a very strong stabilization package, especially studied for use during recycling of post-consume polymers. It can inactivate the decomposition products such as radicals derived for example from flame retardants. It also contains an additive that helps to reduce frictions.	
GC STANNATO DI ZINCO PHYSICAL FORM: PW, MB, COMPACTED	ZnSnO3	The product is used in a number of plastic, rubber and paint applications and it can completely replace Antimony Trioxide in formulations. It is also capable of improving smoke performance in both halogen and halogen free systems.	TGA: >570°C

Peroxides

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
GC BIPB 40 Peroxide formulation based on Bis(t-butylperoxy isopropyl)benzene		Thermoplastic Polyolefins - natural and synthetic Rubber.	M.P./S.R Viscosity 37-54°C
GC DICUMYL PEROXIDE Dicumyl Peroxide CAS n. 80-43-3		Polyolefins - Elastomers (tubes, wires, tires, rubber seals).	M.P./S.R Viscosity >39°C
GC BEO 25 W Dibenzoyl Peroxide (CAS n. 94-36-0) 75% with water		PVC - Styrenics.	M.P./S.R Viscosity 103-108 °C @ 1.013 hPa

PRODUCT NAME	APPLICATIONS	DESCRIPTION
CG AOX 1098 50% PHYSICAL FORM: LIQ	Polyolefins - Polyurethanes - Engineering Thermoplastics.	Liquid dispersion 50 % of phenolic antioxidant, suitable for PU, PA and elastomers.
CG AOX 1171 PHYSICAL FORM: PW	Engineering Thermoplastics.	Mixture of phenolic antioxidant and phosphite suitable for PA.
GC B215, B220, B225, B561 PHYSICAL FORM: PW	Polyolefins - Engineering Thermoplastics.	Mixture of antioxidant 1010/168, suitable for PC, ABS, Polyester and PO.
GC B900, B921 PHYSICAL FORM: PW	Polyolefins - Engineering Thermoplastics.	Mixture of antioxidant 1076/168, suitable for PC, ABS, Polyester and PO.
GC UV LS 783 PHYSICAL FORM: GR	Polyolefins - Polyurethanes - Engineering Thermoplastics.	Mixture of 622/944 for several polymers.
GC UV LS 791 PHYSICAL FORM: PW	Polyolefins - Polyurethanes - Engineering Thermoplastics.	Mixture of 770/944 for several polymers.
<i>Please feel free to contact us for any other substance not mentioned in this list.</i>		

Optical Brighteners			
PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
GC OB 2,5-thiophenediylbis (5-tert-butyl-1,3-benzoxazole) CAS n. 7128-64-5 PHYSICAL FORM: PW		Polyesters - Polycarbonate - Polyamides Acrylics - Thermoplastic Polyurethanes - Polyvinylchloride - Styrene homo and copolymers - Polyolefins - Adhesives, and other organic substrates.	M.P./S.R Viscosity 201-205°C
GC OB-1 2,2'-(1,2-Ethenediyl-di-4,1-phenylene)bisbenzoxazole CAS n. 1533-45-5 PHYSICAL FORM: PW		Polypropylene plastic - hard PVC - ABS EVA - Polystyrene - Polycarbonate.	M.P./S.R Viscosity 355-360°C
SMA			
PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R Viscosity ----- TGA
GC SMA 700 Random Copolymer PHYSICAL FORM: GR		It can be used as modifier of the heat resistance of ABS, PS, AS and ASA improving thermal performance. GC SMA 700 can be used as compatibilizer in PC and PET or as coupling agent for styrene resins and glass fiber.	
GC SMA 725 Random Copolymer PHYSICAL FORM: GR		It contains maleic anhydride and styrene. It can be used as modifier of the heat resistance of ABS, PS, AS and ASA improving thermal performance. It can be used as compatibilizer in PC and PET or as coupling agent for styrene resins and glass fiber.	
GC SMA 800 Random Copolymer PHYSICAL FORM: GR		Because of the hyper reactivity of SAN chain and maleic anhydride, it is particularly suitable as compatilizer for resin alloy like PA/ABS, PC/ABS, PC/ASA, PA/ASA, ABS/PET, etc.	
Please feel free to contact us for any other substance not mentioned in this list.			

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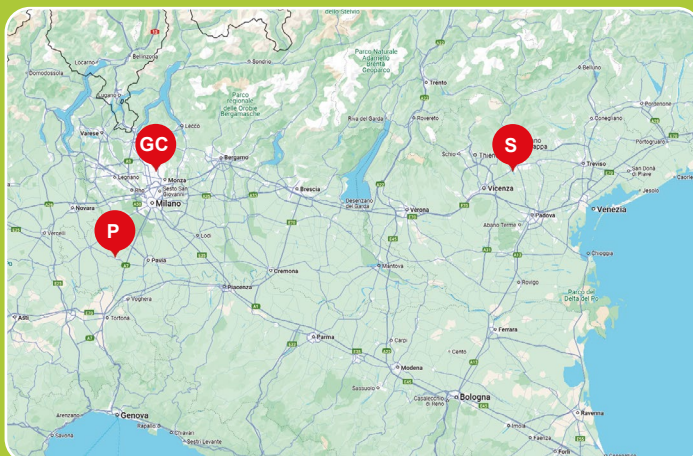
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PLASTIC ADDITIVES

FR

UV

AOX