PLASTIC ADDITIVES



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FLAME RETARDANTS
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ACID SCAVENGERS





ABOUT GREENCHEMICALS

• Founded in 2010 by Micaela Lorenzi

Based in Desio - ITALY

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

GC-VISION

DEVELOPING AND PROMOTING PERFORMING SOLUTIONS:

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

GC - PHYSICAL FORMS

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

Greenchemicals's products comply with REACH, CLP, SVHC, Food Contact, RoHS requirements, if applicable.

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. In order to allow a better Family management, GreenChemicals, since the beginning, supports smart working, part time and flexible working time.

MEMBERSHIP





PALMAHOLE

ABOUT PALMAROLE AG

PARTNERS

- TRAMACO Japan
- AUROS ADDITIVES USA
- UNILAT Colombia



MAIN FIELDS OF APPLICATION:

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

OTHER PRODUCTS:

- Antioxidants
- Uv
- Processing aids
- Color masterbatches

• Founded in 1982 by Gerard Palmarole • Based in Basel, Switerzland • Specialized Polymer Additives • Service provider in the plastic additive's industry

PALMAROLE'S VISION

To be the premier service provider in the plastics industry through:

- our global network
- connecting additives manufacturers and users
- creating multifaceted and innovative product solutions

A NEW PARTNERSHIP

In 2022 GreenChemicals acquires Palmarole AG's majority of shares .

The partnership combines GreenChemicals's specialization in fire retardant additives for plastics and Palmarole's experience in UV stabilizers, antioxidants and clarifying agents. In this way, is it now possible to expand the market offer, maximizing customer support skills.

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.

 $\begin{array}{l} \mathsf{CO} + \mathsf{OH}^{\bullet} \rightarrow \mathsf{CO2} + \mathsf{H}^{\bullet} \\ \mathsf{RCH3} + \mathsf{OH}^{\bullet} \rightarrow \mathsf{RCH2}^{\bullet} + \mathsf{H2O} \\ \mathsf{RCH2}^{\bullet} + \mathsf{O2} \rightarrow \mathsf{RCHO} + \mathsf{OH}^{\bullet} \\ \mathsf{H}^{\bullet} + \mathsf{O2} \rightarrow \mathsf{OH}^{\bullet} + {\bullet}\mathsf{O}^{\bullet} \end{array}$



The fire starts with an ignition source put on combustible item. Solid materials donot burn directly, they are degradated 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

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.



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 chain and cause dripping of the polymer. The reaction is endothermic.



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-combustibile gas

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. OMBUSTION OLATILES POLYMER (6) Without Flame Retardant >250°C (NH4PO3)n HPO3)n (7) With Flame Retardant -n NH3 (HPO3)n +Cx(H2O)m → ("C")x+(HPO3)n x mH2O

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.

2Al(OH)3►	Al2O3 + 3 H2O
Mg(OH)2►	MgO + H2O
2 AlOOH	Al2O3 + H2O

ANTIOXIDANTS

ANTIOXIDANTS CYCLE

Weathering of polymers is caused by absorption of UV lights, which results in radical initiated auto-oxidation by contact with athmospheric oxygen and generation of **free radicals** such as **R**•, **RO**•, **ROO**•, **HO**•. These free radicals further react with atmospheric oxygen to produce more and more free radicals.

R• + O2 → ROO• ROO• + R-H → ROOH + R•

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.

ROO• + AH → ROOH + A•	
ROO• + RH → ROOH + R•	

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:



UV ABSORBERS,

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

• QUENCHERS

are energy tranfer 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.



(A) ROOH + P(OR1)3 → ROH + O=P(OR1)3



• SECONDARY

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



(2) Light stabilizer mechanism



• HINDERED AMINES

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

BROMINATED FLAME RETARDANTS

CHEMICAL FORMUL

	Р	RODUCT NAME
	GC DPE 8 Decabromo	31 diphenyl ethane
	GC	CAS n. 84852-53-9 PHYSICAL FORM: GR, PW
	GC BDDF Tetrabromo ether)	P 68 bisphenol A bis (2,3-dibromopropyl
	GC	CAS n. 21850-44-2 PHYSICAL FORM: GR, PW
	GC BT 67 Ethylenbist	, etrabromo Phthalimide
	GC	CAS n. 32588-76-4 PHYSICAL FORM: GR, PW
	GC PHT Tetrabromo	phtalic Anhydride
	GC	CAS n. 632-79-1 PHYSICAL FORM: PW
	GC FR TF Tris(tribrom	RI 70 oneopentyl)phosphate
PLASTIC	GC	CAS n. 19186-97-1 PHYSICAL FORM: GR, PW
ADDITIVES	GC B 52 Phenoxy-te of tetrabiso	rminated carbonate oligomer henol A
	GC	CAS n. 94334-64-2 PHYSICAL FORM: PW
THE RANGE	GC B 58 Tribromylph oligomer of	nenyl terminated carbonate tetrabromobisphenol A
		CAS n. 71342-77-3



PALMAROLE'S PRODUCT



GREENCHEMICALS' PRODUCT



CAS n. 71342-77-3 PHYSICAL FORM: PW

GC FR245 66 2,4,6-tris(2,4,6-tribromophenoxy) -1,3,5-triazine



CAS n. 25713-60-4 PHYSICAL FORM: GR, PW



CH₂Br $\begin{bmatrix} BrCH_2 - C - CH_2O + P = O \end{bmatrix}$ CH₂Br

A	APPLICATIONS	M.P./S.R. viscosity
	Polyolefins - Engineering Thermoplastics.	350°C
	High efficiency, dioxine free, multi-function for PE, PP, HIPS, PA, PBT, EPOXY, PHE.	TGA: 1% @ 332℃ 5% @ 365℃ 10% @ 378℃
	Polyolefins - Engineering Thermoplastics.	113-117°C
	Good thermal stability, high efficiency PP, HIPS, ABS.	TGA: 1% @ 299°C 5% @ 312°C 10% @ 321°C
	Polyolefins - Engineering Thermoplastics.	460°C
3r 3r	HIPS, PBT, PET, TPR, good thermal stability, UV stability, no blooming, excellent wet electrical properties.	TGA: 1% @ 336 ℃ 5% @ 417℃ 10% @ 430℃
	Polyurethanes - Engineering Thermoplastics.	280°C
	Rigid PU, Epoxy, PS, PHE, high fr efficiency.	TGA: 1% @ 202 °C 5% @ 228°C 10% @ 240°C
	Polyolefins - Engineering Thermoplastics.	181°C
	PP, HIPS, ABS, XPS, alloy, UV and light stability, non blooming.	TGA: 1% @ 332℃ 5% @ 365℃ 10% @ 378℃
	Engineering Thermoplastics.	190-210°C
	PET, PBT, PC, ABS, PC / ABS, thermal and UV stability, excellent electrical properties.	TGA: 1% @ 376°C 5% @ 412°C 10% @ 426°C
	Engineering Thermoplastics.	210-230°C
J Br	PET, PBT, PC, ABS, PC / ABS, thermal and UV stability, excellent electrical properties.	TGA: 1% @ 356℃ 5% @ 407℃ 10% @ 425℃
	Engineering Thermoplastics.	230°C
	HIPS, ABS, good flow, good impact, good UV and thermal stability, non-blooming.	TGA: 1% @ 351℃ 5% @ 385℃ 10% @ 400℃

BROMINATED FLAME RETARDANTS

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PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity	PRODUCT NAME	CHEMICAL FORMULA
GC BPS 67, GC BPS 310 Brominated polystyrene		Engineering Thermoplastics. PA, PBT, PET, good CTI, good thermal stability,	- IGA - 265-320°C	GC MHBR Melamine Hydrobromide	NH ₂
CAS n. 88497-56-7 PHYSICAL FORM: GR	Bry	non-biooming.	TGA: 2% @ 340°C 5% @ 375°C 10% @ 384°C	CAS n. 29305-12-2 PHYSICAL FORM: PW	H_2N H_Br H_2N N H_2
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)b-[-[2-[3,5-dibromo-4-(2,3,3- tribromo-2-methylpropoxy)phenyl]propan-2-yl]benzene EC n. 944-461-4	$\begin{array}{c} Br \\ H_{1} \\ H_{2} \\ H_{3} \\ H_{7} \\ H_$	EPS - XPS. Good FR efficiency.	113°C		
GC PHT DIOLO LV Reaction products of tetrabromophthalic anhydride with 2,2'-oxydiethanol and methyloxirane	Br CH ₃ CH ₃ CH ₃ Br CH ₃	Rigid Polyurethane Foam, Urethane Elastomers and Coatings with high bromine content (Viscosity 25°C, CP 15,000-30,000).	15000 30000 cps		
CAS n. 77098-07-8 PHYSICAL FORM: LIQ					
GC PHT DIOL0 MV Reaction products of tetrabromophthalic anhy- dride with 2,2'-oxydiethanol and methyloxirane		Rigid Polyurethane Foam, Urethane Elastomers and Coatings with high bromine content (Viscosity 25°C, CP 30,000-70,000).	30000 70000 cps		
CAS n. 77098-07-8 PHYSICAL FORM: LIQ					
GC PHT DIOLO HV Reaction products of tetrabromophthalic anhy- dride with 2,2'-oxydiethanol and methyloxirane		Rigid Polyurethane Foam, Urethane Elastomers and Coatings with high bromine content (Viscosity 25°C, CP 30,000-70,000).	70000 120000 cps		
CAS n. 77098-07-8 PHYSICAL FORM: LIQ					
GC BDDP 65 S Bis[3,5-dibromo-4-(2,3-dibromopropoxy) phenyl] sulphone	Br Br Br	PP - PE - PS - ABS - Rubber. Flame retardant with white color, outstanding thermal and UV stability, non blooming,	110°C TGA:		
CAS n. 42757-55-1 PHYSICAL FORM: PW		excellent wet electrical properties.	2% @ 262°C 5% @ 295°C 10% @ 306°C		
GC TBBPA 59 Tetrabromobisphenol A	OH Br Br Br	Engineering Thermoplastics. Epoxy resin, good flow and compatibility, no blooming.	180°C TGA:		
CAS n. 79-94-7 PHYSICAL FORM: PW	OH Br		1% @ 227℃ 5% @ 254℃ 10% @ 270℃		
GC D3BO 65 Tris (2,3-dibromopropyl) isocyanurate	Br Br	Polyolefins - Engineering Thermoplastics. PP, HIPS, ABS. Good thermal stability, high	105-115°C TGA:		
CAS n. 52434-90-9 PHYSICAL FORM: PW	$Br \rightarrow Dr \rightarrow Dr$ $Br \rightarrow Dr \rightarrow Dr$ $Br \rightarrow Dr$	efficiency.	1% @ 110℃ 5% @ 172℃ 10% @ 208℃	Please feel free to contact us for an We supply material in powder, gran	y other substance not mentio nular, masterbatch physical fo

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BROMINATED FLAME RETARDANTS



APPLICATIONS

Effective flame retardant for PP V2 with low halogen content requirements.



M.P./S.R. viscosity

- TGA -

oned in this list. rm and liquid dispersions.

HALOGEN FREE FLAME RETARDANTS

HALOGEN FREE FLAME RETARDANTS

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity	PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity
GC MELAMMINA Melamine CAS n. 108-78-1 PHYSICAL FORM: GR, PW	NH2 N N H2N N H2N NH2	Polyolefins - Polyurethanes. PP, PE, PU, Textile, Coatings.	354°C	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	Ph = 0 Ph =	Polyurethanes - Engineering Thermoplastics. PC/ABS, PPO/HIPS, TPU, PU.	500-800 cps a 80°C TGA: 2% @ 290°C 5% @ 325°C 10% @ 360°C
GC MC series & GC MCA granular Melamine Cyanurate CAS n. 37640-57-6 PHYSICAL FORM: GR, PW	$ \begin{array}{c} $	Engineering Thermoplastics. PA, Polyesters.	Decomposition T. > 350°C TGA: 1% @ 305°C 2% @ 320°C 5% @ 340°C	GC DICUMENE 90 Dicumene CAS n. 1889-67-4 PHYSICAL FORM: PW	CH3 CH3 CH3 CH3 CH3	Polyolefins - Engineering Thermoplastics. FR synergist.	100-110°C
GC APP II Ammonium Polyphosphate CAS n. 68333-79-9 PHYSICAL FORM: GR, PW	$ \begin{array}{c} & \bigcap_{I} & \bigcap_{I$	Polyolefins- Polyurethanes - Engineering Thermoplastics. PA, PP, PU, Polyesters.	Decomposition T. > 275°C	GC FOS 65 Isopropylated Triaryl phosphate CAS n. 68937-41-7 PHYSICAL FORM: LIQ		Polyolefins - Engineering Thermoplastics. PVC, Phenolic, PU, Epoxy resins.	64-76 cps TGA: 1% @ 197°C 5% @ 217°C 10% @ 235°C
GC MPP Melamine Polyphosphate CAS n. 218768-84-4 PHYSICAL FORM: GR,PW	$HO = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ H_2 \\ N \\ H_2 \\ N \\ $	Polyurethanes - Engineering Thermoplastics. PA, Epoxy, PU, Polyesters.	Decomposition T. > 300°C TGA: 1% @ 355°C 2% @ 370°C 5% @ 385°C	GC FOS 35 Isopropylated Triaryl phosphate CAS n. 68937-41-7 PHYSICAL FORM: LIQ		Polyurethanes - PVC - Epoxy resins - Vinyl polymers.	42-50 cps
GC MP Melamine Phosphate CAS n. 41583-09-9 PHYSICAL FORM: GR, PW	$\begin{array}{c c} H_2N & N & NH_2 \\ & & I & OH \\ & N & N & HO & P \\ & NH_2 & OH \\ \end{array}$	Polyolefins- Polyurethanes - Engineering Thermoplastics. PA, Epoxy, PU, PP, Polyesters.	Decomposition T. > 300°C TGA: 1% @ 215°C 2% @ 235°C 5% @ 260°C	GC FOS 95 Isopropylated Triaryl phosphate CAS n. 68937-41-7 PHYSICAL FORM: LIQ		Polyurethanes - PVC - Epoxy resins - Vinyl polymers.	95-114 cps
GC MPF Melamine Pyrophosphate CAS n. 15541-60-3 PHYSICAL FORM: GR, PW	$\begin{array}{c} NH_2\\N\\N\\H_2\\N\\N\\N\\N\\N\\N\\N\\H_2\end{array} \xrightarrow{OH} \begin{array}{c} OH\\\mathsf$	Polyolefins- Polyurethanes - Engineering Thermoplastics. PA, Epoxy Resins, PU, Polyesters, PP.	Decomposition T. > 300°C TGA: 0,5% @ 300°C 5% @ 350°C	GC TEP Triethyl Phosphate CAS n. 78-40-0 PHYSICAL FORM: LIQ	0 H₃C 0-₽-0 СН₃ 0 СН₃	Polyurethanes. PU.	5 mPa·s5 mPa·s
GC TPP Triphenyl Phosphate CAS n. 115-86-6 PHYSICAL FORM: FLAKES, PW	Ph O	Engineering Thermoplastics. PC/ABS, PPO/HIPS, PVC, RUBBER, Epoxy Resin, Phenolic Resin, Acetalic Resin.	47,5-49,5°C TGA: 1% @ 198°C 5% @ 231°C 10% @ 247°C	GC TCP Tricresyl Phosphate CAS n. 1330-78-5 PHYSICAL FORM: LIQ		Polyolefins. PE, PVC, Rubber, Wire&cables.	55-70 mPa·s
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.	120 cps a 80°C TGA: 1% @ 255°C 5% @ 372°C 10% @ 398°C				

HALOGEN FREE FLAME RETARDANTS

HALOGEN FREE FLAME RETARDANTS

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HALOGEN FREE FLAME RETARDANTS

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity	PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity
NOFIA HM1100, HM9000, HM7000 & HM5000 Polyphosphonate CAS n. 68664-06-02 PHYSICAL FORM: GR, PW	nofice Processes Polymeter	PET - PTT - PBT - PLA - PC - TPU - TPEE.	Decomposition T. > 350°C	GC MgOH2 Magnesium Hydroxide CAS n. 1309-42-8 PHYSICAL FORM: GR PW MB	но он	PP - PE - PS - PA - PET.	350°C TGA: 1% @ 362°C 5% @ 388°C 10% @ 404°C
NOFIA CO6000 Polyphosphonate-co-carbonate CAS n. 77226-90-5 PHYSICAL FORM: GR	nofic Hacoen Free Polymetice	PC - PC blends.		GC ZnBO3 - 4 Zinc Borate CAS n. 138265-88-0 PHYSICAL FORM: PW, COMPACTED	0 ⁻ —В Zn ² + ОН	Polyolefins - Polyurethanes- Engineering Thermoplastics. Synergist suitable for PVC, Polyolefines, PA, Rubber.	890°C TGA: 1% @ 282°C 5% @ 388°C 10% @ 425°C
NOFIA OL1000 Phosphonate Oligomer CAS n. 68664-06-02 PHYSICAL FORM: GR		UP - Epoxy - Polyurethane and Polyurea.		GC ZnBO3 - 8 Zinc Borate CAS n. 138265-88-0 PHYSICAL FORM: PW, COMPACTED	0 ⁻ -в Zn ² + ОН Zn ² +	Polyolefins - Polyurethanes- Engineering Thermoplastics. Synergist suitable for PVC, Polyolefines, PA, Rubber. Specially suitable for Film.	890°C TGA: 1% @ 282°C 5% @ 388°C 10% @ 425°C
GC DOPO 9,10-Dihydro-9-oxa-10- phosphaphenanthrene 10-oxide CAS n. 35948-25-5 PHYSICAL FORM: PW, FLAKES	HO HO	Engineering Thermoplastics. Epoxy, PU, PA, Polyesters. Reactive Flame Retardant.	117-120°C	GC KSS Reaction mass of dipotassium 3,3'-sulphonyl- bis(benzenesulphonate) and potassium 3-(phenylsulphonyl) benzene sulphonate EC n. 915-932-1 PHYSICAL FORM: PW	0 ⁺¹ 5 0 ⁺¹ 5 K ⁺ 0 ⁺¹ 5	Engineering Thermoplastics. Flame retardant suitable for transparent PC at very low dosage.	TGA: 1% @ 425°C 5% @ 452°C 10% @ 468°C
GC DOPO HQ 10-(2,5-Dihydroxyphenyl)-10H-9-oxa-10- phospha-phenantbrene-10-oxide CAS n. 99208-50-1 PHYSICAL FORM: PW		Epoxy resins and Engineering polymers. Reactive Flame Retardant.	245°C	GC TRIOSSIDO DI ANTIMONIO Antimony Trioxide CAS n. 1309-64-4 PHYSICAL FORM: PW	o ^{≠Sb} ∼o ^{∽Sb} ≈o	Polyolefins - Polyurethanes - Engineering Thermoplastics. Synergist for brominated flame retardant suitable for plastics and textiles.	656°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.	197°C	GC NATO Sodium Antimonate CAS n. 15432-85-6 PHYSICAL FORM: PW	Na ⁺ Na ⁺ Na ⁺ O ⁻ Sb=O O ⁻	Synergist for brominated flame retardant, low acidity, indicated for PC and Polyesters.	Melting point: 600°C 100 kPa
GC CEPPA 3-(hydroxyphenylphosphinyl)propanoic acid CAS n. 14657-64-8 PHYSICAL FORM: PW	он С Рон ОН	PE - PA. Reactive phosphorous flame retardants for PE, PA and Polyesters polymerization.	158-162°C		•	1	
GC HFR 693 Hexaphenoxycyclotriphosphazene CAS n. 1184-10-7 PHYSICAL FORM: PW	$ \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \end{array}\\ \end{array}\\ \end{array}\\ \end{array}\\ \end{array}\\ \end{array}\\ \end{array}\\ \end{array}$	PC - PC/ABS - Polyesters. HF polymeric system for PC, PC/ABS and Polyesters.	110-117°C				

HALOGEN FREE FLAME RETARDANTS

HALOGEN FREE FLAME RETARDANTS

FLAME RETARDANT FORMULATIONS

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity - TGA -	PRODUCT NAME	APPLICATIO
	PHOSPHIN	ATES		HALOGEN FREE	FLAME RETA
GC FOS AL Aluminium phosphinate CAS n. 7784-22-7 PHYSICAL FORM: PW	о	Engineering polymers - TPU - PU - PBT - PET - TPE - PA + GF - Polyolefins. Non-halogenated flame retardant based on inorganic hypophosphite.		GC DRIPP HF 70 Low Halogen Content PHYSICAL FORM: PW, MB	PP V2.
GC FOSCA Calcium phosphinate CAS n. 7789-79-9 PHYSICAL FORM: PW	$\begin{bmatrix} 0 \\ H \\ -P $	Polyolefins - Engineering polymers. Active phosphorous flame retardants.		GC HFT PC 90 HALOGEN FREE PHYSICAL FORM: PW	PC V0 Transparent.
				GC ABS FLAM V0 HALOGEN FREE PHYSICAL FORM: GR, PW, MB, COMPACTED	ABS VO.
				GC PBT FLAM VO HALOGEN FREE PHYSICAL FORM: PW	PBT, PBT VO.
				ISODRIPP PA MC25 45 HALOGEN FREE PHYSICAL FORM: GR, PW, MB, COMPACTED	PA.
				GC PP HF 200 Intumescent System HALOGEN FREE PHYSICAL FORM: PW, MB	PP V0 - PE - TPR - TPU.
Please feel free to contact us for any We supply material in powder, gran	y other substance not mentio ular, masterbatch physical for	ned in this list. rm and liquid dispersions.		GC PP HF 1000 Intumescent System HALOGEN FREE PHYSICAL FORM: PW	PP VO - PE - TRP - TPU.
,,, .	. ,				

ONS

DESCRIPTION

RDANT FORMULATIONS

It is very low halogen formulation for PP V2. Very low dosage, Br content in the compound can respect 900ppm limit. Also in masterbatch.
Halogen free blend based on new P3 products for low thickness PC, keeping transparency below in 1,6 mm.
Halogen Free blend for ABS, appication ABS.
Halogen free blend for polyesters. It keeps mechanical properties for a long time.
Concentrated masterbatch of melamine cyanurate on PA base.
Efficient halogen free intumescent blend. Reduced loading level, good dispersion.
Efficient intumescen blend based on phosphorus and nitrogen.

FLAME RETARDANT FORMULATIONS

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FLAME RETARDANT FORMULATIONS

PRODUCT NAME	APPLICATIONS	DESCRIPTION	PRODUCT NAME	APPLICATIONS	DESCRIPTION
MB PA P RED 50 Red phosphorous masterbatch PHYSICAL FORM: MB	Engineering Thermoplastics. PA, Polyesters. Red phosphorous masterbatch for PA.	CHEMICAL FORMLULA: $-p \xrightarrow{P} p \xrightarrow{P} p \xrightarrow{P} p$	HALOGENATED F	LAME RETARDANT	FORMULATIONS
MB PP P RED 60 Red phosphorous masterbatch PHYSICAL FORM: MB	Polyolefins. PP, PE. Red phosphorous masterbatch for PP.	CHEMICAL FORMLULA:	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.
MB PE P RED 70 Red phosphorous masterbatch PHYSICAL FORM: MB	Polyolefins. PP, PE. Red phosphorous masterbatch for PE.	CHEMICAL FORMLULA:	MB PE DPE 90 PHYSICAL FORM: MB	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.
MB PE TRIX 80 / 90 PHYSICAL FORM: MB	Polyolefins.	Masterbatch containing antimony trioxide, also on EVA base.		·	·

FLAME RETARDANT FORMULATIONS

ANTIOXIDANTS

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity - TGA -	PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity - TGA -
AOX DSTDP Dioctadecyl 3-3'-thiodipropionate CAS n. 693-36-7 PHYSICAL FORM: GR, PW	S-OBu Bu	Polyolefins - Engineering Thermoplastics. Thiosynergist antioxidant, suitable for PA, PO, PET and ABS.	63,5-68,5°C TGA: 5% @ 270°C 10% @ 310°C 25% @ 342°C	AOX 5057 Benzenamine, N-phenyl-, reaction products with 2, 4, 4-trymethylpentene CAS n. 68411-46-1 PHYSICAL FORM: PW	H N +	Polyolefins - Polyurethanes. EVA, PUR, Polyol.	
AOX DLTDP Di-lauryl-3,3'-thiodipropionate CAS n. 123-28-4 PHYSICAL FORM: GR, PW	S-4 Bu	Polyolefins - Engineering Thermoplastics. Thiosynergist antioxidant, suitable for PA, PO, Polyester and ABS.	38-41°C TGA: 5% @ 251°C 10% @ 270°C 25% @ 296°C	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 CAS n. 40601-76-1 PHYSICAL FORM: PW	CH CH CH CH CH CH CH CH CH CH CH CH CH C	Polyurethanes- Polyolefins - Engineering Thermoplastics. PU, PA, PET, ABS, Polyolefins.	159-163°C TGA: 1% @ 202°C 5% @ 333°C 10% @ 349°C
AOX 412S Pentaerythrityl tetrakis (3-laurylthiopropionate) CAS n. 29598-76-3 PHYSICAL FORM: GR, PW, MB		Polyolefins - Engineering Thermoplastics. Suitable for ABS, BR, PC, PE, PP, PS.	48-54°C TGA: 5% @ 284°C 10% @ 295°C 25% @ 330°C	AOX PEP-36 Bis(2,6-di-ter-butyl-4-methylphenyl)- pentaerythritol diphosphite CAS n. 80693-00-1 PHYSICAL FORM: PW		ABS - Engeneering plastics - Polyolefins - PS.	135-240°C
AOX 1726 4,6-Bis(Dodecylthiomethyl)-o-cresol CAS n. 110675-26-8 PHYSICAL FORM: PW	Correction of the second secon	Polyolefins - Polyurethanes. SBS, SIS, PUR.	28°C	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	H0 - CH2 - CH2	PU foam.	56°C
AOX 1010 Tetrakismethylen(3,5-di-t-butyl-4- hydroxycinnammate) methane CAS n. 6683-19-8 PHYSICAL FORM: GR, PW		Polyolefins - Engineering Thermoplastics. Phenolic antioxidant, suitable for PA, PO and ABS.	110-125°C TGA: 5% @ 350°C 10% @ 365°C 25% @ 387°C	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, MB		Polyolefins - HIPS - ABS - Engeneering plastics - TPU - Unsaturated elastomers.	115-125°C
AOX 1024 PHYSICAL FORM: GR, PW	NH NH O TBU OH TBU	Polyolefins - Engineering Thermoplastics. Phenolic chelating antioxidant and metal deactivator, suitable for PO, PA, Elastomers.	221-232°C TGA: 5% @ 284°C 10% @ 295°C 50% @ 330°C	AOX 245 Triethylenglycol-bis[3-(3-t-butyl-4-hydroxy-5- methylpheyl)propionate] CAS n. 36443-68-2 PHYSICAL FORM: PW		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.	76-80°C TGA: 5% @ 297°C 10% @ 312°C 25% @ 332°C
AOX P11 PHYSICAL FORM: GR, PW	X ^N - ^N	Polyurethanes - Polyolefins- Engineering Thermoplastics. Phenolic chelating antioxidant, suitable for PO, PU, PA, ABS.	174-180°C TGA: 10% @ 326°C 20% @ 338°C 30% @ 345°C	AOX P 626 Bis (2,4-Di-T-Butylphenyl) Pentaerythritol Diphosphite CAS n. 26741-53-7 PHYSICAL FORM: GR, PW	X J Corport	PVC - Polyolefins - Engineering Thermoplastics. Phosphite ester antioxidant suitable for PE, PP, PS, PA, PC and ABS.	160-175°C TGA: 5% @ 159°C 10% @ 215°C 25% @ 267°C
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	K OH K K K K K K K K K K K K K K K K K K K	Polyurethanes. PUR, Polyol.	TGA: 1% @ 160℃ 10% @ 200℃	AOX 1076 Octadecyl 3-(3',5'-di-tert-butyl-4'- hydroxyphenyl)proprionate CAS n. 2082-79-3 PHYSICAL FORM: GR, PW	сто он	PVC - Engineering Thermoplastics. Excellent stabilizer for polyolefins, impact modified styrenics, block co-polymers, elastomers, adhesives, PVC and polyurethanes.	50-55°C TGA: 5% @ 260°C 10% @ 278°C 25% @ 302°C

ANTIOXIDANTS

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PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity - TGA -	PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity - TGA -
PALMAROLE AOX 565 Multifunctional antioxidant for elastomers 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.	91-96°C TGA: 1% @ 268°C 10% @ 28°C	PALMAROLE AOX 1520 Liquid sulfur-containing antioxidant CAS n. 110553-27-0 PHYSICAL FORM: LIQ	OH S S	Elastomers - Silant Adhesives - Lubricants.	About 14°C
PALMAROLE AOX 1425 High molecular weight phenolic antioxidant CAS n. 65140-91-2 PHYSICAL FORM: GR, PW	$\begin{array}{c} 0 & & Ca^{2+} \\ \begin{array}{c} & & \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array} \\ \end{array} \\ \end{array} \\ \end{array} \\$	PP Fibers.		PALMAROLE AOX 358 Sulfur-contained hindered phenolic antioxidant CAS n. 96-69-5 PHYSICAL FORM: PW	HO L S		
PALMAROLE AOX 405 Aromatic amine antioxidant CAS n. 10081-67-1 PHYSICAL FORM: PW		Aromatic Antioxidants.		PALMAROLE AOX P 928, 928 A Free flowing solid phosphite antioxidant CAS n. 154862-43-8 PHYSICAL FORM: PW			
AOX 168 Tris(2,4-di-tert-butylphenyl)phosphite CAS n. 31570-04-4 PHYSICAL FORM: GR, PW	+ Jorgo	PVC - Polyolefins - Engineering Thermoplastics. Organophosphite antioxidant suitable for use in a lot of polymers such as polyolefins, polycarbonate, ABS and polyesters.	183-187°C TGA: 5% @ 239°C 10% @ 250°C 25% @ 272°C			<u></u>	
AOX 330 Hindered phenolic primary antioxidant CAS n. 1709-70-2 PHYSICAL FORM: PW, FLAKES		Adhesives - Elastomers - PA - Polyolefins - Polyesters - PS - PUR.	240-250°C TGA: 5% @ 316°C 10% @ 350°C 25% @ 385°C				
AOX 3114 Multifunctional hindered phenolic primary antioxidant CAS n. 27676-62-6 PHYSICAL FORM: GR, PW		Styrenics and Polyolefins (Fibers). Phenolic antioxidant with low extraction properties. Suitable for fibers and PO.	218-223°C TGA: 5% @ 305°C 10% @ 319°C 25% @ 337°C				
AOX 1098 Hindered phenolic primary antioxidant CAS n. 23128-74-7 PHYSICAL FORM: GR, PW, MB	HN COH	PA - PU - Elastomers.	156-162°C TGA: 5% @ 330°C 10% @ 342°C 25% @ 375°C				
PALMAROLE AOX 998 Polymeric sterically hindered phenolic antioxidant CAS n. 68610-51-5 PHYSICAL FORM: LIQ		Hot melts Adhesives.		Please feel free to contact us for an	y other substance not mention	ned in this list.	

ANTIOXIDANTS

ANTIOXIDANTS

UV ABSORBERS / LIGHT STABILIZERS

UV ABSORBERS / LIGHT STABILIZERS

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity - TGA -	PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity - TGA -
PALMAROLE LS CA 3035 Solid cyanoacrylate UV absorber CAS n. 5232-99-5		Solid cyanoacrylate UV absorber.		PALMAROLE LS BL 112	Proprietary mixture	Polyolefins.	
PHYSICAL FORM: GR, PW				PW			
UV 3039 2-Ethylhexyl 2-cyano-3,3-diphenylpropenoate CAS n. 6197-30-4 PHYSICAL FORM: LIO		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.		UV 3050 2,2',4,4'-Tetrahydroxybenzophenone CAS n. 131-55-5 PHYSICAL FORM: PW	HO HO OH	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 Alkvd resins.	
UV 80 ethyl 2-cyano-3-(4-hydroxy-3-methoxyphenyl) prop-2-enoate CAS n. 13373-29-0 PHYSICAL FORM: GR, PW, MB	OMe HO HO CN OEt	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 adhesive, paint and solvent-based systems.	110-113°C	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 protests from premature damage, particularly under severe exposure conditions.	
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.	175-178°C TGA: 1% @ 250°C 2% @ 350°C	UV 531 Octabenzone CAS n. 1843-05-6 PHYSICAL FORM: PW, FLAKES	O OH U U OC ₈ H ₁₇	Polyolefins - Polyurethanes - Engineering Thermoplastics. UV absorber containing benzotriazole, suitable for PS, PUR, elastomers, PVC.	47-50°C TGA: 5% @ 220°C 10% @233°C 25% @ 255°C
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.	2000 – 3000 cps at 25C°	PALMAROLE LS BO 90 Oxybenzone CAS n. 131-57-7 PHYSICAL FORM: PW	O OH OCH3	PVC - Wood Paints. Benzophenone UV absorber.	
UV 3638 2,2-(1,4-phenylene)bis((4H-3,1- benzoxazine-4-one) CAS n. 18600-59-4 PHYSICAL FORM: PW	CT JO	Engineering Thermoplastics. UV absorber for engineering plastics, especially for PET, PBT.	310°C	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	$\begin{array}{c} \begin{array}{c} \begin{array}{c} \\ \\ \end{array} \\ \\ \end{array} \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \end{array} \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \end{array} \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \end{array} \\ \\ \\ \end{array} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \\ \\ \end{array} \\ \\ \\ \end{array} \\ \\ \\ \end{array} \\ \\ \\ \\ \end{array} \\ \\ \\ \\ \end{array} \\ \\ \\ \end{array} \\ \\ \\ \\ \end{array} \\ \\ \\ \end{array} \\ \\ \\ \\ \\ \end{array} \\ \\ \\ \\ \\ \\ \end{array} \\ \\ \\ \\ \\ \end{array} \\ \\ \\ \\ \\ \\ \\ \\ \end{array} \\$	Polyolefins - Polyurethanes - Engineering Thermoplastics. UV absorber containing benzotriazole, suitable for POM, PMMA, PC, PA, PBT, PET, Elastomers.	195°C TGA: 1% @ 333°C 2% @ 350°C
CAS n. 7443-25-6 PHYSICAL FORM:		Acrylic plastics - PVC - Polyesters - PC - Polyamides - Sstyrene plastics - EVA copolymers - Cellulosics.	55-59°C	PALMAROLE LS BT 328 Benzotriazole CAS n. 25973-55-1 PHYSICAL FORM: DW		Polyolefins - PVC - Polyesters - PC - PA.	
PALMAROLE LS BL 111 PHYSICAL FORM: PW		Polyolefins (PP - PE - EVA).	47-49°C	UV 329 2-(2H-benzotriazole-2-yl)-4-(1,1,3,3,- tetramethylbutyl)phenol CAS n. 3147-75-9 PHYSICAL FORM: GR, PW	HO HO HO HO HO HO HO HO	Engineering Thermoplastics. UV absorber belonging to the benzotriazole class suitable for a variety of plastics and other organic substrates.	102-108°C

UV ABSORBERS / LIGHT STABILIZERS

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UV ABSORBERS / LIGHT STABILIZERS

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity - TGA -	PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity - TGA -
PALMAROLE LS BT 320 Benzotriazole CAS n. 3846-71-1		PVC - Polyesters.		UV 312 N-(2-ethoxyphenyl)-N'-(2-ethylphenyl)oxamide	C_2H_5 H O N N OC ₂ H ₅	Oxanilide UV absorber with highly effective light stabilizer for a variety of plastics and other organic substrates including unsaturated polyesters, PVC and PVC plastisol.	124-127°C
PHYSICAL FORM: PW				GR, PW			
UV 326 2-(5-Chloro-2H-benzotriazol-2-yl)-6-(1,1- dimethylethyl)-4-methylphenol CAS n. 3896-11-5 PHYSICAL FORM: GR, PW	CI V N HO t -Bu t -Bu CH_3	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.	137-142°C TGA: 5% @ 202°C 10% @ 205°C 25% @ 236°C	UV 1084 2,2'-Thiobis(4-tert-octylphenolato) -n-butylamine nickel(II) CAS n. 14516-71-3 PHYSICAL FORM: PW	Bu NH ₂ O t tBu Ni ²⁺	Polyolefins. Nickel Quencher, UV stabilizer developed for outdoor applications in polyolefins.	245-280°C
PALMAROLE LS BT 327 Benzotriazole CAS n. 3864-99-1 PHYSICAL FORM: GR, PW		PVC - Polyolefins.		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	OC ₆ H ₁₃ OH N OH	Engineering Thermoplastics. UV absorber 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.	147-151°C
UV 234 2-[2-hydroxy-3,5-di(1,1-dimethylbenzyl) phenyl]-2H-benzotriazole CAS n. 70321-86-7 PHYSICAL FORM: PW	HO N N Ph	Polyolefins - Engineering Thermoplastics. UV absorber containing benzotriazole, suitable for PS, PET, TPE, PA, POM, PC.	137-141°C TGA: 1% @ 264°C 2% @ 280°C 5% @ 302°C	UV 1579 2-(2-Hydroxy-4-methoxyphenyl)-4,6- diphenyl-1,3,5-triazine CAS n. 106556-36-9 PHYSICAL FORM: GR, PW, MB		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.	
UV P 2-(2H-benzotriazol-2-yl)-p-cresol CAS n. 2440-22-4 PHYSICAL FORM: PW	HO N N CH ₃	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.	128-132°C TGA: 5% @ 163°C 10% @ 178°C 50% @ 197°C	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, MB		Engineering Thermoplastics. UV absorber applicable in nylon, PVC, PET, PBT, ABS and PMMA and other high performance plastics.	88-91°C
PALMAROLE LS.BT.113 Benzotriazole CAS n. 104810-47-1 PHYSICAL FORM: LIQ		Liquid benzotriazole UV Absorber, mainly used for coatings.			·		
UV 1130 A mixture of: a -3-(3-(2H-benzotriazol-2-yl) -5-tert-butyl-4-hydroxyphenyl)propionyl- ω - hydroxypoly(oxyethylene); a -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.	7400 (+/-2%) mPa.s				
PHYSICAL FORM: LIQ				Please feel free to contact us for any	other substance not mentio	ned in this list.	

UV ABSORBERS / LIGHT STABILIZERS

HALS

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity - TGA -	PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity - TGA -
HALS 119 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 CAS n. 106990-43-6 PHYSICAL FORM: GR HALS 119 B ALS 19-90% CAS n. 106990-43-6	HAN HANNAN	Elastomers - Polyolefins. Light stabilizers with good migration resistance and low volatility. It is an effective antioxidant which provides significant long-term heat stability for polyolefins and elastomers. PP - PE - blends with EVA - PE - EEA - Polyolefins - Elastomers.		HALS 4050 N,N'-Bis(2,2,6,6-tetramethyl-4-piperidyl) -N,N'-diformylhexamethylenediamine CAS n. 124172-53-8 PHYSICAL FORM: GR HALS 3346 1,6-Hexanediamine, N,N'-bis(2,2,6,6-tetra- methyl-4-piperidinyl)-, polymer with 2,4-	+ HN + H	Polyolefins - Engineering Thermoplastics. Light stabilizer used in polyolefins, ABS and nylons. It is highly compatible with pigments. Polyolefins - Polyurethanes - Engineering Thermoplastics. Hindered amine light stabilizer with broad	155-158°C 100-125°C
HALS 62-10% CAS n. 65447-77-0				CAS n. 82451-48-7 PHYSICAL FORM: GR		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, PET, ASA, PBT, ABS, HIPS, PMMA and PU.	TGA: 10% @ 340℃
HALS 622 Butanedioic acid, dimethyl ester, polymer with 4-hydroxy -2,2,6,6-tetramethyl-1-piperidine ethanol CAS n. 65447-77-0 PHYSICAL FORM: GR, PW	$ - \left[\begin{array}{c} 0 \\ - \\ 0 \\ - \\ H_{3}C \end{array} \right]_{H_{3}C} \left[\begin{array}{c} 0 \\ 0 \\ - \\ 0 \\ H_{3}C \end{array} \right]_{n} $	Polyolefins - Engineering Thermoplastics. UV absorber suitable for Adhesives, Elastomers, PO, PVC, Sealants, Styrenics, Unsatured Polyesters.	50-70°C TGA: 0,1% @ 200°C 0,4% @ 250°C 1,1% @ 275°C	HALS 5050 Alkenes, C20-24 α-, polymers with maleic anhydride, reaction products with 2,2,6,6- tetramethyl-4-piperidinamine CAS n. 152261-33-1 PHYSICAL FORM: GR, PW, MB	$\left[\begin{array}{c} & & & \\ & & & \\ 0 & N & & & \\ & & & & \\ & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & &$	Polyolefins - Polyurethanes - Engineering Thermoplastics. Oligomeric sterically hindered amine light stabilizer. HALS be used in all polyolefins. It is 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 and PET.	
HALS 770 Bis(2,2,6,6-tetramethyl-4-piperidyl)sebacate CAS n. 52829-07-9 PHYSICAL FORM: GR, PW		Polyolefins - Engineering Thermoplastics. UV absorber suitable for ABS, ASA, EPDM, IPS, PP, SAN, TPO.	81-85°C TGA: 1% @ 203°C 5% @ 221°C 10% @ 242°C	HALS 123 Bis-(1-octyloxy-2,2,6,6-tetramethyl-4- piperidinyl) sebacate CAS n. 129757-67-1 PHYSICAL FORM: LIQ	the t	Coatings. HALS, especially used in automotive and industrial coatings/decorative paints and wood stains or varnishes.	
HALS 292 Reaction mass of bis(1,2,2,6,6-pentamethyl-4- piperidyl) sebacate and methyl 1,2,2,6,6-penta- methyl-4-piperidyl sebacate CAS n. 41556-26-7/82919-37-7 PHYSICAL FORM: LIQ		Elastomers - Engineering Thermoplastics. UV absorber applicable in wide range of polymers and applications including polyurethanes, sealants, adhesives, elastomers, unsaturated polyesters, acrylics, vinyl polymers (PVB, PVC), styrene homo and copolymers, polyolefins, liquid color concentrates, and other organic substrates.		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-hexanediyl[(2,2,6,6- tetramethyl-4-piperidyl)imino]} CAS n. 86168-95-8 PHYSICAL FORM: PW		Polyolefins.	275-300°C
HALS 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]] CAS n. 71878-19-8 PHYSICAL FORM: GR, PW	$ \begin{array}{c} \underset{H-N-(CH_2)_6}{\overset{H}{\longrightarrow}} & \underset{N}{\overset{H}{\longrightarrow}} & \underset{N}{\overset{H}{\longrightarrow}} & \underset{N-(CH_2)_6}{\overset{H}{\longrightarrow}} & \underset{N+}{\overset{H}{\longrightarrow}} & \underset{N+}{\overset{H}{\overset{H}{\longrightarrow}} & \underset{N+}{\overset{H}{\longrightarrow}} & \underset{N+}{\overset{H}{\overset{H}{\longrightarrow}} & \underset{N+}{\overset{H}{\overset{H}{\longrightarrow}} & \underset{N+}{\overset{H}{\overset{H}{\longrightarrow}} & \underset{N+}{\overset{H}{\overset{H}{\longrightarrow}} & \underset{N+}{\overset{N+}{\overset{H}{\overset{H}{\longrightarrow}} & \underset{N+}{\overset{H}{\overset{H}{\longrightarrow}} & \underset{N+}{\overset{H}{\overset{H}{\overset{H}{\longrightarrow}} & \underset{N+}{\overset{H}{\overset{H}{\overset{H}{\overset{H}{\overset{H}{\overset{H}{\overset{H}{$	Polyolefins - Polyurethanes - Engineering Thermoplastics. UV absorber suitable for EVA, PO, POM, PU, PVC, XPE.	100-135°C TGA: 0.2% @ 275°C 1.0% @ 300°C 3,7% @ 325°C	PALMAROLE HALS 13	H_3C CH_3 H_3C H_3C	Polyamides for injection and blow-moulded or extruded articles, fibre spinning.	268-275°C
HALS 3529 1,6-Hexanediamine, N,N'-bis(2,2,6,6-tetra- methyl-4-piperidinyl)-, polymers with mor- pholine-2,4,6-trichloro-1,3,5-triazine reaction products, methylated CAS n. 193098-40-7		Polyolefins - Engineering Thermoplastics. HALS used in PE and PP agricultural films, artificial turf, injection&rotational molding. PP fiber, POM, PA, PET, PBT, ASA, ABS.	95-120℃ TGA: 10%@350℃	PALMAROLE HALS 3853		Low blooming LMW HALS for automotive applications.	
PHYSICAL FORM: GR HALS 2020 Block oligomeric bindered amine light stabilizer		HIPS, Rigid&flexible PVC, PMMA and PUR.		PALMAROLE HALS BL 3808		Low blooming and high thermal stability light stabilizer solution for automotive applications.	
CAS n. 192268-64-7 PHYSICAL FORM: GR	$ \begin{array}{c} c_{1} k_{0} = N \\ \vdots \\ n \end{array} \qquad \qquad$			PALMAROLE HALS BL 4611		High performance light stabiliser solution for rotomolding and durable outdoor molded articles.	

Please feel free to contact us for any other substance not mentioned in this list. We supply material in powder, granular, masterbatch physical form and liquid dispersions.

HALS

HALS

HALS

ONE SHOT FORMULATIONS

PRODUCT NAME	APPLICATIONS	DESCRIPTION	PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity - TGA -
AOX 1098 50% PHYSICAL FORM: LIQ	Polyolefins - Polyurethanes - Engineering Thermoplastics.	Liquid dispersion 50 % of phenolic antioxidant, suitable for PU, PA and elastomers.	PALMAROLE OBA 01 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.	201-205°C
AOX 1171 CONTRACT FORM: PW	Engineering Thermoplastics.	Mixture of phenolic antioxidant and phosphite suitable for PA.	PALMAROLE OBA 04 2,2'-(1,2-Ethenediyldi-4,1-phenylene) bisbenzoxazole CAS n. 1533-45-5 PHYSICAL FORM: PW		Polypropylene plastic - hard PVC - ABS - EVA - Polystyrene - Polycarbonate.	355-360°C
AOX 215, 220, 225, 561	Polyolefins - Engineering Thermoplastics.	Mixture of antioxidant 1010/168, suitable for PC, ABS, Polyester and PO.				
AOX 900, 921	Polyolefins - Engineering Thermoplastics.	Mixture of antioxidant 1076/168, suitable for PC, ABS, Polyester and PO.				SMA
HALS BL 783 PHYSICAL FORM: GR	Polyolefins - Polyurethanes - Engineering Thermoplastics.	Mixture of 622/944 for several polymers.	GC SMA 700 Random Copolymer PHYSICAL FORM: GR	*-{-CH-CH ₂]; / , / , / , * o o o	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.	
HALS BL 791 PHYSICAL FORM: PW	Polyolefins - Polyurethanes - Engineering Thermoplastics.	Mixture of 770/944 for several polymers.	GC SMA 725 Random Copolymer PHYSICAL FORM: GR	*CH2 	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	$* + \begin{bmatrix} CH - CH_2 \end{bmatrix}_{x} \begin{bmatrix} CH_2 - CH_2 - CH_2 - CH_1 \end{bmatrix}_{y} \begin{bmatrix} I \\ I \\ 0 \end{bmatrix}_{z}$	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.

ONE SHOT FORMULATIONS

OPTICAL BRIGHTENERS



PROCESSING AIDS

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity - TGA -	PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity - TGA -
GC STEARATO DI BARIO Fatty acids, C16-18, barium salts	(Drying lubricants and dusting agents for Rubbers.		GC BIPB 40 Peroxide formulation based on Bis(t- butylperoxy isopropyl)benzene	$H_{3}C + CH_{3}$	Thermoplastic Polyolefins - natural and synthetic Rubber.	37-54°C
GC STEARATO DI ZINCO Fatty acids, C16-18, zinc salts CAS n. 91051-01-3 PHYSICAL FORM: PW	H ₂ C, H ₂ C, H ₂ C, To Zn ²⁺	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.	120°C	GC DICUMYL PEROXIDE Dicumyl Peroxide CAS n. 80-43-3	$\dot{C}H_3$ H ₃ C CH_3 CH_3 CH_3 CH_3 CH_3	Polyolefins - Elastomers (tubes, wires, tires, rubber seals).	>39°C
GC STEARATO DI CALCIO Fatty acids, C16-18, calcium salts CAS n. 85251-71-4 PHYSICAL FORM: PW	ol	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.	140-160°C	GC BEO 25 W Dibenzoyl Peroxide (CAS n. 94-36-0) 75% with water	y of	PVC - Styrenics.	103-108 °C @ 1.013 hPa
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.	130-150°C				
GC GMS 40 Stearic acid, monoester with glycerol (Conc. ≥40%)	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Plasticizer.	60°C				
GC GMS 90 Stearic acid, monoester with glycerol (Conc. ≥90%) CAS n. 123-94-4	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Plasticizer.	66,7°C				
GC DGM 95 Dystilled Glycerol Monostearate CAS n. 123-94-4 PHYSICAL FORM: PASTILLES	но он	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	$H_3C-(CH_{2'm}-CH-(CH_2)_n-CH_3$ SO ₃ Na m + n = 11 - 4 Average chain length: C15,2	Anionic surfactants for the detergent, chemical- technical and cosmetic industry with excellent wetting behavior.	> 350°C				

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

PROCESSING AIDS

PEROXIDES

PEROXIDES

NUCLEATING & CLARIFYING AGENTS

THERMAL CO-STABILIZERS

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity - TGA -	PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity - TGA -
PALMAROLE NA 88 Sorbitol based clarifying agent		Sorbitol base claryfing agent for PP.		PALMAROLE S.77 Calcium acetylacetonate heat stabilizer		PO. Thermal stabilizer for PVC and polymers with halogen free flame retardants.	
PHYSICAL FORM: PW							
PALMAROLE MINA 08 (ultra-fine) Sodium benzoate nucleating agent CAS n. 532-32-1	COONa	Improves physical and mechanical performances of polymers, particulary PP.		PALMAROLE S.50 Stearoyl benzoyl methane CAS n. 58446-52-9	Cli.	β-diketone-type heat co-stabilizer in the proces- sing of PVC or other vinyl polymers. It shows particular synergy with calcium/zinc and barium/zinc stabilizers allowing the use of a high level of calcium. It is particularly recommended for use in bottles, rigid	56°C
	~			PHYSICAL FORM: PW		sheet and films and plasticized films for use in food containers and medical/pharmaceutical articles.	
CAS n. 85209-91-2 PHYSICAL FORM: PW		Improves physical and mechanical properties of Polyolefines, particularly PP.		PALMAROLE S.83 1,3-Diphenyl-1,3-propanedione CAS n. 120-46-7 PHYSICAL FORM: DW/		β -diketone-type heat co-stabilizer for PVC or other vinyl polymers and copolymers. It shows particular synergy with calcium/zinc and barium/zinc stabilizers. If necessary, it may be used in combination with phosphites.	76.0 – 81.5°C
PALMAROLE MINA 12	Na O OH	Improves physical and mechanical properties of Polyolefines, particularly PP.					<u> </u>
CAS n. 13179-05-3 PHYSICAL FORM: PW							
PALMAROLE MINA 13		Improves physical and mechanical properties as well as transparency of Polyolefins.					
CAS n. mixture PHYSICAL FORM: PW							
PALMAROLE MINA 21		Clarifying agent for PP Polyolefins.					
CAS n. mixture PHYSICAL FORM: PW							
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NUCLEATING & CLARIFYING AGENTS

ANTISTATIC AGENTS

PRODUCT NAME	CHEMICAL FORMULA	APPLICATIONS	M.P./S.R. viscosity - TGA -	PRODUCT NAME	
PALMAROLE STAT 04 Stearic acid, monoester with glycerol (Conc. ≥40%)	0 ⁰ о ^н	Plasticizer.	60°C		٨
PALMAROLE STAT 09 Glycerides, C16-C18 mono- CAS n. 123-94-4 PHYSICAL FORM: GR, PW	но он	Generic Antistatic. Glycerol monostearate antistatic agent. It can be used in plastic sector as anti-static, anti-fog or lubricant. It's a good emulsifier, dispersant, stabilizer and anti-aging starch.		PALMAROLE MDA 1024 Hindered phenolic antioxidant and metal deactivator CAS n. 32687-78-8 PHYSICAL FORM: GR, PW	OH tBu f tBu f tBu tBu f tBu tBu
PALMAROLE STAT 12F 2-[(2hydroxyethyl)(octadecyl)amino]ethyl octadecanoate CAS n. 52497-24-2		PO - BOPP Film- in agricultural films. Partially esterified amine antistatic agent. Suitable also as anti fog agent. Partially esterified amine antistatic / antifogging agent.		PALMAROLE MDA P11 Hindered phenolic antioxidant and metal deactivator CAS n. 70331-94-1 PHYSICAL FORM: GR, PW	$\begin{bmatrix} t - C_4 H_2 & 0 & H & 0 \\ H & - & - & - & - & - & - & - & - \\ H & - & - & - & - & - & - & - & - \\ H & - & - & - & - & - & - & - & - \\ H & - & - & - & - & - & - & - & - \\ H & - & - & - & - & - & - & - & - \\ H & - & - & - & - & - & - & - & - \\ H & - & - & - & - & - & - & - & - \\ H & - & - & - & - & - & - & - & - \\ H & - & - & - & - & - & - & - \\ H & - & - & - & - & - & - & - \\ H & - & - & - & - & - & - & - \\ H & - & - & - & - & - & - & - \\ H & - & - & - & - & - & - \\ H & - & - & - & - & - & - \\ H & - & - & - & - & - & - \\ H & - & - & - & - & - & - \\ H & - & - & - & - & - & - \\ H & - & - & - & - & - & - \\ H & - & - & - & - & - \\ H & - & - & - & - & - \\ H & - & - & - & - & - \\ H & - & - & - & - & - \\ H & - & - & - & - & - \\ H & - & - & - & - & - \\ H & - & - & - & - & - \\ H & - & - & - & - & - \\ H & - & - & - & - & - \\ H & - & - & - & - & - \\ H & - & - & - & - & - \\ H & - & - & - & - & - \\ H & - & - & - & - & - \\ H & - & - & - & - & - \\ H & - & - & - & - & - \\ H & - & - & - & - & - \\ H & - & - & - & - \\ H & - & - & - & - \\ H & - & - & - & - \\ H & - & - & - & - \\ H & - & - & - & - \\ H & - & - & - & - \\ H & - & - & - & - \\ H & - & - & - \\ H & - & - & - & - \\ H & - & - & - \\ H & - & - & - & - \\ H & $
PALMAROLE STAT 16H Ethanol, 2,2'-iminobis-, N-(hydrogenated tallow alkyl) derivs CAS n. 90367-28-5 PHYSICAL FORM: SOLID		PE - LLDPE - PP - SAN - ABS. Tallow based Ethoxylated alkylamine antistatic agent.			
PALMAROLE STAT 18 2,2'-(octadecylimino)bisethanol. CAS n. 10213-78-2 PHYSICAL FORM: SOLID		PE - LLDPE - PP - SAN - ABS. Vegetable based Ethoxylated alkylamine antistatic agent.		PALMAROLE HT4 Hydrotalcite CAS n. 11097-59-9	
		1	1	PALMAROLE AC 320	
				PALMAROLE AZ 128	

PHYSICAL FORM: PW

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ANTISTATIC AGENTS

APPLICATIONS



1ETAL DEACTIVATORS



ACID SCAVENGERS

PO. Synthetic hydrotalcite; thermal stabilizer for PVC and polymers with halogen free flame retardants.	ERS
PVC. Synthetic Hydrotalcite Mg-Al based.	D SCAVENG
PVC. Synthetic Hydrotalcite Mg-Al-Zn based.	ACII

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PLASTIC ADDITIVES