

ULTRAVIOLET LIGHT ABSORBERS (UVA) | HINDERED AMINE LIGHT STABILIZERS (HALS) (CONT)

PRODUCT NAME	CAS#	CHEMICAL NAME	CHEMICAL STRUCTURE	PERFORMANCE BENEFITS
Lensorb HLS-622	CAS# 65447-77-0	Dimethyl succinate 4-hydroxy-2,2,6,6-tetramethyl-1-piperidineethanol polymer		<ul style="list-style-type: none"> Well suited for use in polyolefins but also compatible with other substrates Co stabilizes with other HALs and UV absorbers Especially effective for thick articles Due to its oligomeric structure and high molecular weight Lensorb HLS 622 has low volatility and minimal migration
Lensorb HLS-783	1:1 CAS# 70624-18-9 & CAS#65447-77-0	1,6-Hexanediamine, N,N'-bis(2,2,6,6-tetramethyl-4-piperidinyl)-, polymer with 2,4,6-trichloro-1,3,5-triazine, reaction products with 2,4,4-trimethyl-2-pentanamine		<ul style="list-style-type: none"> Lensorb HLS 783 is a synergistic blend of Lensorb HLS 622 & Lensorb HLS 944 Well suited for use in polyolefins but also compatible with a wide variety of substrates Low migration Lower interaction with pigments and minimal migration
Lensorb HLS-944	CAS# 70624-18-9	1,6-Hexanediamine, N,N'-bis(2,2,6,6-tetramethyl-4-piperidinyl)-, polymer with 2,4,6-trichloro-1,3,5-triazine, reaction products with 2,4,4-trimethyl-2-pentanamine		<ul style="list-style-type: none"> Well suited for use in polyolefins but also compatible with a wide variety of substrates Low volatility and minimal migration Especially effective for thin articles and fibers
Lensorb UV-2908	CAS# 67845-93-6	Hexadecyl 3,5 - di-tert-butyl-4-hydroxybenzoate		<ul style="list-style-type: none"> Well suited for use in polyolefins but also compatible with other substrates Co stabilizes with other HALs, UV absorbers and thioesters (DLTDP & DSTDP) Especially effective for formulations containing brominated flame retardants Minimal color contribution
Lensorb UV-3853-PE	1:1 CAS# 167078-06-0 & LDPE	2,2,6,6-tetramethyl-4-piperidinyl stearate & low density polyethylene (LDPE)		<ul style="list-style-type: none"> Well suited for use in polyolefins and styrenics but also compatible with other substrates Co stabilizes with high molecular weight HALs and UV absorbers Low volatility and minimal migration Non blooming
Lensorb UV-3346	CAS# 82451-48-7	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		<ul style="list-style-type: none"> Compatible with a wide variety of substrates Co stabilizes exceptionally well with hindered amine light stabilizers (HALS) and UV absorbers Well suited for high temperature applications Low volatility and minimal color contribution

OPTICAL BRIGHTENERS Absorb invisible light (radiation), upper UV range, and fluoresce it back as blue light. This emission of blue light makes the plastic article appear "whiter".

Lenbrite OB-D	CAS# 7128-64-5	2,2'-(2,5-Thiophenediyl)-Bis-(5-Tert-Butyl-Benzoxazole) or 2,5-thiophenediylbis (5-tert-butyl-1,3-benzoxazole)		<ul style="list-style-type: none"> Compatible with a wide variety of substrates Excellent dispersability in water and organic solvents Light fast in polymeric structures
Lenbrite OB-Extra	CAS# 7128-64-5	2,2'-(2,5-Thiophenediyl)-Bis-(5-Tert-Butyl-Benzoxazole) or 2,5-thiophenediylbis (5-tert-butyl-1,3-benzoxazole)		<ul style="list-style-type: none"> Compatible with a wide variety of substrates Excellent dispersability in water and organic solvents Light fast in polymeric structures. Has reduced particle size for better dispersion and increased surface area per mass ratio
Lenbrite OB-1	CAS# 1533-45-5	2,2'-(Vinylendi-4-Phenylene)bis (Benzoxazole) or 2,2'-(vinylendi-p-phenylene)bisbenzoxazole		<ul style="list-style-type: none"> Compatible with a wide variety of substrates Thermally stable Light fast in polymeric structures



APPLICATIONS

	DELIVERY FORM	ABS	NYLON	POLYESTER	POLYETHYLENE	POLYPROPYLENE	POLYSTYRENE	PVC	RUBBER	SIS, SBS
ANTIOXIDANTS										
Lenoxi AO-2246, Phenolic	S	•	•	•	•	•	•	•	•	•
Lenoxi AO-176, Phenolic	S	•	•	•	•	•	•	•	•	•
Lenoxi AO-775, Phenolic	S	•	•	•	•	•	•	•	•	•
Lenoxi AO-784, Phenolic	S	•	•	•	•	•	•	•	•	•
Lenoxi AO-110, Phenolic	S	•	•	•	•	•	•	•	•	•
Lenoxi AO-1135, Phenolic	L									
Lenoxi AO-68, Phosphite	S	•	•	•	•	•				
Lenoxi AO-1035, Phenolic	S	•					•	•		
Lenoxi AO-1726, Phenolic	S				•				•	•
Lenoxi AO-140, Phenolic	S								•	•
Lenoxi AO-MD-1024, Phenolic / Deactivator	S				•	•			•	•
Lenoxi AO-612G, Blend	S	•							•	•
Lenoxi AO-2777, Blend	S	•	•	•	•	•				
Lenoxi AO-1790, Triazine	S	•	•	•	•	•			•	•
Lenoxi AO-382, Oligomeric	S	•	•	•	•	•			•	•
Lenoxi AO-565, Phenolic / Triazine	S	•	•	•	•	•			•	•
DLTDP, Thioester	S	•			•		•		•	•
DSTDP, Thioester	S	•			•		•		•	•
UV/LIGHT STABILIZERS										
Lensorb BT-1, Benzotriazole	S	•	•	•	•	•	•	•	•	•
Lensorb BT-2, Benzotriazole	S	•	•	•	•	•	•	•	•	•
Lensorb BT-3, Benzotriazole	S	•	•	•	•	•	•	•	•	•
Lensorb BT-4, Benzotriazole		•	•	•	•	•	•	•	•	•
Lensorb BT-5, Benzotriazole	S								•	•
Lensorb LS-5411, Benzotriazole	S	•	•	•	•	•	•	•	•	•
Lensorb C135, Benzophenone	S		•	•	•	•	•	•	•	•
Lensorb C448, Benzotriazole	S		•	•	•	•	•	•	•	•
Lensorb HLS-770, HALS	S	•	•	•	•	•	•	•	•	•
Lensorb HLS-92, HALS	L	•			•	•	•	•	•	•
Lensorb HLS-92HP, HALS	L	•			•	•	•	•	•	•
Lensorb HLS-622, HALS	S	•	•	•	•	•	•	•	•	•
Lensorb HLS-783, HALS-BLEND	S	•	•	•	•	•	•	•	•	•
Lensorb HLS-944, HALS	S	•	•	•	•	•	•	•	•	•
Lensorb UV-2908, Phenolic Light Stabilizer	S	•			•		•			
Lensorb UV-3853-PE, HALS-PE / Blend	S				•					
Lensorb UV-3346, HALS	S	•	•	•	•	•	•			
OPTICAL BRIGHTENERS										
Lenbrite OB-D, Optical Brightener	S		•	•	•	•	•			
Lenbrite OB-Extra, Optical Brightener	S		•	•	•	•	•			
Lenbrite OB-1, Optical Brightener	S	•	•	•	•	•	•			



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Additive Product Selection Guide



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ANTIOXIDANTS

Antioxidants protect polymers (and other systems) by scavenging free radicals. Unlike HALS, they are consumed in the reaction and provide effective but finite protection.

PRODUCT NAME	CAS#	CHEMICAL NAME	CHEMICAL STRUCTURE	PERFORMANCE BENEFITS
Lenoxi AO-2246	CAS# 119-47-1	2,2'-Methylenebis(6-tert-butyl-4-methyl-phenol) or 6,6'-Di-tert-butyl-methylenedi-p-cresol		<ul style="list-style-type: none"> Compatible with a wide variety of substrates Provides processing and long term stability
Lenoxi AO-176	CAS# 2082-79-3	Benzenepropanoic acid, 3,5-bis(1,1-Dimethylethyl)-4-Hydroxy-,Octadecyl Ester		<ul style="list-style-type: none"> Low volatility Good extraction resistance Non-staining and non-discoloring
Lenoxi AO-775	CAS# 1709-70-2	Phenol, 4,4',4''-(2,4,6-trimethyl-1,3,5-benzenetriyl)tris(methylene)tris(2,6-bis(1,1-dimethylethyl)-		<ul style="list-style-type: none"> Compatible with a wide variety of substrates Excellent extraction resistance Good dielectric properties
Lenoxi AO-784	CAS# 27676-62-6	1,3,5-Tris(3,5-di-tert-butyl-4-hydroxybenzyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione		<ul style="list-style-type: none"> Compatible with a wide variety of substrates Low volatility Good extraction resistance
Lenoxi AO-110	CAS# 6683-19-8	Benzenepropanoic acid,3,5,-bis(1,1-Dimethylethyl)-4-Hydroxy-2,2-Bis(3-(3,5-bis(1,1-Dimethylethyl)-4-Hydroxyphenyl)-1-Oxoproxy) Methyl-1,3-Propanediyl Ester or Tetrakis(methylene(3,5-di-tertbutyl-4-hydroxyhydrocinamate)methane		<ul style="list-style-type: none"> Compatible with a wide variety of substrates Provides processing and long term stability Low volatility Good extraction resistance
Lenoxi AO-1135	CAS# 125643-61-0	Octyl-3,5-di-tert-butyl-4-hydroxy-hydrocinamate		<ul style="list-style-type: none"> Provides processing and long term stability Prevents the formation of peroxide radicals Pumpable liquid
Lenoxi AO-68	CAS# 31570-04-4	Phenol, 2,4-bis(1,1-dimethylethyl)-, phosphite (3:1)		<ul style="list-style-type: none"> Excellent synergist for hindered phenolic antioxidants and hindered amine light stabilizers (HALS)
Lenoxi AO-1035	CAS# 41484-35-9	Thiodiethylene bis[3-(3,5-di-tert-butyl-4-hydroxy-phenyl)propionate]		<ul style="list-style-type: none"> Primary hindered phenolic antioxidant which also has thio-synergist functionality
Lenoxi AO-1726	CAS# 110675-26-8	4,6-bis(dodecylthiomethyl)-o-cresol		<ul style="list-style-type: none"> Primary hindered phenolic antioxidant which also has thio-synergistic functionality Low volatility Good extraction resistance
Lenoxi AO-140	CAS# 128-39-2	2,6-di-tert-butylphenol		<ul style="list-style-type: none"> Primary antioxidant & intermediate for more complex hindered phenolic antioxidants and light stabilizers
Lenoxi AO-1790	CAS# 40601-76-1	1,3,5-Tris(4-tert-butyl-3-hydroxy-2,6-xylyl)methyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione		<ul style="list-style-type: none"> Low volatility High resistance to gas fading
Lenoxi AO-382	CAS# 68610-51-5	Butylated reaction product of p-cresol and dicyclopentadiene		<ul style="list-style-type: none"> Low volatility High resistance to gas fading

ANTIOXIDANTS (CONT)

PRODUCT NAME	CAS#	CHEMICAL NAME	CHEMICAL STRUCTURE	PERFORMANCE BENEFITS
Lenoxi AO-MD-1024	CAS # 32687-78-8	Benzenepropanoic acid-3,5-bis(1,1-dimethylethyl)-4-hydroxy-2-[3-(3,5-bis(1,1-dimethylethyl)-4-hydroxyphenyl)-1-oxopropyl]hydrazine		<ul style="list-style-type: none"> Primary hindered phenolic antioxidant and metal deactivator that protects plastic in contact with copper Excellent extraction resistance
Lenoxi AO-612G	1:2 CAS # 991-84-4 & CAS #31570-04-4	2,6-Di-tert-butyl-4-[4,6-bis(octylthio)-1,3,5-triazin-2-ylamino] phenol & Phenol, 2,4-bis(1,1-dimethylethyl)-, phosphite (3:1)		<ul style="list-style-type: none"> Synergistic blend of LENOXI AO 565 and LENOXI AO 68 which provides processing and long term thermal protection respectively
Lenoxi AO-2777	1:2 CAS# 40601-76-1 & CAS#31570-04-4	1,3,5-Tris(4-tert-butyl-3-hydroxy-2,6-xylyl)methyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione & Phenol, 2,4-bis(1,1-dimethylethyl)-, phosphite (3:1)		<ul style="list-style-type: none"> Synergistic blend of LENOXI AO 1790 and LENOXI AO 68 which provides processing and long term thermal protection respectively Low volatility
Lenoxi AO-565	CAS# 991-84-4	2,6-Di-tert-butyl-4-[4,6-bis(octylthio)-1,3,5-triazin-2-ylamino] phenol		<ul style="list-style-type: none"> Multifunctional primary antioxidant Low volatility Non-staining and non-discoloring
DLTDP	CAS# 123-28-4	Dilauryl Thiodipropionate		<ul style="list-style-type: none"> Excellent synergist for hindered phenolic antioxidants
DSTDP	CAS# 693-36-7	Distearyl Thiodipropionate		<ul style="list-style-type: none"> Excellent synergist for hindered phenolic antioxidants

ULTRAVIOLET LIGHT ABSORBERS (UVA)

UVAs inhibit polymer degradation by preferentially absorbing ultraviolet light and a via electron promotion converting damaging UV radiation into harmless kinetic energy.

HINDERED AMINE LIGHT STABILIZERS (HALS)

HALS inhibit polymer degradation by scavenging radical intermediates in a cyclic process where the HALS is regenerated preventing the radicals from reacting with and damaging the polymer.

PRODUCT NAME	CAS#	CHEMICAL NAME	CHEMICAL STRUCTURE	PERFORMANCE BENEFITS
Lensorb BT-1	CAS# 2440-22-4	2-(2'-hydroxy-5'-methylphenyl) benzotriazole		<ul style="list-style-type: none"> Compatible with a wide variety of substrates Co stabilizes with hindered phenolic antioxidants, phosphites and hindered amine light stabilizers (HALS) Strongly absorbs UV radiation between 300-400 nm
Lensorb BT-2	CAS# 3896-11-5	2-(2'-hydroxy-3'-1-butyl-5'-Methylphenyl)-5-Chloro-Benzotriazole		<ul style="list-style-type: none"> Excellent UV stabilizer for polyolefins Co stabilizes with hindered phenolic antioxidants, phosphites and hindered amine light stabilizers (HALS) Strongly absorbs UV radiation between 300-400 nm
Lensorb BT-3	CAS# 25973-55-1	2-(2'-Hydroxy-3',5'-Di-tert-amyl Phenyl) Benzotriazole		<ul style="list-style-type: none"> Compatible with a wide variety of substrates Co stabilizes with hindered phenolic antioxidants, phosphites and hindered amine light stabilizers (HALS) Low volatility during high processing temperature and good resistance to extraction Strongly absorbs UV radiation between 300-400 nm

ULTRAVIOLET LIGHT ABSORBERS (UVA) | HINDERED AMINE LIGHT STABILIZERS (HALS) (CONT)

PRODUCT NAME	CAS#	CHEMICAL NAME	CHEMICAL STRUCTURE	PERFORMANCE BENEFITS
Lensorb BT-4	CAS# 3864-99-1	2-(2'-Hydroxy-3',5'-Di-Tert-Butylphenyl)-5-Chlorobenzotriazole		<ul style="list-style-type: none"> Excellent UV stabilizer for polyurethanes Co stabilizes with hindered phenolic antioxidants, phosphites and hindered amine light stabilizers (HALS) Low volatility during high processing temperature and good resistance to extraction Strongly absorbs UV radiation between 300-400 nm
Lensorb BT-5	CAS# 104810-47-1 & CAS# 104810-48-2	Mixture of: Poly(oxy-1,2-ethanediyl); alpha-[3-[3-(2H-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl]-1-oxopropyl]-omega-[3-[3-(2H-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl]-1-oxopropoxy]- and alpha-[3-[3-(2H-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl]-1-oxopropyl]-omega.-hydroxy-		<ul style="list-style-type: none"> Excellent liquid UV stabilizer for polyurethanes Co stabilizes with hindered phenolic antioxidants, phosphites and hindered amine light stabilizers (HALS) High degree of permanence due to its reactivity with isocyanates and melamines Strongly absorbs UV radiation between 300-400 nm
Lensorb LS-5411	CAS# 3147-75-9	2-(2'-Hydroxy-5-t-Octylphenyl)Benzotriazole		<ul style="list-style-type: none"> Compatible with a wide variety of substrates Co stabilizes with hindered phenolic antioxidants, phosphites and hindered amine light stabilizers (HALS) Strongly absorbs UV radiation between 300-400 nm
Lensorb C 135	CAS# 1843-05-6	2-Hydroxy-4-n-Octoxy Benzophenone		<ul style="list-style-type: none"> Compatible with a wide variety of substrates Co stabilizes with hindered amine light stabilizers (HALS), benzotriazole UV stabilizers and quenchers Strongly absorbs UV radiation between 260-350 nm
Lensorb C 448	CAS# 70321-86-7	2-[2-Hydroxy-3,5-Di(1,1-Dimethylbenzyl)] 2-H-Benzotriazole		<ul style="list-style-type: none"> Especially suited for high temperature applications with polyolefins, polyurethanes, polycarbonate and polyesters Co stabilizes with hindered amine light stabilizer Lensorb HLS 92 & 92 HP Strongly absorbs UV radiation between 300-400 nm
Lensorb HLS-770	CAS# 52829-07-9	Bis(2,2,6,6-Tetramethyl-4-Piperidyl) Sebacate		<ul style="list-style-type: none"> Compatible with a wide variety of substrates Co stabilizes with hindered phenolic antioxidants, phosphites and UV absorbers Especially effective for articles that are thick *Note Additives containing sulphur may reduce Lensorb HLS 770 effectiveness
Lensorb HLS-92	CAS# 41556-26-7	Bis-(1,2,2,6,6-Pentamethyl-4-Piperidyl) Sebacate / Methyl(1,2,2,6,6-Pentamethyl-4-Piperidyl)Sebacate		<ul style="list-style-type: none"> Specifically suited for use in polyolefins but also compatible with a wide variety of substrates Co stabilizes with hindered phenolic antioxidants, phosphites and UV absorbers Lower interaction with pigments
Lensorb HLS-92HP	92 % of CAS# 41556-26-7	Bis-(1,2,2,6,6-Pentamethyl-4-Piperidyl) Sebacate		<ul style="list-style-type: none"> Lensorb HLS 92HP is more active than Lensorb HLS 92 due to it's higher purity Specifically suited for use in polyolefins but also compatible with a wide variety of substrates Co stabilizes with hindered phenolic antioxidants, phosphites and UV absorbers Lower interaction with pigments