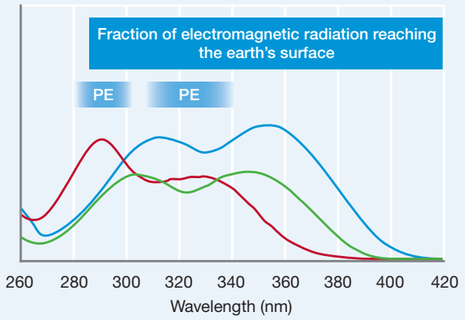
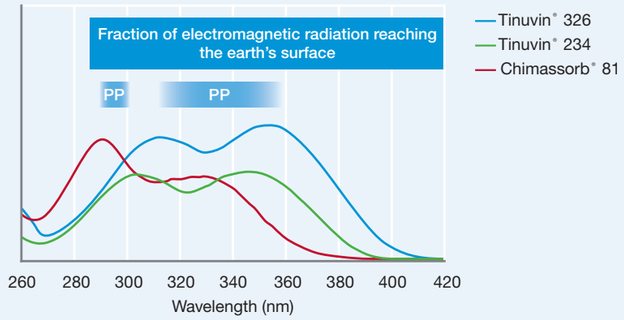
Absorption characteristics of UV absorbers

Individual polymers are affected by different wavelengths. Choosing the most effective light stabilizer for a given substrate depends upon matching the right UV absorber with the susceptible wavelength range of the polymer.

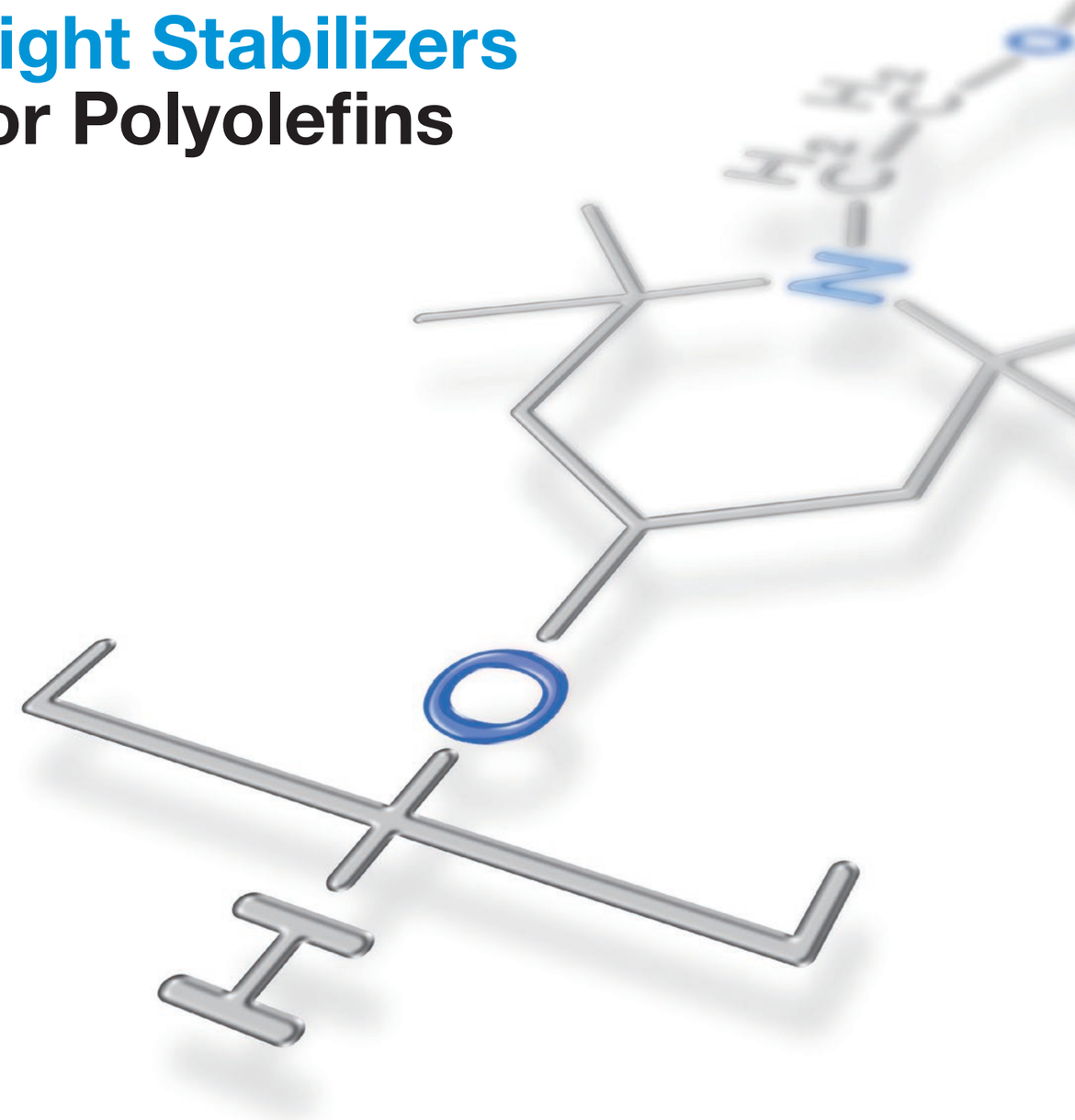
UV sensitivity and UV absorbers for PE



UV sensitivity and UV absorbers for PP



Light Stabilizers for Polyolefins



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	Product form	Molecular weight (g/mol)	Melting point °C	PP molding		PP extrusion					PE molding		PE extrusion						Key attributes
				General	Filled	Pipe/sheet/profiles	Yarn, BCF	Nonwoven	Tapes/monofilaments	Film	HD-, LLD-PE general	LLD-PE rotomolding	Pipe/sheet	PE, PE-x cable	Tapes/monofilaments	HDPE film	LD-/EVA , LLD-PE film	LD-, LLD-PE, EVA agro	
Light stabilizers (HALS)																			
Chimassorb® 2020	FDL	2600 – 3400	120 – 150	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	Standard high molecular weight HALS (Hindered Amine Light Stabilizer) with superior light /thermal stability for a wide range of applications
Chimassorb® 944	FDL, LD	2000 – 3100	100 – 135	■	■	■	□	□	□	□	■	□	■	□	□	□	□	□	High molecular weight HALS
Tinuvin® 111	FDL	NA	NA	□	□	□	□		□	□					□		□	■	Synergistic blend of high molecular weight HALS, intermediate chemical resistance
Tinuvin® 494	AR	NA	NA															■	Synergistic, pesticide resistant light stabilizer blend for agriculture films
Tinuvin® 622	SF	3100 – 4000	50 – 70	□	□	□	□	□	□	□	□	□	■	□	□	□	□		High molecular weight HALS with low volatility and minimal migration
Tinuvin® 770	DF	481	81 – 85	□	□	□			□	□									Low molecular weight HALS, particularly for thick section applications
Tinuvin® 783	FDL	NA	NA	□	□	□	□	□	□	□	■	■	□	□	□	□	■	□	Synergistic blend of high molecular weight HALS with broad food contact clearance
Tinuvin® 791	FB	NA	NA	●	●	●			●	○									Synergistic blend of high and low molecular weight HALS for thick section applications
Uvinul® 4050	FF	450	155 – 158	■	■	■			●	□									Low molecular weight HALS, particularly for thick section applications with food contact clearance
Uvinul® 5050 H	G	3000 – 4000	95 – 125	□	□	□	□	□	■	□	□	□	□		■	■	■	□	High molecular weight HALS suitable for water quenching process
Tinuvin® NOR® 356	G	= 1700	120 – 150					●										●	Light stabilizer with very high resistance to agro-chemicals
Tinuvin® NOR® 371	FF	2800 – 4000	91 – 104					●										●	Light stabilizer with very high resistance to agro-chemicals
Tinuvin® XT 200	FF	NA	NA					○										●	Light stabilizer with high resistance to agro-chemicals
Tinuvin® XT 100*	FF	NA	NA															●	Light stabilizer with intermediate chemical resistance
Tinuvin® XT 847*	FF	NA	NA			●													High performance light stabilizer system
Tinuvin® XT 850	FF	NA	NA	□	□	□													Non-interacting light stabilizer system particularly for automotive applications
Tinuvin® XT 55	FB	NA	NA			●			■						■				Synergistic blend of HALS with reduced water carry-over in tope or monofilament extrusion
Light stabilizers (UV absorbers)																			
Chimassorb® 81	P, FL	326.4	47 – 49	□		□			□	□	□		■		□	■	■	■	Benzophenone with excellent compatibility
Tinuvin® 234	P, FF	448	137 – 141				□	■		□					□				Benzotriazole with low volatility
Tinuvin® 312	P	312	124 – 127	□							□	■							Oxanilide with low initial color
Tinuvin® 326	P, FL	316	138 – 141	■	□	■			■	■	■	■	■		■	■	■	■	Benzotriazole with enhanced absorption of long-wave UV radiation

NA: Not Applicable * available in selected countries only

Food Contact Approval (FCA) Indicator

- ○ no FCA, can be used
- ● no FCA, recommended
- □ FCA in at least one country, can be used
- ■ FCA in at least one country, recommended

BASF product forms

FD/FDL Free Flowing Dust Free

FF Free Flowing

G Granules

P Powder

SF Solid Flowable

FL Flakes

Further Product Forms

AD	Aqueous Dispersion
AR	Attrition Resistant
DF	Dust Free, Free Flowing
FB	Free Flowing Beads
G	Granule
L	Liquid
LD	Low Dust
M	Melt