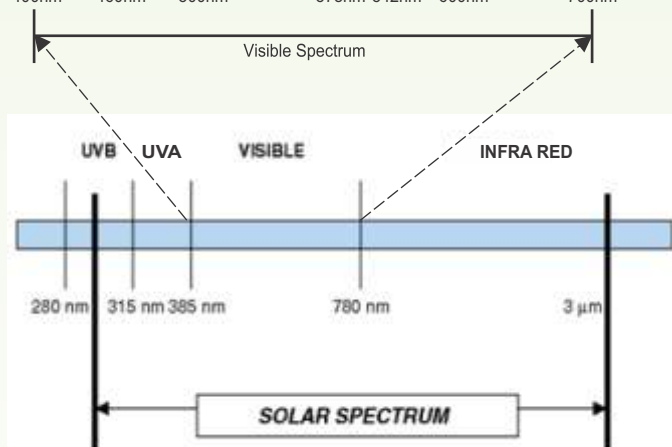


# UV STABILISER MASTERBATCH

Light energy emitted by the sun spans a wide range of wavelengths, mainly comprising of Ultraviolet (UV, 295 -400 nm), Visible (VIS, 400-700 nm) & Infrared (IR, 700-3000 nm) regions.

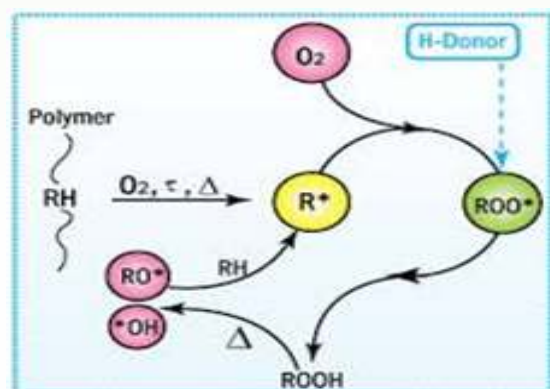


5% of the total solar energy reaching the earth is UV light. This part of the solar spectrum leads to degradation / weathering of polymers by breaking chemical bonds.

50% of the solar energy reaching the earth's surface is Visible light. The human eye translates various wavelengths into colours based on light scattering, absorption and reflectance.

45% of the solar energy reaching the earth's surface is in infrared range. This part of the sunlight, if absorbed, results in elevation in material temperature.

Weathering is the term used to describe the adverse response of a material or product to climatic conditions, often causing unwanted reactions. Light, high temperature and moisture can cause damage to plastics. The damage includes gloss loss, fading, yellowing, cracking, peeling, embrittlement, loss of tensile strength & delamination. Even indoor lighting & sunlight through window glass can degrade materials such as plastics, pigments & dyes, causing fade and colour change.



The schematic shows the degradation of polymer (RH) by heat ( $\Delta$ ), light ( $h\nu$ ) & oxygen ( $O_2$ ). The reaction is sustainable as free radicals ( $R^*$ ,  $ROO^*$ ,  $RO^*$  &  $OH^*$ ) are continuously produced by polymer degradation.

The degradation can be stopped by 2 class of additives – UV Absorbers (UVA) : Absorbs light energy & dissipates as heat in a controlled manner.

Hindered Amine Light Stabiliser (HALS) : Acts as a radical scavenger, thus retards the degradation process.

Supreme UV Stabiliser masterbatches consists of formulation based on a range of UVAs and HALS, either alone or in synergistic combination, designed for various applications.

The type and quantity of additive recommendation depends on –

Polymer type  
Presence of colourants, additives & fillers  
Geographical location & Climatic condition

Product thickness  
Expected exposure time / service life  
Regulatory requirements, like FDA

### Features of UV Masterbatches

- ❖ Available in PS, PE & PP carrier resin
- ❖ Active content ranges between 10 – 20%
- ❖ Low pigment interaction
- ❖ Excellent performance in thick & thin articles
- ❖ Provides protection against photo & thermal oxidation
- ❖ Formulations with chemical & pesticide resistance
- ❖ Formulations with outstanding extraction resistance, Low gas fading
- ❖ Formulations with low water carryover
- ❖ Formulations with FDA compliance
- ❖ Consistent quality
- ❖ Custom formulations / Combi grades are feasible.

### Grade & Application Details

Grade	Content	Applications
51 Series	10% HALS	High molecular weight polymeric HALS for packaging and agricultural (low sulphur) films. FDA Compliant.
52 Series	20% HALS	Synergistic mixture of high & low molecular weight HALS for light & thermal stability, low water carryover. Recommended for PP/PE tapes, Furniture, Crates, Molded (Injection, Blow & Roto) articles, pipes
53 Series	20% HALS	Based on low molecular weight HALS, exhibits excellent light stability. High migration rate, thus recommended for thick sections. Applications include tapes, Furniture, Crates, Molded (Injection, Blow & Roto) articles, pipes
54 Series	20% HALS	Synergistic mixture of high molecular weight HALS for both, thin & thick sections. Exhibits light & thermal stability, low water carryover & Chemical Resistance. Recommended for PP/PE tapes, films, Molded (Injection, Blow & Roto) articles. FDA Compliant
55 Series	Proprietary	Formulations in PS for transparent & opaque applications for appliance industry. FDA & Non-FDA versions available.
56 Series	HALS + UV	Combination of UV & HALS, provides best protection to surface aesthetics, colour stability & retention of mechanical properties. Recommended for applications subjected to direct sunlight.
57 Series	Proprietary	Formulations for agricultural applications, exhibits pesticide resistance.

### Packaging & Storage

Material is supplied in pellet form, packed in 25 Kg laminated bags. SPL recommends storage of material in a ventilated & covered facility, protected from Moisture, Sunlight and Heat. The packing material used is not UV stabilized and hence should not be exposed to sunlight.



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