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K.SORB 770

Low Molecular Weight Hindered Amine Light Stabilizer (HALS)

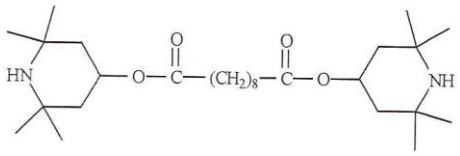
CHEMICAL NAME Bis (2,2,6,6-tetramethyl-4-pyperidyl) sebacate

CAS NUMBER 52829-07-9

EINECS NUMBER 2582079

MOLECULAR FORMULA $C_{28}H_{52}N_2O_4$

STRUCTURE



MOLECULAR WEIGHT 480,7 Dalton

CHARACTERIZATION

K.SORB 770, a tetramethyl pyperidinol derivative, belongs to the sterically hindered cyclic amine class of light stabilizer for polymers (HALS). It is used to prevent or considerably reduce the photo-oxidative degradation (in terms of loss of mechanical and aesthetic properties) of plastic articles exposed outdoors to the destructive action of the sun's UV rays.

Its stabilization mechanism, self regenerating, includes the decomposition of the alkylperoxy radicals and the scavenging of the alkyl free radicals produced into the polymer by the combined attack of UV rays and atmospheric oxygen.

K.SORB 770's performance is highly superior to that of the classic UV absorbers. It is generally not influenced by pigments or fillers (if free of transition metals ions) and may be further enhanced by the synergistic combination with UVAs themselves and organophosphites. Laboratory pre-trials are however mandatory to control colour development or reduced stabilization performance.

Moreover, the efficacy of **K.SORB 770** (which contains unsubstituted >NH functional groups) can be negatively influenced by compounds containing sulphur or halogens (like thioethers, fire-retarding additives, or particular pigments) and by acidic substances. Here again, such influence on processing, colour and end-use must be determined by preliminary lab tests.

PHYSICAL PROPERTIES

Appearance	White Odourless Crystalline Powder or White granules/flakes
Assay (GC)	≥ 98 %
Melting range (capillary)	81° – 85°C
Volatiles (2h @105°C)	≤ 0.5 %
Ash	≤ 0.1 %

Technical Data Sheet

Technical Data Sheet

Transmittance % (solution of 10 g /100 ml toluene, 1 cm cell)	
@ 425 nm	≥ 95.0 %
@ 500 nm	≥ 97.0 %
Bulk density	470 – 510 Kg/m3
Specific gravity @ 20°C	1.05 g/cm3
Vapour pressure @ 20°C	1.3 x 10-8 Pa
Flash point (C.C. DIN 51584)	> 150 °C
Volatility, % weight loss (TGA-analysis, heating rate 20°C/min in air)	
	1% at 200°C
	10% at 260°C
Solubility @ 20°C (g/100 ml solvent)	
Methylene Chloride	56
Benzene	47
Chloroform	45
Methanol	38
Ethyl acetate	24
Acetone	19
Hexane	5
Water	< 0.01

PACKAGING

K.SORB 770 is supplied in 20/25 Kgs carton box with inner polyethylene bag.

TOXICOLOGY

Acute oral toxicity (LD50 rat)	> 2000 mg/Kg
Skin irritation (rabbit)	Non-irritant
Eye irritation (rabbit)	Irritant

STORAGE-HANDLING

K.SORB 770 must be stored in a dry and ventilated cool place, in securely closed drums. Maximum recommended storage time under suitable condition (dry and cool): 5 years. Protect eyes and face and use gloves when handling the product. For detailed information on toxicity, storage and handling please refer to the relevant Material Safety Data Sheet.

APPLICATION

K.SORB 770 is one of the most powerful light stabilizer for PP and HDPE (thick sections and raffia), TPO, EPDM, styrene copolymers, thermoplastics elastomers, TPU, PMMA, PA. In many instances its efficacy can be synergistically raised by oligomeric HALS, classic UV absorbers and organophosphites.

K.SORB 770 does not affect the polymers' colour, in particular if combined with an organophosphite and if the polymer is BHT-free. As a low molecular weight compound, **K.SORB 770** should preferably not be used in thin section articles such as LDPE films and olefinic fibres, since blooming and extraction problems may occur.

ADDITION LEVELS

Taking into account the type of polymer, the type and amount of pigments, fillers, synergistic additives and the expected service life, **K.SORB 770** should be used at 0.10 to 0.50 phr.

Extensive performance data of **K.SORB 770** in various polymers and specific application areas are available upon request.