

ANTI OXIDANTS

CORRELATION CHART

<u>Produkt..</u>	<u>Countertypes..</u>	<u>Application..</u>
MileOx – D	Antioxidant DPG	Rubber
MileOx – NOBS	Antioxidant TMTD	Rubber
MileOx – P	Antioxidant P	Rubber, Plastics
MileOx – TMQ	Anox HB / Vulkanox HS / Flechtol past.	Rubber
MileOx – 40	ADK Stab AO-40	Plastics
MileOx – 234	Tinuvin 234 / Irganox 234	Plastics
MileOx – 320	Tinuvin 320 / ADK Stab LA-38	Plastics
MileOx – 326	Tinuvin 326	Plastics
MileOx – 327	Tinuvin 327 / ADK stab LA-34	Plastics
MileOx – 328	Tinuvin 328	Plastics
MileOx – 329	Tinuvin 329 / Cyasorb UV-5411	Plastics, ABS
MileOx – 1010	Irganox 1010	Plastics, ABS
MileOx – 1076	Irganox 1076	Plastics
MileOx – 1330	Irganox 1330/ Ethanox 330	Plastics, Rubber
MileOx – 3114	Irganox 3114 / Anox IC-14 / ADK Stab AO-20	Plastics

Usage:

The products above are better than benzophenone products because of their high-efficiency, low-toxicity, low consumption and large absorption of UV. They are suitable for natural and synthetic rubber, plastics (as polyolefin, polyester, polyurethane) and ABS. The products can also be used in pale colored / transparent rubber, coatings and plastic products because of its high temperature resistance, high stability and low volatility. This series of products are not sensitive to metal ion, not stained in alkali, oil resistant and washing resistant.

MILEOX TYPE - D

Diphenyl guanidine (DPG)

Chemical formula : C₁₃H₁₃N₃

Molecular weight : 211,27

Shape and properties : White powder without odor and poison. Specific gravity : 1,08 – 1,19. Melting point above 144 °C. Easily soluble in acetone, ethyl acetate, soluble in benzene, ethanol carbon tetrachloride, insoluble in water and gasoline. Stable storage.

Specification

Melting point : 144 °C

Loss by heating : 0,3 % max.

Ash content : 0,3 % max.

Residue on 150 UM : 0

Application

: Generally used for natural and synthetic rubbers. Not suitable for latex. Often in common use with MBTS (DM) and TMTD, also used as a activating agent for thiazole, sulfenamide and thiuram types accelerators. Mainly used in manufacture of tires, rubber boards, rubber shoes and other technical rubber goods and used for rubber mixtures with high stretching strength at definite elongation.

MILEOX TYPE - NOBS

Tetramethyl thiuram disulfide (TMTD)

Chemical formula : **C₆H₁₂N₂S₄O**

Molecular weight : **240,41**

Shape and properties : Light grey-ish white powder without poison, but with skin irritation. Specific gravity : 1,29. Melting point above 136 °C. Soluble in chloroform, acetone, methylene chloride, benzene, not easily soluble in carbon tetrachloride, ethyl alcohol, ethyl acetate, insoluble in water and gasoline. Stable in storage. After the treatment by oil, the finesse may reach 300 mesh (45 um)

Specification

Beginning melting point : 142 °C

Loss by heating : 0,4 % max.

Ash content : 0,3 % max.

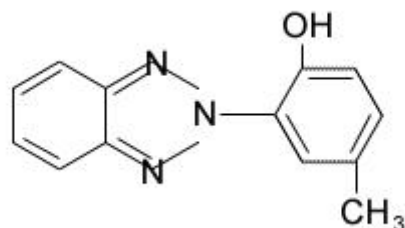
Residue on 100

UM mesh : None

Application

: The ultra accelerator has a higher critical temperature, suitable for natural and synthetic rubbers, can be used as vulcanizator too. Pay attention to pre-vulcanization during operation with the accelerators. It can be used in with other common accelerators and as secondary accelerator. Mainly used for tires, rubber shoes, cable, and transparent, white and coloured technical rubber goods. It can be used as a activating agent for accelerators MBT and other sulfenamide type accelerators.

MILEOX TYPE - P



Molecular weight : 225

C.A.S. NO : 2440-22-4

Specifications

Appearance : white to pale yellow crystalline powder

Melting point : 128-132 °C

Purity : $\geq 99\%$ (HPLC)

Light transmittance : 440nm, $\geq 98\%$
500nm, $\geq 99\%$

Packing : 1kg, 5kg, 25kg, 50kg

Application

: It is high-efficient UV absorbent to absorb UV between 270-340 nm, used in poly, polystyrene, polyester, polycarbonate, Perspex, polyethylene, ABS resin, epoxy resin and cellulose resin. It almost absorb no visible light, being especially fit for colorless transparent and pale colored products. It can be used in plastic products for food

MILEOX TYPE - TMQ

Polymerized 2,2,4 -Trimethyl-1,2-Dihydroquinoline resin

Synonyms : TMQ

C.A.S. NO : 26780-96-1

Specifications

Component : 2,2,4 -Trimethyl-1,2-Dihydroquinoline, Polymerized
95% min

Appearance : amber-brown flaky

Melting point : 75-90 °C

Heating loss : 0.5% max

Ash content : 0.3% max

Packing : 20 kgs net bags lined with plastic bags.

Application : TMQ as an antioxidant for rubber. It has remarkable effect on the protection against thermal and oxygen ageing with low toxicity and non-frosting.

MILEOX TYPE - 40

4,4-Butylidenebis(3-methyl-6-tert-butylphenol)

C.A.S. NO : 85-60-9

Specifications

Appearance : White powder

Melting point : 210-214°C

Heat loss
(120°C x2h, 5-10mmHg): < 0.5%

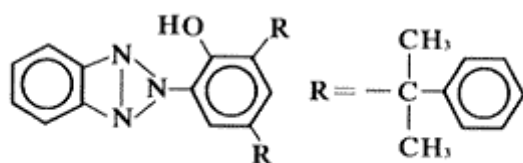
Colour of solution at
425nm (4g to 20ml
methanol soln) : < 80%

Ash (guaranteed value) : <0.1%

Packing : 25kgs bags

MILEOX TYPE - 234

2-(2H-benzotriazol-2-yl)-4,6-bis(1-methyl-1-phenyl ethyl)phenol



C.A.S. NO : 70321-86-7

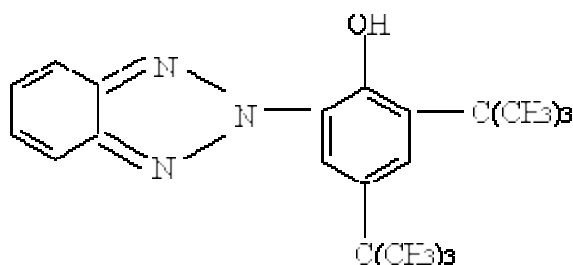
Specifications

Appearance : slightly yellow powder
Melting point : 137-141 °C
Assay : ≥ 99%

Packing : 1kg, 5kg, 25kg, 50kg

Application : MileOx 234 is a high molecular weight and low volatile ultraviolet light absorber of the hydroxyphenyl benzotriazole class, imparting outstanding light stability to a variety of polymers during its use.

MILEOX TYPE - 320



Molecular weight : 323

C.A.S. NO : 3846-71-7

Specifications

Appearance : white powder
Melting point : 152-156 °C
Purity : ≥ 99% (HPLC)
Light transmittance : 440nm, ≥ 97%
500nm, ≥ 98%
LD50 : > 2000 mg/kg
Volatile : ≤ 0.3%

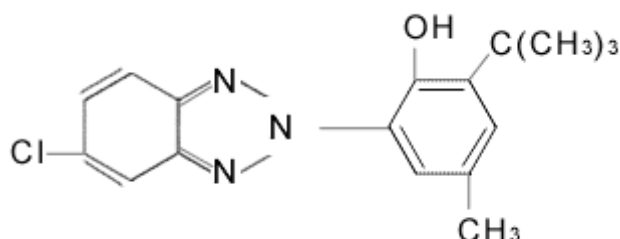
Packing : 1kg, 5kg, 25kg

Application

: MileOx -320 is a highly effective light stabilizer for a variety of plastics and other organic substrates including unsaturated polyesters, PVC and PVC plastisol. Good results are also expected when MileOx -320 is used in polycarbonates, polyurethanes, polyamides, synthetic fibers, particularly those with a polyester, skyd, epoxy or isocyanate resin base. MileOx -320 features strong UV absorption excellent compatibility in a variety of substrates and low volatility and protects polymers as well as organic pigments from UV radiation helping to preserve the original appearance and physical integrity of molded articles, films, sheets and fibers during outdoor weathering, MileOx - 320 is slightly more discoloring than convention UV absorbers.

MILEOX TYPE - 326

2'-(2'-Hydroxy-3',5'-tert-buty-5'-methyl-phenyl)-5-chlorobenzotriazole



Molecular weight : 315.8

C.A.S. NO : 3896-11-5

Specifications

Appearance : slightly yellow powder

Melting point : 139-140.5 °C

Purity : $\geq 99\%$

Light transmittance : 460nm, $\geq 97\%$
500nm, $\geq 99\%$

LD50 : > 5000 mg/kg

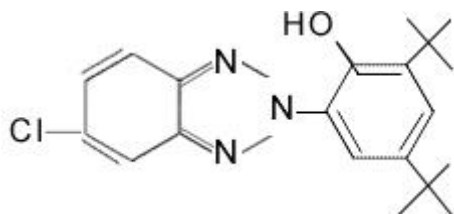
Volatile : $\leq 0.3\%$

Packing : 1kg, 5kg, 25kg, 50kg

Application : This product is a UV absorber, it may absorb UV between 270nm to 380nm, it has a wide range of indirect food approvals in polyolefins. It has a low volatility at high temperatures and light resistance to thermal degradation and can therefore be used without significant loss or decomposition in the polyolefin compounding and melting processes in the use for the UV protection of polyester resins ect.

MILEOX TYPE - 327

2'-(2'-Hydroxy-3',5'-di-tert-butylophenyl)-5-chlorobenzotriazole

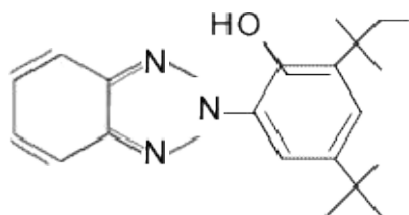


C.A.S. NO : 3864-99-1

Purity : $\geq 99\%$ (GC)

MILEOX TYPE - 328

2-(2'-Hydroxy-3',5'-di-tert-pentylphenyl)-benzotriazole



Molecular weight : 351.5

C.A.S. NO : 25973-55-1

Specifications

Appearance : slightly-yellowish crystal powder

Melting point : ≥ 80 °C

Purity : $\geq 99\%$ (GC)

Light transmittance : 460nm, $\geq 97\%$
500nm, $\geq 98\%$

LD50 : > 5000 mg/kg

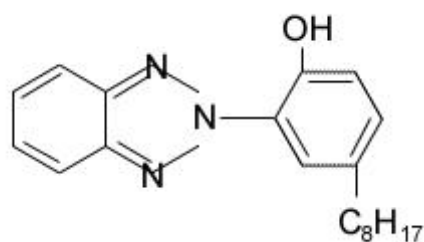
Volatile : $\leq 0.3\%$

Packing : 1kg, 5kg, 25kg, 50kg

Application : This product is a UV absorbent, it may absorb UV between 270 nm to 380 nm, λ_{\max} 345nm, it is a highly effective light stabilizer for a variety of plastics and other organic substrates, it's used as recommended for the stabilization of styrene homo and copolymers, acrylic polymers, unsaturated polyesters, polyvinyl chloride, polyolefins, polyurethanes polyacetals, etc

MILEOX TYPE – 329

2-(2'-hydroxy-5'-tert-octylphenyl)benzotriazole



Molecular weight : 323

C.A.S. NO : 3147-75-9

Specifications

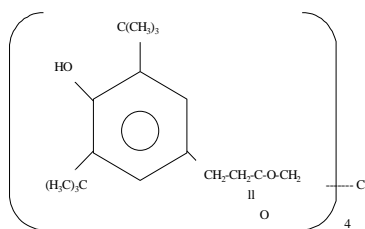
Appearance : white powder
Melting point : 101-106 °C
Purity : ≥ 99% (HPLC)
Light transmittance : 440nm, ≥ 97%
 500nm, ≥ 99%
Volatile : ≤ 0.3%

Packing : 1kg, 5kg, 25kg, 50kg

Application : It is high-efficient light stabilizer, absorbing UV with low volatility, used in polystyrene, Perspex, polyester, hard poly, polycarbonate, ABS resin, etc. It is quite fit for transparent products and engineering plastics processed in high-temperature. It has good cooperative effect when used with anti-oxidant to increase the resistance to elements and heat stability.

MILEOX TYPE – 1010

Pentaerythrityl-tetrakis-3-(3,5-di-tert-butyl-4-hydroxyphenyl)
propionate or
Tetrakismethylene (3,5-di-tert-butyl-4-hydroxyhydrocinnamate)



Molecular weight : 1178

C.A.S. NO : 6683-19-8

Specifications

Appearance : white free flowing crystalline powder

Melting point : 110-125 °C

Specific (20°C) : 1.45

Transmittance : 425nm - 93% min
500nm - 95% min

Vapor pressure : 1 x 10⁻¹² mm Hg (at 2-°C)

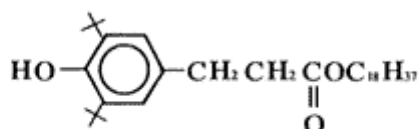
Flash point : 297°C (Close up)

Packing : 25 kgs cardboard boxes on pallets, shrinkfoiled

Application : MileOx 1010 is particularly effective in polyethylene, high impact polystyrene, ABS, polyacetals, polyamides, polyurethane, and thermoplastic elastomers, such as EPDM, SBR block copolymers, and synthetic rubbers, adhesives. In polypropylene MileOx 1010 offer excellent color, long term aging and processing stability. The stabilizaiton performance can be further enhanced when MileOx 1010 is used in combination with thiodipropionate esters, such as DLTDP or DSTDP.

MILEOX TYPE – 1076

octadecyl-3,5-di-tert-butyl-4-hydroxyhydrocinnamate



C.A.S. NO : 2082-79-3

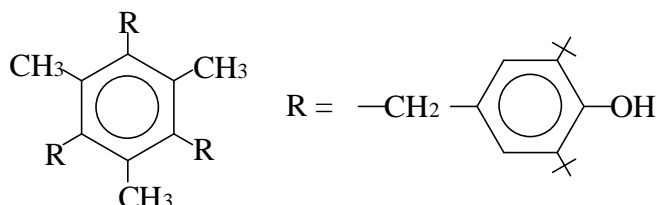
Specifications

Appearance : white crystalline powder
Melting point : 50 - 55 C
Density (g cm⁻³) : 1.02
Flash point : 273 C (open cup)
Water solubility : negligible

Application : MileOx 1076 is a hindered phenolic antioxidant with its advantages of relatively better heatproof and waterproof character. It can effectively inhibit oxidation and thermal degradation of many organic and polymeric materials.

MILEOX TYPE – 1330

1,3,5-Trimethyl-2,4,6-tris(3,5-di-t-butyl-4-hydroxybenzyl)benzene



Molecular weight : 775.2

C.A.S. NO : 1709-70-2

Specifications

Appearance : White to off-white crystalline powder

Melting point : 240-245 °C

Assay (HPLC) : 98% min.

Ash : 0.1% max.

Loss on Drying : 0.5% max.

Solution Clarity
& Transmittance : Clear solution.

(10 g/ 100 g Toluene) : 425 nm - 96% min.
500 nm - 98.0% min.

Packing : 20 Kgs net/paper bag, 2 bags/carton.

Application : It protects polyolefins from thermo-oxidative degradation during processing and in service. Because of its excellent dielectrical properties, it's widely used in PE cable insulation and in PE and PP capacitor films. It's also recommended for thermoplastic rubbers such as polyether and hydrogenated SBS/SIS.

MILEOX TYPE – 3114

1,3,5-Tris(3,5-Di-Tert-Butyl-4-Hydroxybenzyl)-1,3,5-Triazine-2,4,6(1H,3H,5H)-Trione

Molecular weight : 784

C.A.S. NO : 27676-62-6

Specifications

Appearance : White free-flowing powder
Melting point : 218~223 °C
Flash point : 289
Specific gravity : 1.03g/cm³@20
Bulk density powder : 540-630g/l
Solubility (25) : g/100g solution
Acetone : 29
Chloroform : 21
Ethanol : 1.5
n-HEXANE : 0.6
Methanol : 0.5
Water : 0.01

Application : This product is a sterically hindered phenolic antioxidant- is a highly effective, non discolouring stabilizer for organic substrates such as polymers, synthetic fibers, elastomers, adhesives, waxes, oils and fats. It protects these substrates against thermo-oxidative degradation and contributes to their light stability.