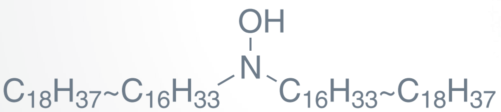
MILANO COLORI

Plastic Additives Highlight

Revonox® 420V

Novel plant-derived hydroxylamine antioxidant

Amines, bis(hydrogenated palm-oil alkyl)hydroxy



REACH registered and TSCA listed

Resistant to gas-fading

Ideal for polyolefins, e.g. PP/PE

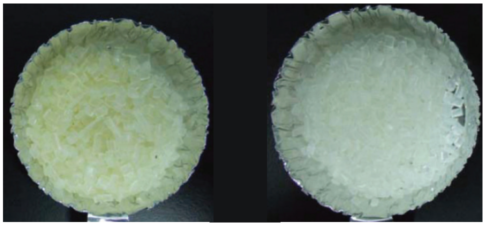
NO animal origin ingredient

Fig. 1. PP[a] - melt flow stability

Extrusion pass[b]	1	2	3	4	5	ΔMFR[c]
Control (MFI=5.5)	9.78	16.60	27.20	42.80	---	33.02
Revonox® 420V	6.58	8.70	11.26	15.99	19.35	12.77
Revonox® 420V/ Deox® 68[d]	6.41	7.85	10.50	14.86	18.17	11.76

a: Polymer: PP (homo, MFI=5.5)
b: Processing condition: Multiple extrusion, twin screw extruder (Φ = 35mm, L/D = 36)
c: Melt flow rate is measured by weight every 10 minutes at 230°C and 2.16kg pressure
d: 0.1 phr Revonox® 420V and 0.1 phr Deox® 68

Fig. 2. PP[a] - color stability



0.1 phr Phenolic AO + 0.1 phr Deox® 68 | 0.1 phr Revonox® 420V + 0.1 phr Deox® 68

a: Polymer: PP (homo, MFI=5.5)
b: Test condition : Oven ageing at 150°C for 6 days in recirculating air oven

Recommended applications:

-Polypropylene fiber
-PE film
-Phenol-free systems

Zuran® 9C

Halogen-free intumescent flame retardant

Low smoke, low toxicity and high flame retardancy

Minimal migration

Best price/ performance ratio

High heat resistance up to 280°C

Outstanding hydrolytic stability

Fig. 1. Thermogravimetric analysis (TGA) diagram

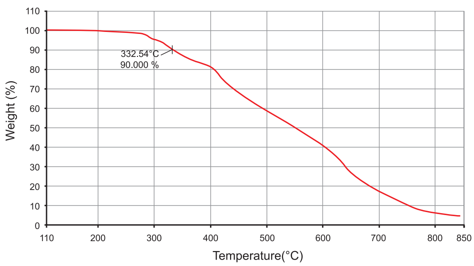


Fig. 2. Modified UL VW-1 wire flammability testing

Recommended applications:

-Polyolefins and synthetic rubber
-Exterior applications
-Migration-sensitive applications

Revonox® 608

A powerful phosphite antioxidant for plastics processed at elevated temperature

FDA approved and REACH registered

- Remarkable antioxidation efficiency
- High hydrolytic resistance
- Superb thermal stability
- Excellent color protection

Fig. 1. Thermogravimetric analysis (TGA) diagram

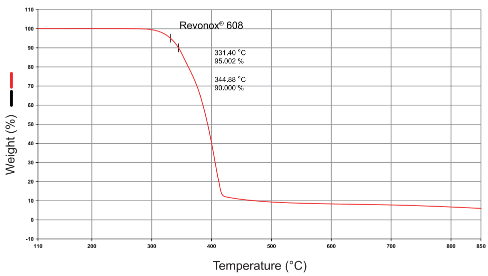


Fig. 2. Molten color of Reveonox® 608

(1) (2) (3) (4) (5)

(1) Tetrakis(2,4-di-*tert*-butylphenyl)-4,4’-biphenyldiphosphonite
(2) Deox® 604 : Bis(2,4-di-*tert*-butylphenyl)pentaerythritol diphosphite
(3) Revonox® 608
(4) Bis(2,6-di-*tert*-butyl-4-methylphenyl)pentaerythritol-di-phosphite
(5) 2,2',2''-Nitrilo[triethyl tris(3,3',5,5'-tetra-*tert*-butyl-1,1'-biphenyl-2,2'-diyl)phosphite]

Recommended applications:

-General purpose plastics: PE, PP, TPO, TPE, etc.
-Engineering plastics: polyester, nylon, PET, etc.

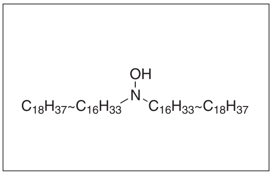
Antioxidants

Product	CAS no.	Form	Melting point	Application
Revonox® 420	143925-92-2	P	90 °C min.	Automotive TPO
Revonox® 420V	1374859-51-4	P	90 °C min.	PP fiber/automotive TPO
Revonox® 501	1261240-30-5	P	183 °C min.	PP/PE/PU
Deox® BS-1135	125643-61-0	L	-	PU/Epoxy
Deox® MD-1024	32687-78-8	P	221-232 °C	PE/PP
Deox® MD-1072	69851-61-2	P	170 °C min.	Engineering plastics
Deox® MD-1098	23128-74-7	P	156-161 °C	Nylon
Deox® 1412	29598-76-3	P	44-52 °C	Engineering plastics
Deox® 565	991-84-4	P	91-96 °C	Rubber
Deox® 604	26741-53-7	P	160 °C min.	Olefins
Revonox® 608	154862-43-8	P	225 °C min.	High processing temp. plastics

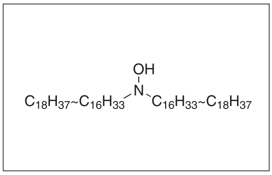
P=Powder, L=Liquid

Structure

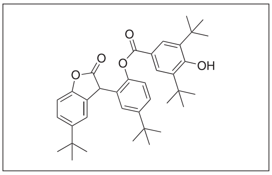
Revonox® 420



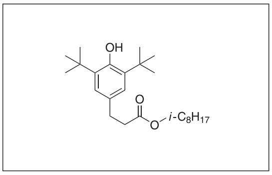
Revonox® 420V



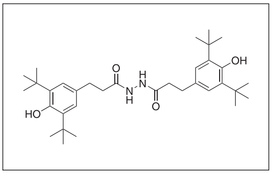
Revonox® 501



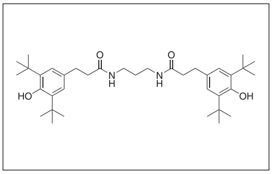
Deox® BS-1135



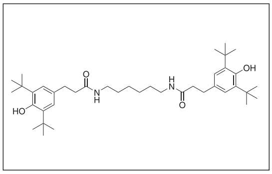
Deox® MD-1024



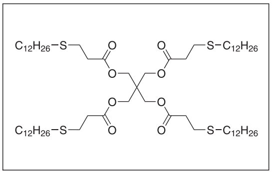
Deox® MD-1072



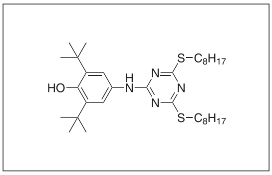
Deox® MD-1098



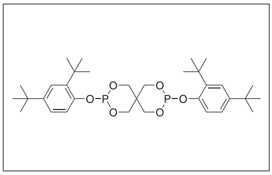
Deox® 1412



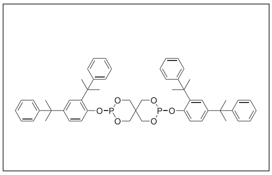
Deox® 565



Deox® 604



Revonox® 608



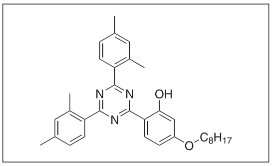
UV Absorbers

Product	CAS no.	Form	Melting point	Application
Chiguard® 1064	2725-22-6	P	89 °C min.	PP, PE, TPE
Chiguard® 5577	147315-50-2	P	145 °C min.	Polyester/PC
Chiguard® 234	70321-86-7	P	137 °C min.	Nylon/PBT
Chiguard® 326	3896-11-5	P	137-141 °C	HIPS/SEBS/coatings
Chiguard® 328	25973-55-1	P	79-84 °C	Polyolefins/styrenics/urethanes
Chiguard® 5228	73936-91-1	P	109-113 °C	PP/TPO
Chiguard® 5411	3147-75-9	P	102-107 °C	PC/PMMA
Chiguard® 5431	103597-45-1	P	190 °C min.	PC
Chiguard® 5571	125304-04-3	L	-	PUR/PVC/PMMA/PE
Chiguard® 1033	23949-66-8	P	120 °C min.	Acrylic/TPU
Chiguard® 380W	18600-59-4	P	300 °C min.	PET
Chiguard® 1108	67845-93-6	P	58 °C min.	PP/PE
Chiguard® 5540	4221-80-1	P	193 °C min.	PP/PE
Chiguard® 9735	Mixture of UVA & HALS	L	-	Epoxy flooring
Chiguard® U-9310	Mixture of UVA & HALS	L	-	PU foam/TPU
Chiguard® P	2440-22-4	P	128 °C min.	PVC
Chiguard® BP-2	131-55-5	P	195 °C min.	Film
Chiguard® BP-12	1843-05-6	P	46.5-48.5 °C	PVC/EVA

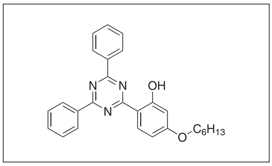
P=Powder, L=Liquid

Structure

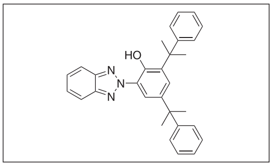
Chiguard® 1064



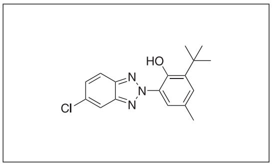
Chiguard® 5577



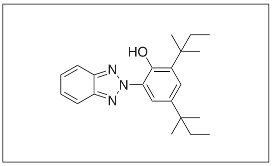
Chiguard® 234



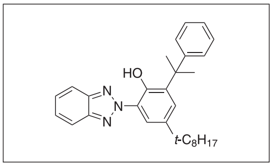
Chiguard® 326



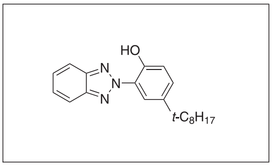
Chiguard® 328



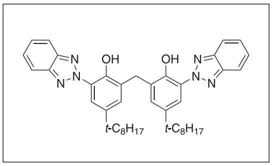
Chiguard® 5228



Chiguard® 5411



Chiguard® 5431



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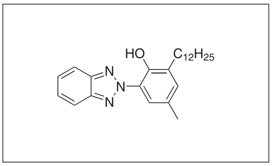
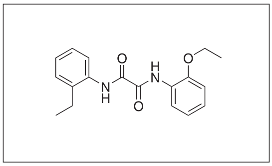
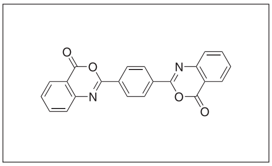


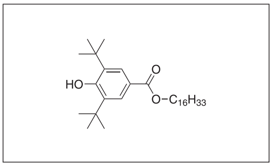
Chiguard® 1033



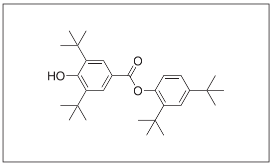
Chiguard® 380W



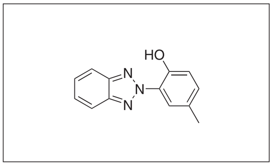
Chiguard® 1108



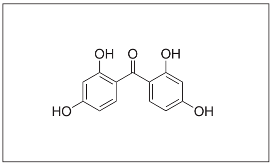
Chiguard® 5540



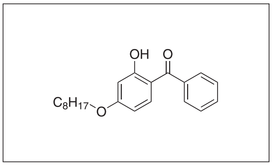
Chiguard® P



Chiguard® BP-2



Chiguard® BP-12



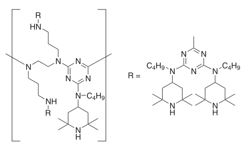
Light Stabilizers

Product	CAS no.	Form	Melting point	Application
Chiguard® 088	136504-96-6	G	-	TPE
Chiguard® 101	129757-67-1	L	-	PE/PVC
Chiguard® 106	82451-48-7	P	110 °C min.	PE/PP/PET/PBT/PA
Chiguard® 1152	191743-75-6	P	83-90 °C	Polyester/acrylic-urethane coatings
Chiguard® 228	106990-43-6	P	115-150 °C	Film/polyolefins/elastomers
Chiguard® 388	167078-06-0	S	28-32 °C	TPO
Chiguard® 405	124172-53-8	P	155-160 °C	Olefins

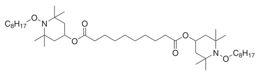
P=Powder, L=Liquid, S=Solid, G=Granule

Structure

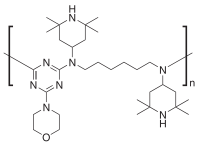
Chiguard® 088



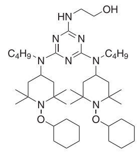
Chiguard® 101



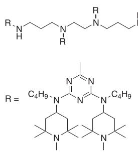
Chiguard® 106



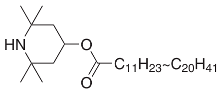
Chiguard® 1152



Chiguard® 228

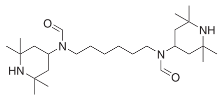


Chiguard® 388



Predominantly, $C_{16}H_{33}$~$C_{18}H_{37}$

Chiguard® 405



Flame Retardants

Product	CAS no.	Form	Heat loss	Application
Zuran® 9C	-	P	332 °C (10%)	Engineering class polyolefins

P=Powder

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