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# VANDERBILT

## VAROX<sup>®</sup> Brochure

### VAROX<sup>®</sup> Peroxide Brochure

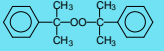
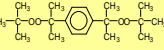
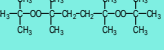
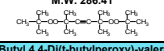
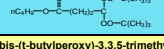
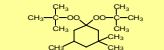
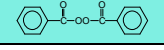

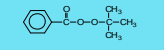
#### Crosslinking Agents for the Rubber & Plastics Industries

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VAROX<sup>®</sup> crosslinking agent Peroxides for the Rubber and Plastics Industries

Specifications				Half-Life Temperatures			Compounding Information																				
Product	Generic Name Peroxide Structure Molecular Weight	Assay (%)	Active Oxygen (%)	1 Min Half-Life Temp. °F(°C)	10 Min Half-Life Temp. °F(°C)	1 Hr Half-Life Temp. °F(°C)	Suggested Cure and Compounding Temperatures and Suggested Loading Levels in pphr rubber																				
							Suggested Cure Temps. °F (°C)	Suggested Maximum Compounding Temp. <sup>(2)</sup> °F (°C)	CPE	CR	EPDM/POE	EVA	FKM	HDPE	HNBR	LDPE	NBR	NR or IR	Q	SBR							
VAROX DCP	 Dicumyl Peroxide M.W. 270.37	98.0 min	5.80 - 5.92	352(178)	315(157)	279(137)	310 - 390 (154 - 199)	266(130)	2.4 - 6.0	1.5 - 6.0	0.8 - 14.0	0.8 - 2.0	2.4 - 14.0	1.2 - 2.0	-	-	-	2.2 - 5.5	4.2 - 10.5	1.5 - 2.5	0.9 - 2.3	1.7 - 4.3	1.6 - 4.0	0.8 - 1.0	0.4 - 0.8	0.7 - 1.5	
VAROX DCP-40C		39.5 - 41.5	2.34 - 2.46	352(178)	315(157)	279(137)	310 - 390 (154 - 199)	266(130)	6.0 - 14.0	2.0 - 4.0	4.0 - 16.0	6.0 - 14.0	-	-	-	-	-	5.5 - 10.5	10.5 - 10.5	-	2.3 - 4.3	2.3 - 4.3	2.0 - 4.0	1.0 - 2.0	0.4 - 0.8	0.7 - 1.5	
VAROX DCP-40KE		39.5 - 41.5	2.34 - 2.46	352(178)	315(157)	279(137)	310 - 390 (154 - 199)	266(130)	6.0 - 14.0	2.0 - 4.0	4.0 - 16.0	6.0 - 14.0	-	-	-	-	-	5.5 - 10.5	10.5 - 10.5	-	2.3 - 4.3	2.3 - 4.3	2.0 - 4.0	1.0 - 2.0	0.4 - 0.8	0.7 - 1.5	
VAROX VC-R	 α, α'-Di(t-butylperoxy)- diisopropylbenzene M.W. 338.46	97.0 min	9.08 min	358(181)	315(157)	282(139)	320 - 400 (160 - 204)	282(139)	1.5 - 2.4	1.5 - 2.4	0.5 - 1.0	1.6 - 3.4	0.8 - 1.6	-	-	-	1.4 - 2.4	2.4 - 6.1	1.2 - 1.8	0.5 - 1.5	1.5 - 2.3	1.5 - 4.3	1.6 - 4.0	0.5 - 1.0	0.2 - 1.0	0.4 - 1.0	
VAROX 802-40C		39.5 - 41.5	3.74 - 3.93	358(181)	315(157)	282(139)	320 - 400 (160 - 204)	282(139)	3.8 - 6.0	1.3 - 2.5	1.3 - 2.5	4.0 - 8.0	4.0 - 8.0	-	-	-	3.4 - 6.1	6.1 - 6.1	-	1.3 - 3.8	1.3 - 3.8	1.3 - 2.5	1.3 - 2.5	1.0 - 2.0	0.5 - 1.0	0.2 - 1.0	0.4 - 1.0
VAROX 802-40KE		39.5 - 41.5	3.74 - 3.93	358(181)	315(157)	282(139)	320 - 400 (160 - 204)	282(139)	3.8 - 6.0	1.3 - 2.5	1.3 - 2.5	4.0 - 8.0	4.0 - 8.0	-	-	-	3.4 - 6.1	6.1 - 6.1	-	1.3 - 3.8	1.3 - 3.8	1.3 - 2.5	1.3 - 2.5	1.0 - 2.0	0.5 - 1.0	0.2 - 1.0	0.4 - 1.0
VAROX DBPH	 2,5-dimethyl-2,5-Di-(t- butylperoxy)hexane M.W. 290.44	93.0 - 95.0	10.25 - 10.47	358(181)	315(157)	284(140)	320 - 400 (160-204)	293(145)	2.5 - 4.0	0.5 - 1.4	1.7 - 3.4	1.0 - 1.2	-	-	-	0.5 - 1.2	2.5 - 4.7	-	1.4 - 2.0	1.1 - 2.0	0.8 - 1.6	0.4 - 0.8	0.4 - 0.8	0.4 - 0.8	0.4 - 0.8	0.4 - 1.5	
VAROX DBPH-50		45.0 - 48.0	4.96 - 5.29	358(181)	315(157)	284(140)	320 - 400 (160 - 204)	293(145)	5.6 - 8.9	1.0 - 3.0	3.8 - 7.6	2.0 - 5.0	-	-	-	0.5 - 1.2	5.5 - 10.5	-	1.4 - 2.0	2.4 - 4.4	2.0 - 4.0	0.9 - 2.0	0.9 - 2.0	0.9 - 2.0	0.9 - 2.0	1.6 - 2.7	
VAROX DBPH-P20		19.0 - 21.0	2.09 - 2.31	358(181)	315(157)	284(140)	320 - 400 (160 - 204)	293(145)	-	-	-	-	-	-	-	1.5 - 3.0	-	-	4.0 - 8.0	-	-	-	-	-	-	-	-
VAROX 130 XL	 2,5-dimethyl-2,5-Di-(t- butylperoxy)hexyne-3 M.W. 286.41	45.0 - 48.0	5.03 - 5.36	381(194)	336(169)	306(152)	340 - 420 (171 - 215.5)	305.6(152)	5.6 - 8.9	1.0 - 3.0	3.8 - 7.6	2.0 - 5.0	-	-	-	-	5.5 - 10.5	-	-	2.4 - 4.4	2.0 - 4.0	0.9 - 2.0	0.9 - 2.0	0.9 - 2.0	1.6 - 2.7		
VAROX 230XL	 n-Butyl 4,4-Di-(t-butylperoxy)- valerate M.W. 334	38.5 - 41.5	3.68 - 3.97	337.6(169.8)	294.3(145.7)	263.8(128.8)	266 - 347 (130 - 175)	230(110)	3.5 - 6.5	1.1 - 3.5	7.5 - 13.0	3.5 - 6.5	-	-	-	-	7.5 - 13.0	-	-	3.0 - 5.5	2.5 - 5.0	2.5 - 5.0	2.5 - 5.0	2.5 - 5.0	2.5 - 5.0	2.0 - 4.5	
VAROX 231XL	 1,1 bis-(t-butylperoxy)-3,3,5-trimethyl- cyclohexane M.W. 302	38.5 - 41.5	4.07 - 4.38	307(153)	268(131)	239(115)	280 - 360 (138 - 182)	221(105)	7.5 - 14.0	0.5 - 2.0	3.5 - 6.5	4.0 - 5.8	-	-	-	-	3.5 - 6.5	-	-	2.5 - 5.0	2.2 - 4.3	-	-	-	-	1.8 - 4.0	
VAROX A75	 Dibenzoyl Peroxide M.W. 242	73.0 - 77.0	4.82 - 5.09	267.2(130)	226(107.8)	197.1(91.7)	200 - 280 (93 - 137.7)	197.1(91.7)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7 - 1.4
VAROX ANS		55.0 - 58.0	3.63 - 3.83	267.2(130.7)	226(107.8)	197.1(91.7)	200 - 280 (93 - 137.7)	197.1(91.7)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAROX DCBP-50 Paste	 2,4 dichlorobenzoyl Peroxide M.W. 230.4	49 - 51	4.21	267.2(115.7)	226(92.8)	197.1(76.7)	194 - 212 (90 - 100)	167.0(75.0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1 - 2.3	
VAROX TBPB	 t-butyl Perbenzoate M.W. 154	98.0	8.1 min	339.5(170.8)	291.2(144)	257(125)	265 - 345 (129 - 173.8)	257(125)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3 - 0.6	

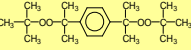
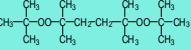
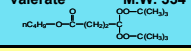
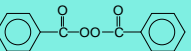
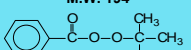
<sup>(1)</sup> Self-Accelerating Decomposition Temperature, ASTM/UN Method

<sup>(2)</sup> The suggested maximum compounding temperature is the temperature at which the scorch time is equal to 5 minut

All MSDSs and specification data can be viewed on, and downloaded from, our website at [www.rtvanderbilt.com](http://www.rtvanderbilt.com)

VAROX Peroxide Accelerator is a registered trademark of R.T. Vanderbilt Company, Inc.

VAROX<sup>®</sup> crosslinking agent Peroxides for the Rubber and Plastics Industries

Product	Peroxide Class	Generic Name, Structure, Molecular Weight	Assay (%)	Active Oxygen (%)	Physical Form	Diluent, Filler or Binder	Maximum Storage Temp. °F (°C)	C.A.S. Registry Number <sup>(1)</sup>	Standard Container	Pallet Weight	DOT Hazard Class
VAROX DCP	Dialkyl	<b>Dicumyl Peroxide</b> M.W. 270.37 	98.0 min	5.80 - 5.92	Free-Flowing Powder	None	86 (30)	80-43-3	44.092 lb Fiber Box	1543.22 lbs	Organic Peroxide Type F Solid; 5.2; UN3110; PGI
VAROX DCP-40C	Dialkyl		39.5 - 41.5	2.34 - 2.46	Free-Flowing Powder	CaCO <sub>3</sub>	100 (38)	80-43-3 471-34-1	44.092 lb Fiber Box	1543.22 lbs	Not regulated
VAROX DCP-40KE	Dialkyl		39.5 - 41.5	2.34 - 2.46	Free-Flowing Powder	Burgess KE Clay	100 (38)	80-43-3 66402-68-4	44.092 lb Fiber Box	1543.22 lbs	Not regulated
VAROX VC-R	Dialkyl	$\alpha, \alpha'$ -Di(t-butylperoxy)-diisopropylbenzene M.W. 338.48 	97.0 min	9.08 min	Semi-crystalline Solid @ 25°C	None	86 (30)	25155-25-3	44.092 lb Fiber Box	1543.22 lbs	Organic Peroxide Type D, Solid (Di(2-tert-butylperoxyisopropyl)benzene), 5.2, UN: 3106, PG: II
VAROX 802-40C	Dialkyl		39.5 - 41.5	3.74 - 3.93	Free-Flowing Powder	CaCO <sub>3</sub>	100 (38)	25155-25-3 471-34-1	44.092 lb. Fiber Box	1543.22 lbs.	Not regulated
VAROX 802-40KE	Dialkyl		39.5 - 41.5	3.74 - 3.93	Free-Flowing Powder	Burgess KE Clay	100 (38)	25155-25-3 66402-68-4	44.092 lb. Fiber Box	1543.22 lbs.	Not regulated
VAROX DBPH	Dialkyl	<b>2,5-dimethyl-2,5-Di-(t-butylperoxy)hexane</b> M.W. 290.44 	93.0 - 95.0	10.25 - 10.47	Liquid	None	86 (30)	78-63-7	35 lb. Pail 100 lb. FD	1575 lbs. 900 lbs.	Organic Peroxide Type D, Liquid, 5.2, UN: 3105, PG II
VAROX DBPH-50	Dialkyl		45.0 - 48.0	4.96 - 5.29	Free-Flowing Powder	CaCO <sub>3</sub> Silica	100 (38)	78-63-7 471-34-1	50 lb. Fiber Box	1350 lbs.	Organic Peroxide Type E, Solid, 5.2, UN: 3108, PG II
VAROX DBPH-P20	Dialkyl		19.0 - 21.0	2.09 - 2.31	Free-Flowing Powder	Polypropylene	100 (38)	78-63-7 9003-07-0	50 lb. Fiber Box	1350 lbs.	Organic Peroxide Type E, Solid, 5.2, UN: 3108, PG II
VAROX 130 XL	Dialkyl	<b>2,5-dimethyl-2,5-Di-(t-butylperoxy)hexyne-3</b> M.W. 286.41 	45.0 - 48.0	5.03 - 5.36	Free-Flowing Powder	CaCO <sub>3</sub>	100 (38)	1068-27-5 471-34-1	50 lb. Fiber Box	1350 lbs.	Organic Peroxide Type D, Solid (2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexyne-3, 45%), 5.2, UN: 3106, PG: II
VAROX 230XL	Peroxyketal	<b>n-Butyl 4,4-Di(t-butylperoxy)valerate</b> M.W. 334 	38.5 - 41.5	3.68 - 3.97	Free-Flowing Powder	CaCO <sub>3</sub> Micro Cel E	100 (38)	995-33-5 471-34-1	50 lb. Fiber Box	1350 lbs.	Organic Peroxide Type E, Solid, (40% n-butyl-4,4-bis(t-butylperoxy)valerate), 5.2, UN: 3108, PGI
VAROX 231XL	Peroxyketal	<b>1,1 bis-(t-butylperoxy)-3,3,5-trimethyl-cyclohexane</b> M.W. 302 	38.5 - 41.5	4.07 - 4.38	Free-Flowing Powder	CaCO <sub>3</sub> Micro Cel E	90(32)	6731-36-8 471-34-1	50 lb. Fiber Box	1350 lbs.	Organic Peroxide Type F Solid, 5.2, UN 3110, PG II
VAROX A75	Diacyl	<b>Dibenzoyl Peroxide</b> M.W. 242 	73.0 - 77.0	4.82 - 5.09	Granular	Water	100 (38)	94-36-0 7732-18-5	25 lb. Fiber Box	750 lbs.	Organic Peroxide Type C, Solid (Dibenzoyl peroxide, <77%), 5.2, UN: 3104, PG: II
VAROX ANS	Diacyl		55.0 - 58.0	3.63 - 3.83	Paste	BBP and Filler	100 (38)	94-36-0	40 lb. Pail	1080 lbs.	Organic Peroxide Type D, Solid (dibenzoyl per-oxide), 5.2, UN: 3106, PG: II
VAROX DCBP-50 Paste	Diacyl	<b>2,4 dichlorobenzoyl Peroxide</b> M.W. 230.4 	49 - 51	4.21	Paste	Silicone Oil	86 (30)	133-14-2			Organic Peroxide Type E Solid; Hazard Code 5.2; UN3106; PGI Organic Peroxide Type C, Liquid (tert-
VAROX TBPB	Peroxyester	<b>t-butyl Perbenzoate</b> M.W. 194 	98.0	8.1 min	Liquid	None	100 (38)	614-45-9	40 lb. Pail	1440 lbs.	Butyl peroxybenzoate), 5.2, UN 3103, PG II

<sup>(1)</sup> The first number refers to the peroxide, followed by that of the filler.

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**OVER 90 YEARS OF SERVICE TO THE RUBBER INDUSTRY!**

