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Technical Data

VANOX[®] ZMTI Antioxidant in an EPDM Wire and Cable Compound

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VANOX[®] ZMTI Antioxidant in an EPDM Wire and Cable Compound

VANOX ZMTI works synergistically with other antioxidants, especially amine and phenolic antioxidants, to greatly improve the retention of physical properties in wire and cable compounds. Compound 3 below, containing VANOX ZMTI and an amine AO (AGERITE[®] SUPERFLEX[®] SOLID G antioxidant), shows significantly improved aging resistance after 1 week at 150 °C.

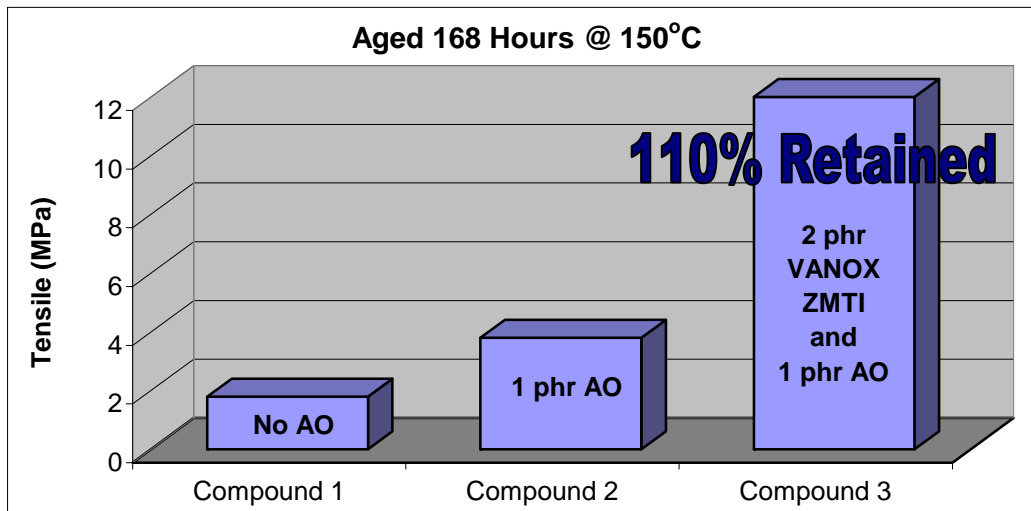


Figure 1: Aged Tensile Strength

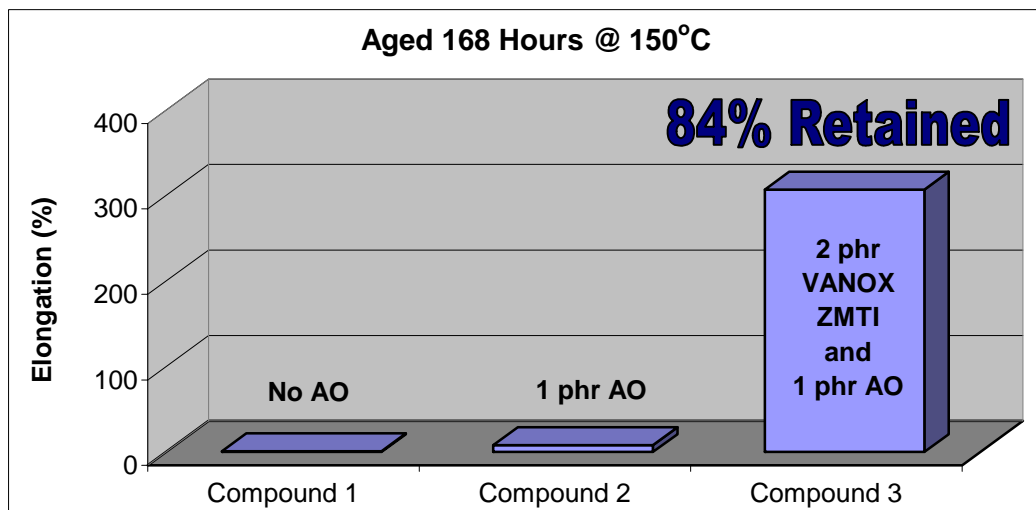


Figure 2: Aged Elongation

Ingredients	Compounds (phr)		
	1	2	3
EPDM Copolymer*	100.0	100.0	100.0
Treated Calcined Clay	110.0	110.0	110.0
N990 Carbon Black	10.0	10.0	10.0
AGERITE® SUPERFLEX® SOLID G antioxidant	-----	1.0	1.0
VANOX® ZMTI antioxidant	-----	-----	2.0
Paraffinic Oil	15.0	15.0	15.0
Zinc Oxide	5.0	5.0	5.0
VANFRE® AP-2 processing aid	2.5	2.5	2.5
A172 (72% active)	1.4	1.4	1.4
Red Lead 90%	4.6	4.6	4.6
VAROX® DCP-40KE crosslinking agent	8.0	8.0	8.0
SR350	2.0	2.0	2.0
Totals	258.5	259.5	261.5

* Mooney Viscosity (ML 1=4 at 125°C) =19; Ethylene, mass % = 71, ENB, mass % = 0.4; Molecular Weight = Medium

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AGERITE, VANFRE, VANOX, and VAROX are registered trademarks of R.T. Vanderbilt Company, Inc.

PHYSICAL PROPERTIES

Press Cured t_c 90 + 2 min. @ 177°C (350°F)

100% Modulus, MPa	6.0	5.4	6.1
Tensile Strength, MPa	11.7	10.2	10.9
Elongation, %	367	382	365
Hardness, Shore A	83	82	84
Tear, Die C, kN/m	24.0	26.4	25.2

OVEN AGED 168 HOURS @ 150°C (302°F)

Tensile Retained, %	15	38	110
Elongation Retained, %	0	2	84
Hardness, Points Change	+7	+5	+1

COMPRESSION SET – METHOD B – 70 HOURS @ 160°C (320°F)

Press Cured t_c 90 + 12.5 min. @ 177°C (350°F)

Set, %	40	42	34
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MDR, ASTM D 5289 @ 177°C (350°F), 0.5°Arc

Minimum Torque, M_L , dN·m	0.9	0.8	0.8
Maximum Torque, M_H , dN·m	17.8	14.2	16.4
t_{s1} , minutes	0.5	0.6	0.6
t_c 90, minutes	3.9	4.2	5.2

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