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VANDERBILT Chemicals Technical Data

No. 1240
Rubber Department

SONGNOX® 1010

for use in Natural Rubber Latex

Accelerated heat aging is one of the best gauges of the long-term performance of a finished latex article. The use of **SONGNOX® 1010** in a natural rubber latex compound significantly improves its heat aging properties and provides protection to the physical properties during the use and storage of the end-product. It is FDA-listed under 21 CFR 178.2010. Finally, the use of **SONGNOX® 1010** provides superior retention of physical properties when compared to a common latex antioxidant*.

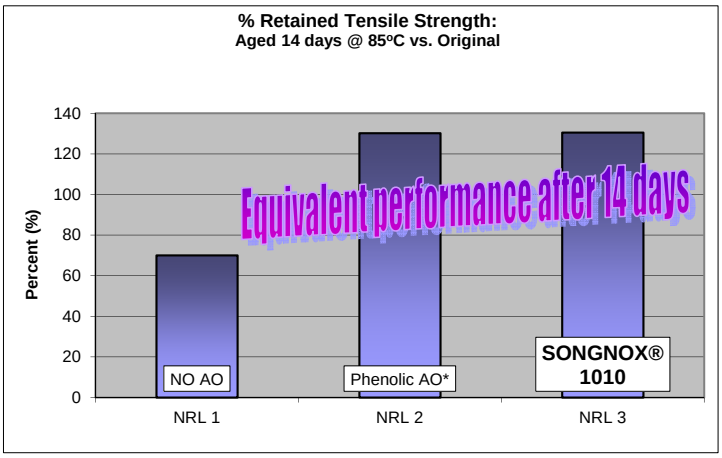

Figure 1: Retained Tensile Strength, Aged 14 days at 85°C

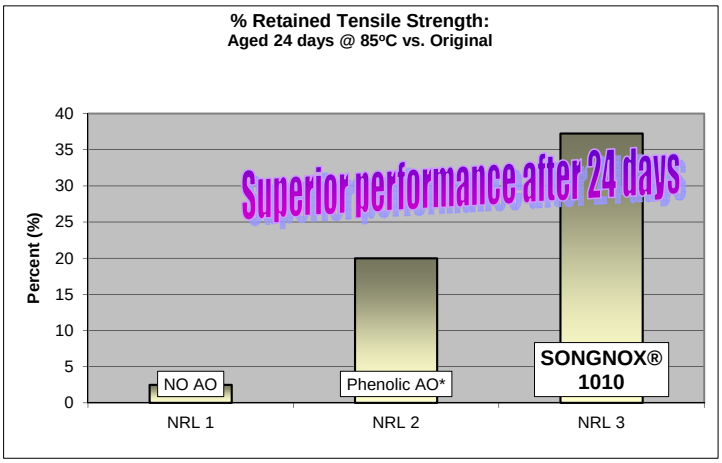

Figure 2: Retained Tensile Strength, Aged 24 days at 85°C

The following test recipe can be used as a starting point when compounding with this antioxidant system.

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INGREDIENTS	**COMPOUNDS (phr)**		
	NRL1	**NRL2**	**NRL3**
High-Ammonia Natural Rubber Latex	100.0	100.0	100.0
Potassium hydroxide (10%)	0.5	0.5	0.5
DARVAN® WAQ Surfactant	0.5	0.5	0.5
ZINC OXIDE Dispersion	0.5	0.5	0.5
Sulfur dispersion	1.0	1.0	1.0
BUTYL ZIMATE® Slurry Accelerator	1.5	1.5	1.5
DARVAN® SMO Surfactant	0.5	0.5	0.5
SONGNOX® 1010 Antioxidant	---	---	1.0
Phenolic antioxidant*	---	1.0	---
Totals	104.5	105.5	105.5

RESULTS	**COMPOUNDS**		
	NRL1	NRL2	NRL3
Original Physical Properties, Cured 30 minutes @ 100°C			
300% Modulus, MPa	1.6	1.5	1.7
Tensile, MPa	16.8	21.0	18.0
Elongation,%	641.4	703.1	643.1
Physical Properties After Aging 14 days @ 85°C			
300% Modulus, MPa	2.1	2.3	2.3
Tensile, MPa	11.8	27.3	26.6
Elongation,%	482.6	543.3	531.0
Physical Properties After Aging 24 days @ 85°C			
300% Modulus, MPa	---	1.6	1.5
Tensile, MPa	0.4	4.2	6.7
Elongation, %	61.9	441.0	530.7

*Phenolic Antioxidant = Butylated reaction product of p-cresol and dicyclopentadiene rev10/21/2013