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VANDERBILT *Technical Data*

No. 1223
Rubber Department

VANAX[®] PIC Accelerator Dispersion and VANOX[®] SPL Antioxidant Slurry for Synthetic Polyisoprene Latex

VANAX PIC Dispersion is a patented accelerator cure system for synthetic polyisoprene. It is capable of producing tensile strengths well above the 10 MPa cited in industry literature. This accelerator system produces films with low modulus and high tensile strength.

Tensile strengths above 30 MPa

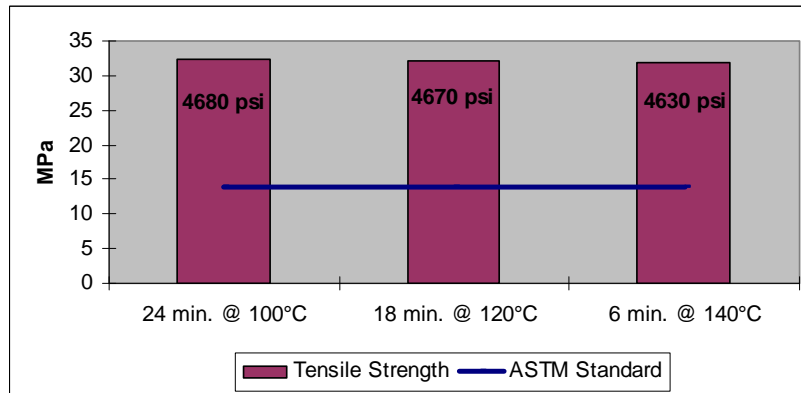


Figure 1: Tensile Strength

Low modulus films for excellent comfort, fit, and feel

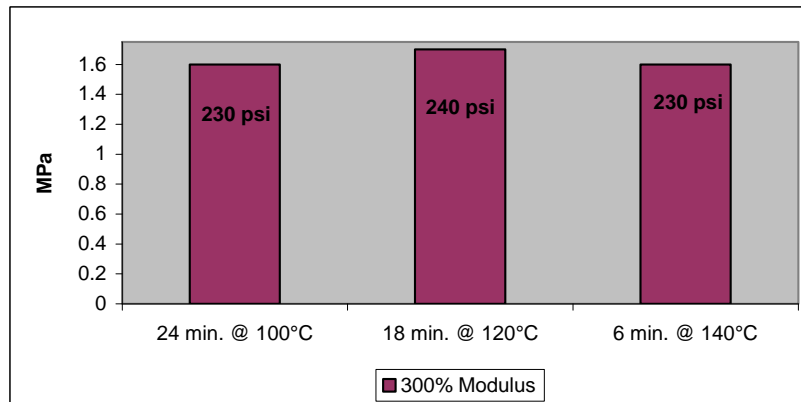


Figure 2: 300% Modulus

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This accelerator system also allows the compounder to balance compound maturation and physical properties while maintaining a relatively constant viscosity (measured with a Brookfield #2 Spindle at 30 rpm. Samples were kept at 25°C for maturation).

Table 1: Viscosity Values, cps

	Initial	4 days	6 days	8 days	14 days	19 days	21 days	25 days
Compound	218	236	227	225	204	189	206	191

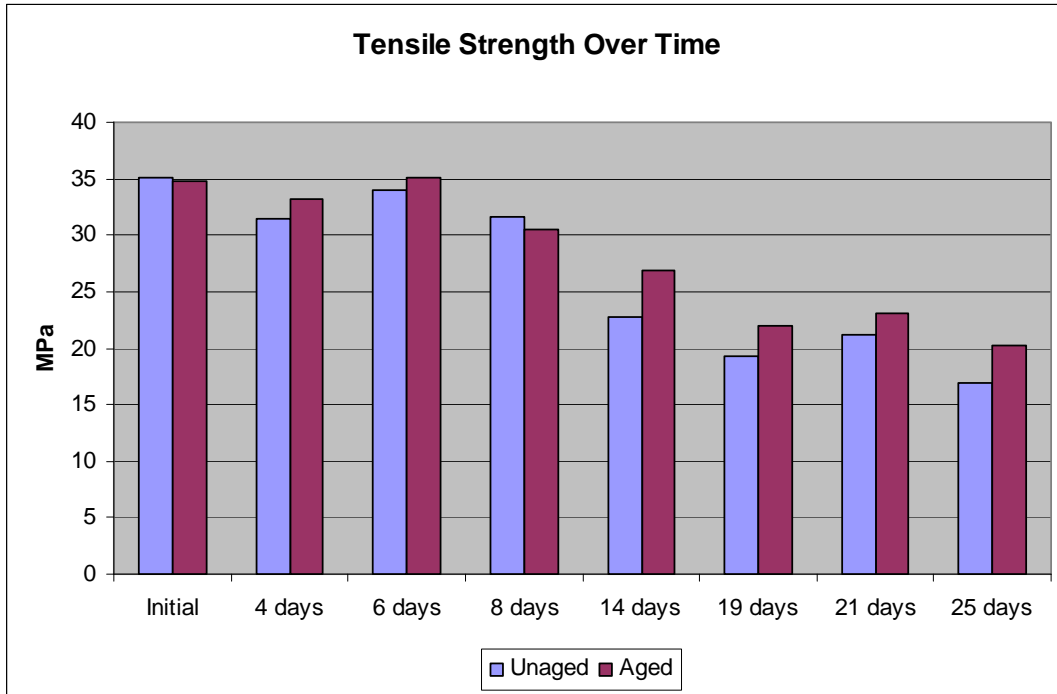


Figure 3: Tensile Strength over Time, MPa

The following test recipe can be used as a starting point to begin compounding, using **VANAX PIC Dispersion**.

Table 2: Test Compound

INGREDIENTS	DRY (phr)	WET (phr)
64% Synthetic Polyisoprene Latex	100.0	156.0
33% DARVAN® WAQ surfactant	0.3	0.9
50% Sulfur Dispersion	1.5	3.0
50% VANOX SPL Slurry	2.0	4.0
50% VANAX PIC Dispersion	2.0	4.0
33% DARVAN SMO surfactant	0.5	1.5

The compounds were cured at either 100°C for 20 minutes, 120°C for 18 minutes, or 140°C for 6 minutes.

Compounding Note: To achieve longer pot life, zinc oxide should not be used. For more information on this subject, please see TDS No. 1217, “VANOX ZMTI Slurry and SETSIT[®] Liquid Accelerator: A Low Zinc Compound.” This data sheet discusses the use of VANOX ZMTI antioxidant in place of zinc oxide.

Table 3: Results

Film Vulcanization	300% Modulus, MPa	300% Modulus, psi	Tensile Strength, MPa	Tensile Strength, psi	Elongation, %
24 min. @ 100°C	1.6	230	32.3	4680	820
18 min. @ 120°C	1.7	240	32.2	4670	820
6 min. @ 140°C	1.6	230	31.9	4630	830

VANOX SPL Slurry is a proprietary blend of **VANOX ZMTI** and a phenolic antioxidant.

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