

TRANSITE PIPE PROCESS STUDY
PLANT EXPERIMENTAL RUN OF AUSTRALIAN BLUE FIBER
SUBSTITUTED FOR MS BLUE IN BLEND M-360
Task Force Report No. 19



SUMMARY:

A preliminary plant run on Manville's No. 2 machine, on 6-in. 150 pipe indicates the direct substitution of Australian No. 3 Blue for MS Blue in Blend M-360-1:

- a. Results in an operable blend.
- b. Required no changes in the machine to secure a forming operation and rate comparable to standard M-360-1 blend.
- c. Resulted in pipe with an ultimate strength level well above specification although slightly lower in strength than standard M-360-1 blend. The differences in strength may have been due to unforeseen electrical trouble of the machine or insufficient treatment of Australian Blue prior to willowing as a blend.

PROCEDURE:

At the Task Force and Steering Committee meeting on May 15, 1952, Mr. Collier read Mr. C. V. Miller's letter of May 14 on the subject of possible Australian Blue usage in Transite pipe. As one phase of the work to gather data for an answer to Mr. C. V. Miller's letter, a preliminary one-shift run of blend M-360-1, with Australian No. 3 Blue substituted for MS Blue, was scheduled for May 16, 1952 on Manville's No. 2 machine.

Standard willowing procedure was used on the special blend, that is, mixing of the following percentages of unwillowed virgin fibers with 10 per cent willowed scrap addition and giving the blend one pass through the willow.

<u>Blue M-360-1</u>		<u>Blend M-360-1A</u>	
MS Blue	9.5%	Australian Blue	9.5%
Vimy H4T	15.0%	Vimy H4T	15.0%
Vimy BC4T	15.0%	Vimy BC4T	15.0%
4M28	25.4%	4M28	25.4%
4Z20	5.1%	4Z20	5.1%
4X	30.0%	4X	30.0%
	100.0%		100.0%

The first set-up of 6-in. 150 pipe made on Manville's No. 2 machine on May 16, 1952 was used as the experimental run. The first 85 sections were made with 25 per cent M-360-1 blend; the following 305 sections were manufactured with 25 per cent M-360-1A blend, and the remaining 83 sections with 25 per cent of blend M-360-1. Hydro and flexure test pipe were designated at the time of manufacture.

RESULTS:

Production, recovery and strength results are shown in the following tables.

Production and Net Recovery
Special Run, 25 per cent Blend M-360-1A
6-in. 150 Pipe

	"Before" Run M-360-1	Special Run M-360-1A	"After" Run M-360-1
No. of Sections Manufactured	85	305	83
Scrap at Machine	2 = 2.35%	1 = 0.33%	1 = 1.20%
Rejects at Machine	0	1 = 0.33%	2 = 2.41%
Steam Cure Rejects	0	0	0
No. of Sections Machined and Inspected	83	303	80
Inspection Rejects	0	3* = 0.98%	0
Flexure Rejects	0	0	0
Hydro Rejects	0	0	0
Net Recovery Based on No. of Sections Manufactured	$\frac{83}{85} = 97.65\%$	$\frac{300}{305} = 98.36\%$	$\frac{80}{83} = 96.39\%$
Net Recovery Based on No. of Sections Machined and Inspected	$\frac{83}{83} = 100\%$	$\frac{300}{303} = 99.01\%$	$\frac{80}{80} = 100\%$
Average Form Time	1.19 min.	1.10 min.	1.08 min.

* 1 Pre-Cure Bad Handling
1 Foreign Material
1 Bad Stock

RESULTS: (Cont'd)

Ultimate Strength Level
25 Per Cent M-360-1A
6-in. 150 Pipe

	"Before" Run M-360-1	Special Blend M-360-1A	"After" Run M-360-1
Hydrostatic Strength			
No. of Test Pipe	15	31	15
Average Load	925 psi	880 psi	871 psi
Standard Deviation	35.0 psi	77.6 psi	52.6 psi
Average MR*	5491 psi	5108 psi	5324 psi
Standard Deviation	192.1 psi	435.8 psi	291.4 psi
Flexure Strength			
No. of Test Pipe	3	6	3
Average Load	4420 lbs	3947 lbs	4420 lbs
Average MR	4993 psi	4422 psi	4833 psi

* Eliminates Center Breaks

Changing of fiber blend from M-360-1 to M-360-1A produced no noticeable change in the forming operation. No changes were made at the machine and no trouble, which could be attributed to the fiber blend, was encountered during the run.

DISCUSSION:

During the experimental run, the electrical connections to the stock feed screw did not automatically turn off the stock feed every time the machine stopped. When the switch failed to operate, dry stock would continue feeding into the vat feed trough, with no flow of water to carry the stock away. When the flow of water came through, upon starting of the machine, this accumulation of dry feed generally plugged the trough and necessitated stopping the machine until the trough was cleared. This trouble, plus the electricians trying to locate the cause of the trouble resulted in several short shut-downs of the machine during the running of the special blend. This may or may not have contributed, in part, to the slightly lower strength and higher standard deviation of the M-360-1A pipe.

Preliminary examination of a blend containing Australian Blue, indicates that in a one-pass willowing of a blend, the Australian Blue tends to segregate from the rest of the fibers more so than MS Blue. This segregating could conceivably contribute to low strength and high standard deviation and might possibly be eliminated by pre-willowing of the Australian Blue.

CONCLUSIONS AND RECOMMENDATIONS:

The use of Australian No. 3 Blue fiber for MS Blue in blend M-360-1 is possible, resulting in (1) no apparent change in machine operation, (2) pipe of sufficiently high strength to meet the test requirements, and (3) a slightly lower strength level than blend M-360-1 with MS Blue.

It is recommended that, if additional information is desired:

- a. An extended run of M-360-1A be made on both 6-in. 150 and 8-in. 150 pipe to substantiate the preliminary run.
- b. The possibilities of pre-willow treatment of Australian Blue be considered.