

## TEST RESULTS-EXAMPLE MIXES

Static      Wear Loss Drag Tests      Stop Distances  
Coeff of

(1n sup 3)

|     |                     | Light | Heavy | Light | Heavy |
|-----|---------------------|-------|-------|-------|-------|
| Mix | Friction Drag/Stops | Drag  | Drag  | BSL   | BSL   |

|   |     |         |   |   |   |   |
|---|-----|---------|---|---|---|---|
| A | 347 | 16/ 33  | P | P | P | P |
| B | 514 | 09/ 33  | P | P | P | P |
| C | 570 | 11/ 26  | P | P | P | P |
| D | 480 | 23/ 56  | P | P | P | P |
| E | 390 | 17/ 57  | P | P | P | P |
| F | 563 | 33/ 18  | P | P | P | P |
| G | 515 | 11/ 33  | P | P | P | P |
| H | 397 | 23/ 56  | P | P | P | P |
| J | 597 | 10/ 32  | P | P | P | P |
| L | 494 | 17/1 03 | P | P | P | P |
| M | 457 | 15/ 59  | P | P | P | P |
| N | 544 | 12/ 31  | P | P | P | P |

All of the above mixes passed all of the A A R performance tests, with the exception of Mix A which exhibited slightly low coefficients of friction. Mix L showed a relatively high wear rate, although within the A A R standards.

It can be seen from the above test results that friction materials made from compositions including various synthetic fibers along, in combination with other synthetic fiber, or in combination with cellulose fiber can meet rigorous A A R standards and exhibit low wear rates. The best wear rates were exhibited by Mixes A, B, C, G and N, which contained from 1.61-3.19% of a single synthetic fiber, and by Mix J which contained a low total content fiber mixture of synthetic and cellulose fibers.

Overall fiber content ranged from 0.71% polyester (M1x E) to 9.56% glass and cellulose (M1x R). Binder content ranged from 16.90% (M1x N) to 19.74% (M1x F), while filler content was from 67.61% (M1x R) to 79.85% (M1x C). The amount and type of curative agents is mainly dependent on the amount and composition of the organic binder used.

In summation, I have discovered that composition friction materials suitable for railroad use can be formulated, without the use of lead or asbestos, by using a relatively low content of various synthetic fibers alone, in combinations, or in combination with cellulose fiber

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