



BROOM ELEMENT COMPARISON Polycorp VS Competition HD

Cycle wear testing on Broom Element tester

Test machine parameters:

- Cement block set at 17" (hub to block) for a ½" of contact on Broom Element.
- Motor set at 60 HZ, 243 RPM (maximum speed the motor will go).
- Machine had 2 broom elements fixed to the machine at once.

Samples:

- Both samples were tested at the same length (17.5")
- Polycorp sample: #1
- Competition HD sample: #2
- In the test unit the samples were placed side by side:

Test runs:

- 10 hours

Sample NO.	Weight Before (g)	Weight After (g)	Weight Loss (g)	Loss (%)
1	1070.84	990.6	80.24	8.1
2	1026.96	943.9	83.06	8.8

- Each sample was weighed before testing then weighed again after testing to determine amount of rubber loss at end of test. See table above
- At the end of the test all parts were in good working condition with normal wear.

Deflection / Stiffness testing

Test parameters:

- One end of the broom Element were fixed and secured to a table while the other end hung over the edge.
- Weight was added to the free end and a vertical measurement taken on how far the end dropped.
- 5 lb, 14 lb and 18 lb weight was used for this test.
- See table below for results.

Weight Applied (lbs.)	Polycorp Deflection (in)	Competition HD Deflection (in)	Difference in Deflection (%)
5	2 ½	2 ¾	Competition HD + 10%
14	7 ½	8 ¾	Competition HD + 14%
18	8 ½	10 ½	Competition HD + 19%

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- This tells us that if the Competition HD Broom element has more flex, it will not hit the test block as aggressively as the Polycorp “stiffer” broom element.
- This would indicate that Polycorp Broom element would work well in the field and have fewer tendencies to “sweep over” the ballast.

Abrasion Testing

- This test will determine the durability of the rubber compound and its resistance to abrasion.

Test parameters:

- Spindle Speed: 1,000 RPM
- Blade Frequency: 30 CPM
- Test Duration: 30 min.

Sample	Weight Before (g)	Weight After (g)	Loss (%)
Polycorp	35.3	34.7	1.7
Competition HD	31.2	30.1	3.5

- These test results show that Polycorp’s rubber compound used in their Broom Elements has a higher abrasion resistance.

Conclusion

The above tests support the conclusion that Polycorp Broom elements should be more efficient at moving ballast due to better rubber compound properties in both stiffness and wear.

In the “cycle wear” testing, Polycorp Broom Elements lost less rubber by weight off their part compared to the Competition HD sample but the Polycorp part is stiffer and has less deflection as shown in the deflection/stiffness testing. Therefore, Polycorp Broom Elements are more aggressive when sweeping yet maintains excellent wear properties as shown in the abrasion test.