CLASS-D WHEEL PERFORMANCE WITH COAL CARS ON A CANADIAN RAILWAY

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1. Background

- Class C wheels from Japan were tested at TTCI FAST as part of the wheel research program
- No micro alloying
- Very clean steel
- Other wheels tested included different types such as micro alloy forged, bainitic forged, cast
- Results were very favorable for the Class C ultra clean wheels – began thinking about microalloying for further improvement

1. Background, Continued

- Production - Blast furnace iron from Wakayama, Japan for wheel production (very low residual elements such as Cu, Sn, etc.)
- Followed by conversion into steel using BOF
- Then wheel forging/rolling operations

Vacuum degassing and ladle refining (low hydrogen, very clean steel)

1. Background, Continued

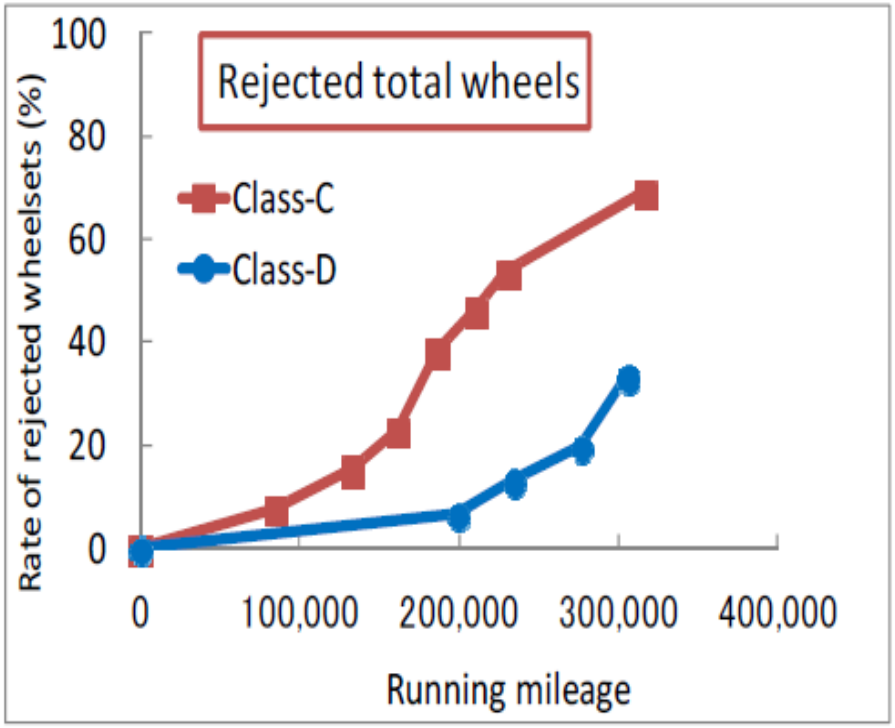
- Class-D wheels vs Class C wheels
- Trials - Western Canada Coal Service, 286K GRL
- Initial service trials with 32 Class D wheels
- Subsequent larger trials with 1,000 H36 Class D wheels

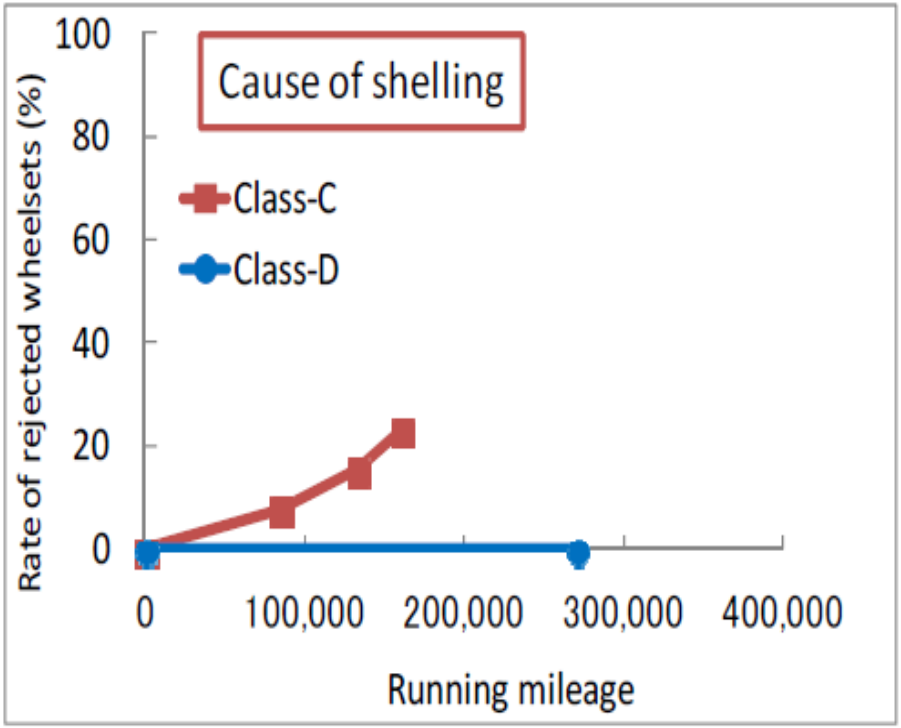
Field trial with a Canadian Customer

Class-D wheels were compared with conventional Class-C wheel.

Trial Duration : 2008-2013
Class-C (HB340-360) : 32 Pieces
Class-D (HB360-380) : 32 Pieces

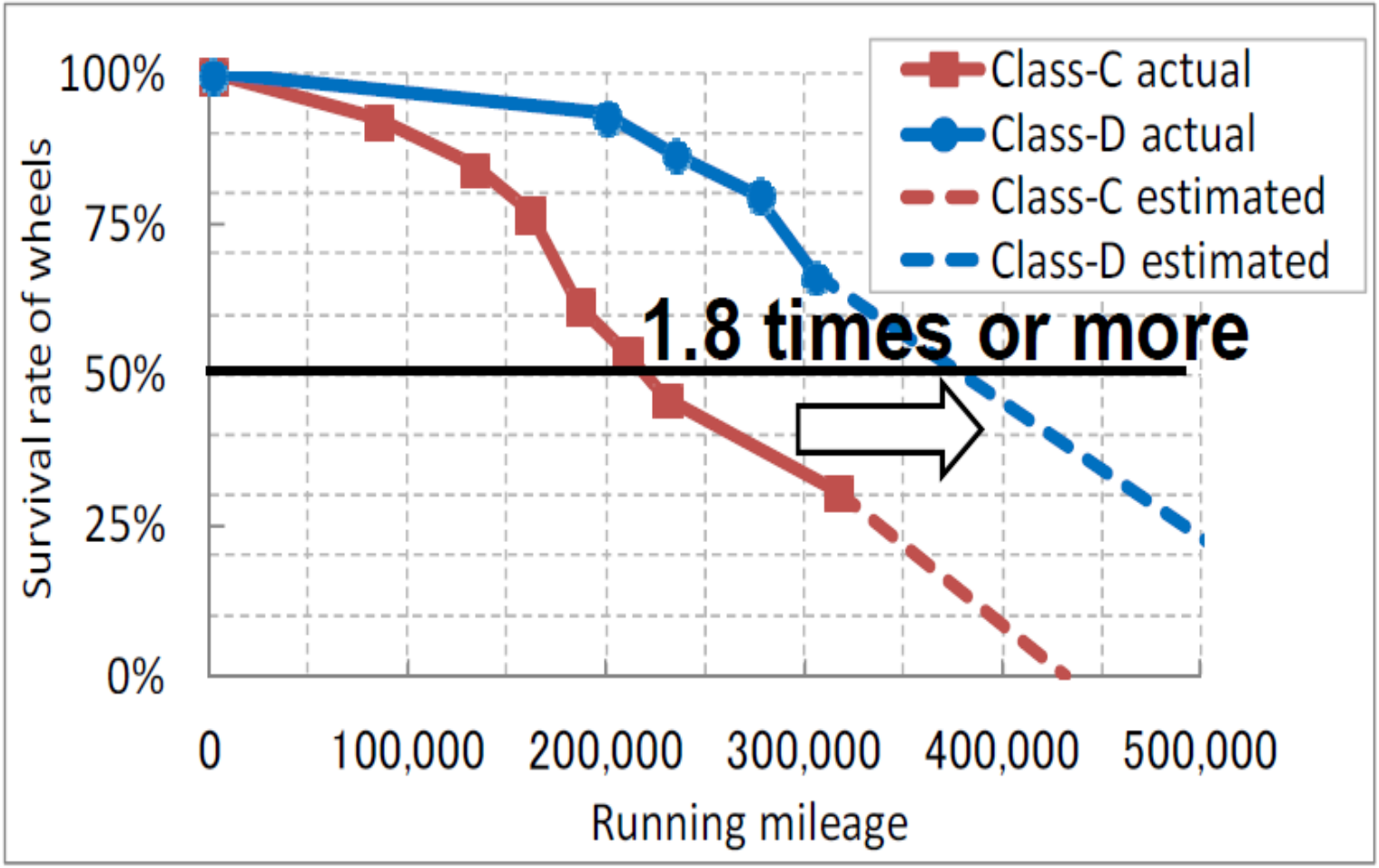
Initial Trial 32 Cass D Wheels





➢Rejection rate of Class-D wheel is much less than Conventional Class-C

Initial 32 Wheel Test



Estimated service life

➢Class-D = Longer life!

2. Coal car application of Class-D

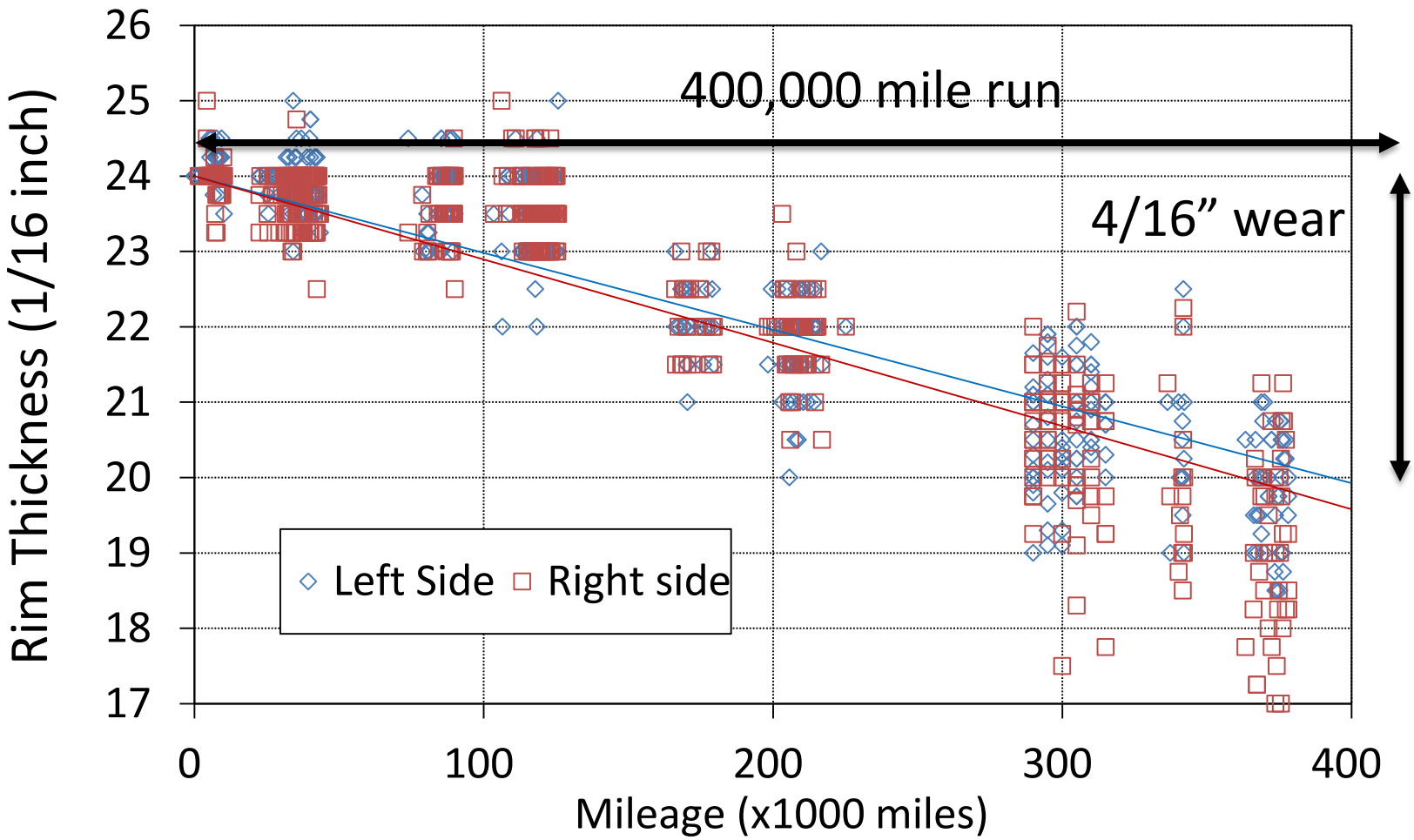
Later supplied more than 1,000 H36 Class-D wheels to a Canadian Railway for trials - most of them are installed under coal cars.

The condition of the wheels has been investigated every year.

3. Tread Surface Condition

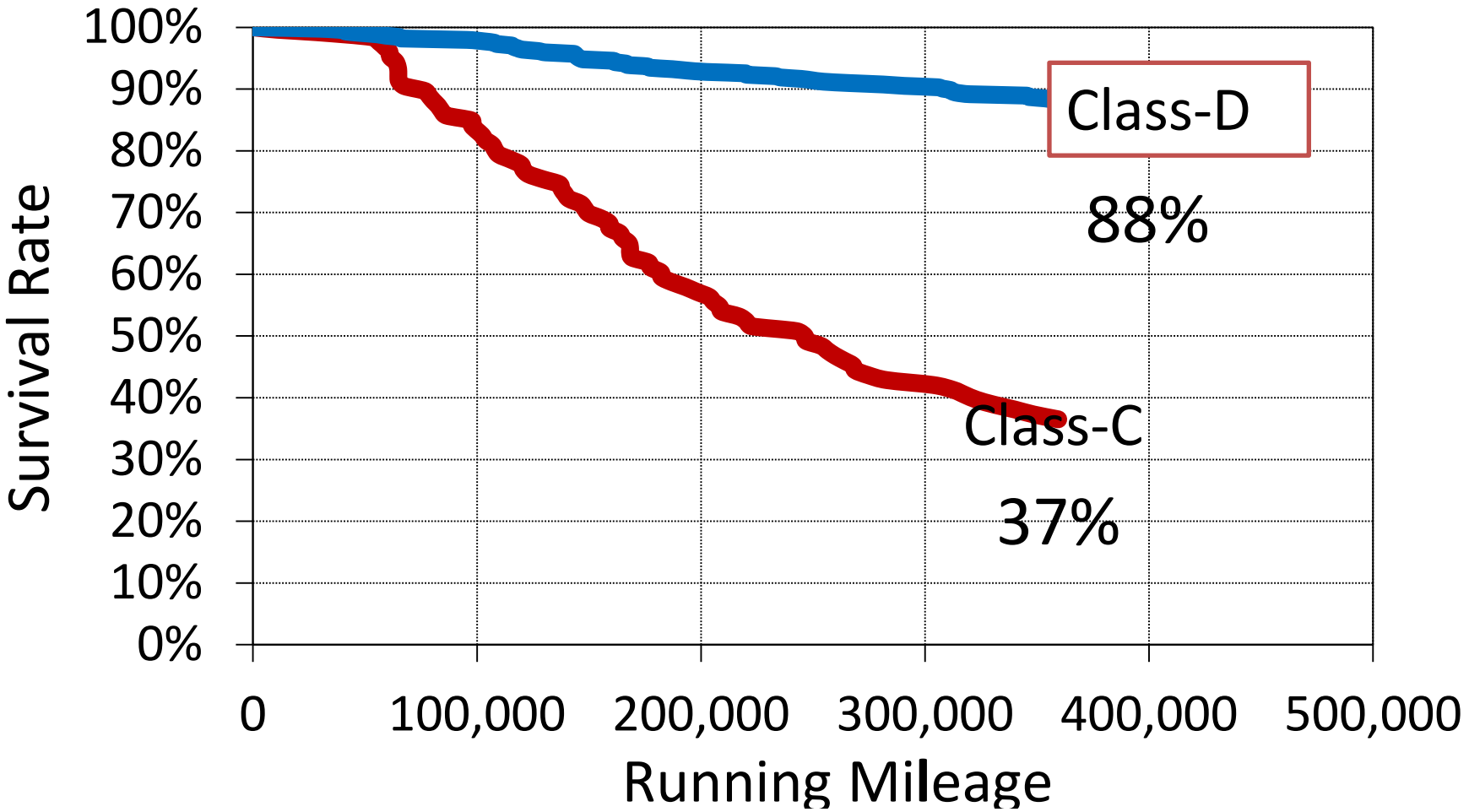
Almost all inspected wheels have a clean surface, though some of Cl. C wheels have tread damage.

4. Rim Thickness Trend



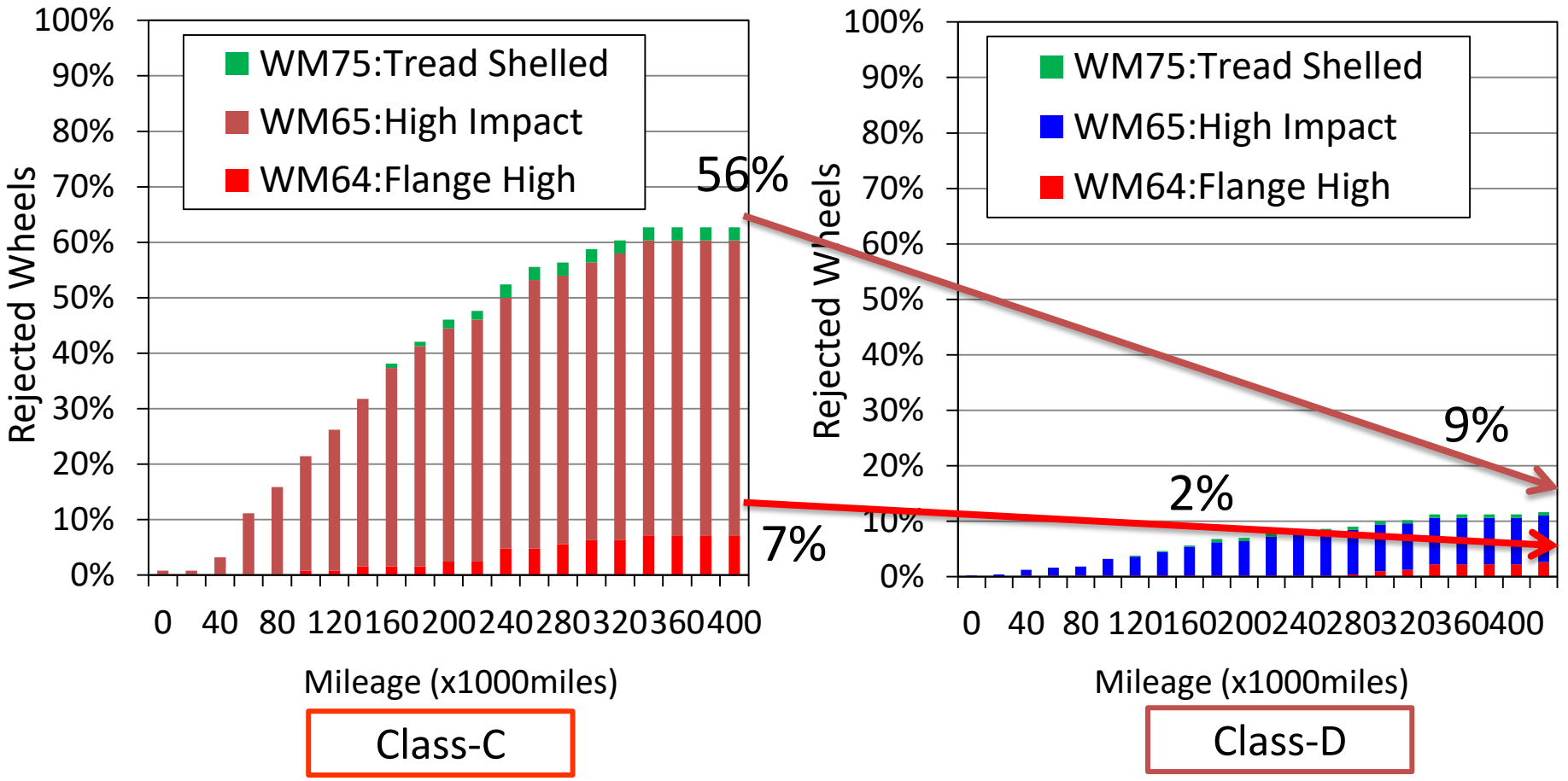
Average Wear Rate is only (1/16”) ／100,000 miles

5. Survival Rate of Wheels



Class-D survival rate is more than double to Class-C

6. Rejection Rate of Wheels



Class-D : fewer removals than Class-C.

7. Summary

1) Surface Condition

- Clean surface observed
- Very low rejection rate by High impact or Shell

⇒**High Resistance against tread damage**

2) Wear Condition

- Average wear rate is (1/16”) ／100kmiles.
- Very low rejection rate by High flange

⇒**High Resistance against tread wear**

Class-D wheel last much longer than conventional Class-C wheels!

Questions

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