



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Washington, DC 20460

OFFICE OF
AIR AND RADIATION

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Performance Requirements for Retread Products

The U.S. Environmental Protection Agency (EPA) has updated procedures for verification of low rolling resistance retread products for use on line-haul class-8 tractors and trailers. The attached “EPA Verification Protocols for Low Rolling Resistance Retread Products” (or Retread Verification Protocols) replaces the June 11, 2012, Interim performance requirements. The updated Retread Verification Protocols have aligned coefficient of rolling resistance (Crr) performance targets with new tires and provide additional flexibility for manufacturers. Additional information on the verification process and program requirements can be found on the verified technologies website.

Updated Retread Verification Protocol Highlights

- Improved protocol clarity
- Allowance to verify retread products on any new tire casing verified by EPA for low rolling resistance
- No specific (reference) new tire casing for dual retread applications
- Retread target levels for dual and single wide tires aligned with new tires.
- Casings used for verification testing will be listed on the EPA website.
- Verified retread products will remain on the EPA website at:
<https://www.epa.gov/verified-diesel-tech/smartway-verified-list-low-rolling-resistance-lrr-new-and-retread-tire>

EPA will continue to accept applications for verification of retread products and new tires thru the SmartWay Technology Application and Reporting System (STARS), and the system has been updated to accommodate the updated protocols.

Verified low rolling resistance retread products, when used as described here, will provide reductions in fuel consumption of at least 3% as compared to higher rolling resistance tires or retread products. To obtain reductions in fuel consumption, verified tires or retreads must be used on the drive and trailer positions, with EPA verified steer tires, and all tires must be properly inflated according to the manufacturer’s specifications. These reductions mean real fuel savings for drivers and fleets who use verified products.

Manufacturers and fleets can play an important role in ensuring the supply and use of innovative technologies, like low rolling resistance retread tires, that provide both emission reductions and fuel savings. We appreciate your interest and look forward to your partnership as we continue working to make the freight industry more efficient, while reducing emissions of harmful pollutants.

Sincerely,

Karl Simon, Director
Transportation and Climate Division
Office of Transportation and Air Quality

EPA Verification Protocols for Low Rolling Resistance Retread Products

Manufacturers of retread technologies (“retread”, “product” or “technologies”) may apply for EPA verification of low rolling resistance performance of their products as described below. These verification test protocols and performance requirements are applicable to precure and mold cure retread technologies to be used for drive or trailer retread tires in the class 8-line haul tractor trailer application. These test methods and procedures apply only to EPA verification of low rolling resistance performance for retread technologies. Manufacturers must comply with all other applicable federal, state, and local laws, regulations, and requirements.

RETREAD TESTING PROTOCOL

Tire Casing Selection

1. Tire casing for testing (“test casing”): The test casing shall be made from any new-unused SmartWay verified casing dual size 295/75R22.5 or 275/80R22.5 load range G or size 445/50R22.5 load range L (single-wide casing). Other sizes and load ranges must be approved by EPA in advance of testing; however, retread verification may be limited in applicable scope. A minimum of three identical test casings is required for verification.
2. The test casing make, model, size, load range, DOT code, and date of manufacture must be identified in the application and recorded in test documentation.

Retread Procedure

1. Three new-unused SmartWay verified new tires are buffed to a thickness above the belt typical for the retread product being tested (minimum of 3/32”). The buff radius should be according to manufacturer specifications and documented for each tire.
2. The buffed casings are retread with the product to be verified.

3. Retreading shall be in accordance with documented procedures normally used for the retread product by the manufacturer.
4. Retread construction and assembly must be in accordance with normal production procedures. The use of a calendared or extruded cushion is acceptable, and the use of an outside/inside curing envelope is acceptable.
5. The cure conditions for the retread process are set by the manufacturer of the retread product based on their standard documented procedure.

Test Method

The ISO 28580:2018 rolling resistance test method shall be performed on each retreaded casing to determine rolling resistance with the following clarifications.

- a. The retreaded casings are tested on a drum diameter of 2.0-meter - (if a drum diameter other than 2.0-meter is used, the result is corrected to 2.0-meter as described in section 9.3 Drum Diameter Correction of the ISO 28580:2018 test method). Load and inflation pressure are set as specified by the ISO 28580:2018 test method and the Tire and Rim Association for the tire size tested. In accordance with ISO 28580:2018, section 9.1, the rolling resistance coefficient (C_r) is calculated by dividing the rolling resistance by the load on the tire using the following formula:

$$C_r = \frac{F_r}{L_m}$$

where

F_r is the rolling resistance, in newtons;

L_m is the test load, in kilonewtons.

- b. C_r is the rolling resistance coefficient of the retreaded tire. Test results from a sample of three retreaded tires are required for each request for verification. Test documentation and results are to be submitted through EPA's SmartWay Technology Application Reporting System (STARS).
- c. Tests must be conducted by a laboratory accredited by a body recognized by the International Laboratory Accreditation Corporation (ILAC) to be in compliance with ISO 17025:2017 for the ISO 28580:2018 test method, or the laboratory must provide data showing that their results are aligned to

an accredited laboratory. A copy of their accreditation certificate (in English translation, if necessary) shall be included with each set of test results. EPA may accept alternative evidence of laboratory competence and quality assurance/quality control by prior arrangement.

Verification

1. The average of three test results is compared to the target value specified in Table 1. The average must be at or below the target value for the specified axle position.

Table 1. Target values for dual and single wide retread products.

Axle Position	Rolling Resistance Coefficient (C_r)
Drive	6.6
Trailer	5.1

2. Tread models that meet the target value for verification in the trailer position also qualify for verification in the drive position if the manufacturer certifies that the tread model is suitable for use in that application.

Documentation

1. Each individual ISO 28580 test report shall be included in the application for verification.
2. The tread width for each test shall be selected based on the appropriate fit for the test casing and documented.
3. Three separate photographs showing the following aspects of the retread tire shall be provided with the application for review:
 - a. the sidewall model stamp
 - b. the tread from the side view
 - c. the tread face

Multiple Branding

If a manufacturer markets a tread product under more than one brand name, only test data under one of the brand names is needed if the product, tread patterns and rubber compounds of the tread products under the different brand names are identical in all material respects and the manufacturer declares such in writing. EPA will approve other brand names based on the test data provided.

EPA Testing

1. EPA reserves the right to conduct testing of all tires and tread models submitted for verification. Verification test tires must be retained by the applicant for a period of 6 months from the date the tire is verified to allow EPA the opportunity to independently test the tires to evaluate tire rolling resistance. EPA will share the test results with the applicant.
2. Verification approval and web listing may be revoked if EPA testing demonstrates a retread technology fails to meet applicable target levels.

Product Integrity

1. If the production tire model(s) are modified in any way from the application model that was verified, the manufacturer must notify EPA immediately through the STARS Verification Reporting System and by email to: Tech_Center@EPA.Gov. Verification does not confer to modified tires that are not the same in all material respects to the original verification model.
2. Verification approval and web listing may be revoked if the verified tread is modified in any way from the tire tested and described in the application.