



SURFACE VEHICLE STANDARD

J1098™

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Superseding J1098 SEP2018

Tonne Kilometer Per Hour Application

RATIONALE

Document SAE J1098 "Tonne Kilometer Per Hour Application" covers time tested procedures and applications. As such the methodology continues to be acceptable in its present form. Therefore, the document is being revised with no significant technical changes.

SAE J1098 has been reaffirmed to comply with the SAE Five-Year Review policy.

1. SCOPE

This SAE Standard establishes the procedures for the application of Tonne Kilometer Per Hour (TKPH) rating values for off-the-road tires; utilizing empirical data formula, it describes the procedure for evaluating and predicting off-the-road tire TKPH requirements as determined by a work cycle analysis.

- 1.1 The loads, speeds, inflations, and rim configurations are assumed to be within acceptable industry or manufacturer's prescribed recommendations.
- 1.2 Other application parameters affecting tires are not included in the scope (for example: flotation, cut, bruise, wear, etc.). These parameters must also be considered for final tire selection, since a tire that maximizes desirable TKPH characteristics will sometimes compromise these other parameters.
- 1.3 The standards for the productivity of off-the-road machines or tires are not included in the scope.
- 1.4 The formulae (4.2 and 4.3) are applicable to transport type machines only (that is, trucks, tractor trailers, and scrapers) using Category E Earthmover Service Code Tires. See SAE J751 for service codes.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

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2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE J751 Off-Road Tire and Rim Classification—Construction Machines

SAE J1015 Tonne Kilometer Per Hour Test Procedure

SAE J1116 Categories of Off-Road Self-Propelled Work Machines

3. GENERAL (INTRODUCTION TO TKPH)

A tire operated at its SAE J1015 TKPH rating will achieve a stabilized temperature under continuous operation without heat damage.

3.1 Origin of Tire Heat

The temperature described in Section 3 occurs at or near the interface of the undertread and carcass (see SAE J751, Figure 1). This results from the transitory load on the tire crown causing the tire to flex, producing the greatest stresses at or near the junction of the undertread and carcass. The TKPH rating of a tire is established from the maximum stabilized temperature, which the tire can sustain along that interface.

3.2 Effect of Tire Heat

As a tire's temperature increases, its material strengths decrease (Figure 1). Repeated or sustained exposure to excessive temperatures will ultimately produce tire damage.

Heat damage is progressive; it may go undetected or become evident under operating conditions where no apparent cause exists.

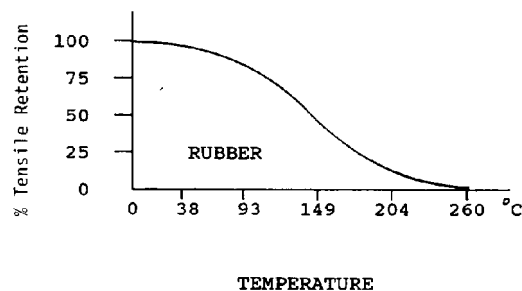


FIGURE 1 - TEMPERATURE EFFECTS

3.3 Effect of Load and Inflation

Tire deflection is a function of its load and inflation pressure. When a tire is operated above its normal deflection range due to insufficient inflation pressure relative to the load carried (see 1.2), excessive heat build-up may take place in the tire. This will affect the tire's TKPH capabilities.