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INTERNATIONAL
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SURFACE VEHICLE STANDARD

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Submitted for recognition as an American National Standard

(R) OFF-ROAD TIRE AND RIM SELECTION AND APPLICATION

***Foreword*—**This Document has not changed other than to put it into the new SAE Technical Standards Board Format.

1. ***Scope*—**This SAE Standard provides general guidelines for the proper selection and application of off-road tires and rims; as defined in SAE J751 APR86; and applied to earthmoving machines described in SAE J1116 JUN86 and J1057 JUN81.

1.1 Off-road tires having Industry Codes E, L, G, C, and LS; together with their appropriate rims are included in this document (Reference SAE J751 APR86).

1.2 Consideration of tire characteristics such as flotation, cut and bruise resistance, ride quality, wear, and tractive ability are not covered herein.

2. ***References***

2.1 Applicable Publications

2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

J751 APR86—Off-Road Tire and Rim Classification - Construction Machines
J1057 JUN81—Identification Terminology of Earthmoving Machines
J1116 JUN86—Categories of Off-Road Self-Propelled Work Machines
J1098 MAR91—Ton Kilometer Per Hour Application

2.2 Other Documents—Available from The Tire & Rim Association, Inc., 175 Montrose West Avenue, Suite 150, Copley, OH 44321.

Tire & Rim Association Yearbook

3. ***General*—**Tires discussed in this document are included under a general designation entitled off-road. As such, they are, by condition of their service, subject to a greater diversity of operating forces than those utilized for on-highway service. The type and magnitude of these forces are a function not only of tire construction, but also of machine performance and operating conditions.

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The interaction of tire, machine, and operating conditions is critical and can be favorable or unfavorable to tire performance and life. The effect of such phenomena is not within the scope of general load tables alone (see 4.1.1).

4. Tire Selection And Application

4.1 Selection of tire size and carcass strength on each axle shall be based on the highest individual wheel load and the speed range capability of the machine on which the tires will be applied (see Section 6).

4.1.1 Maximum load per tire shall not be greater than that specified in the applicable tables of the Tire & Rim Association (TRA) Yearbook or that approved by the manufacturer of the specific tires to be placed in service.

4.1.2 When performance capability of the machine is such that the possibility of excessive heat generation in the tire exists, consideration should also be given to the average tire load and speed in the machine work cycle. Adjustments can be made in maximum load and speed so that the tire operating temperature is limited to an acceptable level by the following methods.

4.1.2.1 For transport machines (for example, dumpers and tractor-scrapers), reference should be made to SAE J1098 MAR91 or to other specialized data available from individual tire manufacturers.

4.1.2.2 For work machines (for example, wheel loaders and wheel dozers), the tire manufacturer's recommendations should be sought.

5. Rim Selection

5.1 Selection of rim size, contour, and type (or style) designation shall be based on the tire design, the highest individual wheel load, the required tire inflation pressure, the speed range capability of the machine, and the method by which the rim is attached to the hub of the machine.

5.1.1 Rim size and contour shall be in accordance with specific recommendations given by either:

5.1.1.1 The Tire & Rim Association (TRA) Yearbook for those tires included in that standard.

5.1.1.2 The manufacturers of the specific tires and rims to be mounted and placed in service.

5.1.2 Rim type or style designation shall conform to the specific recommendations given by the manufacturer of the rims.

6. Definition Of "Highest Individual Wheel Load"

6.1 The term "highest individual wheel load" as used in 4.1 and 5.1 is defined to mean the largest load on a single tire/rim when measured on level ground at stationary conditions. For specific machine types, the loading and load distribution shall be as follows:

6.1.1 For Transport Machines (for example, dumper, tractor-scrapers, forwarders, straddle trucks) use Gross Machine Weight (GMW) load distribution at rated payload.

6.1.2 FOR WHEEL LOADERS

6.1.2.1 For front axle tires both the static (tipping condition) and travel (carry condition) must be considered.

6.1.2.1.1 Tipping Condition—All payload and machine weight distributed evenly on the front tires.

6.1.2.1.2 Carry Condition—All tires on the ground and bucket with rated payload at SAE "carry position".

6.1.2.2 For rear axle tires, the EMW (Empty Machine Weight) distribution with empty bucket in the SAE "carry position".

6.1.3 FOR LIFT TRUCKS

6.1.3.1 *For Front Axle Tires*—All tires on the ground and forks with rated payload at SAE "carry position".

6.1.3.2 *For Rear Axle Tires*—EMW (Empty Machine Weight) distribution with no payload on forks at SAE "carry position".

6.1.4 For wheel dozers, graders, compactors, all of which carry no payload, use the GMW distribution.

6.1.5 For all other machines not included under this Section 6, the tires and/or rim manufacturer should be consulted.

7. Notes

7.1 **Marginal Indicia—**The change bar (I) located in the left margin is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. An (R) symbol to the left of the document titles indicates a complete revision of the report.

PREPARED BY THE OFF-ROAD MACHINERY TECHNICAL COMMITTEE