

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)		NUMBER: MPAPS A-1065
		Former Designation: TMS-1065
TITLE: Tapered Roller Bearings for Wheel End Applications		CURRENT REV No.: 1608
		DATE: Aug. 2016
WRITTEN/EDITED BY: J. Goldschmidt	APPROVED BY: R. Goluch	SUPERSEDES: Rev. 1204 – June 2008
PRINTED COPIES OF THIS DOCUMENT MUST BE VERIFIED FOR CURRENT REVISION		
<i>This specification may involve hazardous materials, equipment, and procedures. This specification does not purport to address all of the safety issues associated with its use. The user is responsible to consult appropriate safety and health practices and to determine the applicability of regulatory limits prior to use.</i>		

1.0 APPLICATION

This specification covers material requirements for tapered roller bearings to be used in wheel end applications. The bearing steels covered by this specification may be of two types:

- Type 1 - Case hardened (carburized)
- Type 2 - Through-hardened

2.0 SCOPE

This specification covers requirements for material, chemical composition microstructure, dimensional tolerances, post-hardening treatments, design performance validation, quality, source approval/quality control, shipping, and identification.

2.1 Restricted Chemical Substances

Effective January 1, 2007, all product supplied to the requirements of this specification must comply with the requirements of the MPAPS B-50 specification.

3.0 REFERENCE DOCUMENTS

Unless otherwise specified, the latest issue of all referenced standards shall apply. The following Specifications, Standards, and Regulations are referenced in this specification.

Quality System Standard ISO 9001 or TS-16949	ASTM A295	ABMA 19.1
CFR Title 29, Part 1910	ASTM A534	ABMA 19.2
NAVISTAR Supplier Packing and Shipping Std. D-13	ASTM A568	
NAVISTAR Engineering Design Std A-16	ASTM A892	
NAVISTAR MPAPS B-50	ASTM E45	
NAVISTAR MPAPS A-0, Part I	ASTM E112	
NAVISTAR MPAPS A-0, Part III		
NAVISTAR MPAPS A-40		
NAVISTAR MPAPS A-52		

This document is restricted and may not be sent outside Navistar, Inc. or reproduced without permission from Corporate Technical Standards. Suppliers are required to assume all patent liability. ©2016 by Navistar, Inc.

AUGUST 2016



Documents

Page 1 of 6

Document-Sharing Hub

NUMBER: MPAPS A-1065	TITLE: Tapered Roller Bearings for Wheel End Applications	REVISION: 1608
--------------------------------	---	--------------------------

4.0 REQUIREMENTS

4.1 Material

Steel for individual bearings will be selected on the basis of section size, hardenability, quench rate, furnace load factors, etc. Such selection to achieve required properties in specific parts is the responsibility of the bearing manufacturer.

4.1.1 Cups, Cones and Rollers

The steel used shall be made by a process capable of providing a high quality product, shall be vacuum degassed, fully killed, made to fine grain practice, and shall meet quality tests, chemical composition, minimum steel cleanliness, grain size, hardenability, decarburization, surface imperfection, microstructure and hardness requirements as described in ASTM A534 for Carburizing Steels used in Type 1 bearings and ASTM A295 for High Carbon Steels used in Type 2 bearings. Reduction ratio shall be 7:1 minimum.

4.1.2 Bearing Cages

Open hearth, basic oxygen or electric furnace, ingot cast or strand cast, steel may be used for bearing cages. Unless otherwise specified, steel used for bearing cages will meet requirements of ASTM A568, and steel cleanliness will meet requirements of MPAPS A-0, Part I, Quality Level I.

4.2 Chemical Composition

4.2.1 Type 1

Steels used for the rollers, cups, and cones of Type 1 bearings shall meet the general composition requirements for 4118H or 8620H steels or equivalent as described in ASTM A534, or as agreed upon between NAVISTAR and the supplier.

4.2.2 Type 2

Steels used for the rollers, cups, and cones of Type 2 bearings shall meet the general composition requirements for 52100 steel or its equivalent as described in ASTM A295, or as agreed upon between NAVISTAR and the supplier.

4.3 Microstructure

4.3.1. Type 1

Carburized bearings shall have a case microstructure consisting of a quenched and tempered high carbon martensite matrix. The amount of retained austenite in the case shall not exceed 30%. The core shall consist of low carbon martensite with various amounts of bainite and ferrite depending on steel selection. Inclusion rating shall be determined per ASTM E45 Method A. The average of all specimens tested, as well as 67% of all specimens, will not exceed the rating specified in Table 1.