

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)		NUMBER: MPAPS C-14
		Former Designation: CEMS C-14
TITLE: Zinc Base Alloy Die Casting		CURRENT REV No.: 1702
		DATE: Feb. 2017
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<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

Zinc base alloys are highly coatable, easily finished, and generally lower cost than comparable aluminum alloys. They provide good mechanical properties and are used in a wide range of decorative and light structural applications.

2.0 SCOPE

This specification covers zinc base alloys for die castings used in the Company's products. Zinc base alloys are classified by chemical composition.

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
 CFR Title 29, Part 1910
 NAVISTAR Supplier Packing and Shipping Std. D-13
 NAVISTAR Engineering Design Std A-16
 NAVISTAR MPAPS B-50
 ASTM B 86

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4.0 REQUIREMENTS

4.1 Chemical composition

TABLE I - CHEMICAL COMPOSITION OF DIE CASTINGS

UNS	Former International	ASTM B86	Elements	min	max
Z33525	DZ-96-4-05	Alloy 3 Zamak 3 AG40A	aluminum	3.70	4.30
			Copper*	—	0.10
			magnesium	0.02	0.06
			iron	—	0.05
			cadmium	—	0.004
			tin	—	0.002
			lead	—	0.005
			zinc	remainder	
Z35535		Alloy 5 Zamak 5 AG41A	aluminum	3.70	4.30
			Copper	0.7	1.20
			magnesium	0.02	0.06
			iron	—	0.05
			cadmium	—	0.004
			tin	—	0.002
			lead	—	0.005
			zinc	remainder	

* For the majority of commercial applications, a copper content of up to 0.7 % will not adversely affect the serviceability of die castings and should not serve as a basis for rejection

4.2 Mechanical Properties

4.2.1 In the case of highly stressed parts, minimum requirements for tensile properties or impact strength, or both, may be specified.

4.2.1.1 Acceptance of castings does not depend on mechanical properties of separately cast test bars samples unless specifically noted on the drawing.

4.2.2 In the event that such requirements are essential, the test bar requirements shown in Table II will be shown on the drawing. These test bar values do not indicate the actual properties of the castings except in a comparative fashion and should not be used to establish design limits or acceptance criteria.

TABLE II - MINIMUM MECHANICAL PROPERTIES OF DIE CAST TEST BARS

		Tensile Strength min		Elongation in 2 in (50 mm)	Charpy Impact min	
		psi	MPa	percent, min	ft lbs	N · m
Z33525	average of tested specimens *	35 000	241	10.0	35.0	47.4
	individual specimen	30 000	207	3.0	15.0	20.3
Z35535	average of tested specimens *	37 000	257	7.0	38.5	52.1
	individual specimen	31 000	214	2.0	16.5	22.3

* 5 tension test specimens and 10 impact test specimens (cut from 5 separately cast bars) will be tested from each shipment when specified.

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