ALUMINUM ALLOY (A356-T6) MODIFIED, CAST WHEEL **WSS-M2A123-B1**

ALUMINUM ALLOY (A356-T6) MODIFIED, CAST WHEEL, HIGH STRENGTH **WSS-M2A123-B2**

1. SCOPE

The materials defined by this specification are permanent mold cast aluminum alloys (A356-T6).

2. APPLICATION

Variant B1 - This specification was released originally for material used for solution heat treated and artificially aged cast aluminum automotive wheels.

Variant B2 - This specification was released originally for material used for solution heat treated and artificially aged cast aluminum automotive wheels requiring strength higher than what is provided by typical industry standards such as SAE J452 A356-T6.

3. REQUIREMENTS

3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.2 CHEMICAL COMPOSITION

The chemical composition of the aluminum wheel must conform to SAE J452 A356.0, except Strontium 0.01 - 0.04 wt% (used to modify Silicon).

The chemical composition of the casting shall be checked per procedures outlined in ASTM B108 and in accordance with suitable chemical (ASTM Method E34), or spectrochemical (ASTM E607, ASTM E1251) test methods. Metal may consist of a blend of both primary and secondary materials.

3.3 MECHANICAL PROPERTIES, (T6 Temper)

3.3.1 Mechanical Properties for WSS-M2A123-B1
(ASTM B557 and ASTM E10)

The mechanical properties of the aluminum wheel must conform to SAE J452 A356.0, except no maximum for Brinell Hardness.

3.3.2 Mechanical Properties for WSS-M2A123-B2

The following mechanical properties are required:

3.3.1.1 Yield Strength (0.2% Offset) (ASTM B557) — 170 MPa min

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3.3.1.2	Tensile Strength (ASTM B557)	245 MPa, min
3.3.1.3	Elongation (ASTM B557)	5 % min
3.3.1.4	Hardness (ASTM E10, 500 Kg, 10 mm ball)	75 BHN min

3.4 HEAT TREATMENT

T6 Temper: A modified T6 heat treatment cycle is permissible with demonstration of compliance to required mechanical properties. NOTE: Casting may be mechanically straightened after solution and quench, but not after the artificial aging treatment.

3.5 MICROSTRUCTURE
(ASTM E3)

Microstructure of this material shall consist of primary alpha aluminum dendrites surrounded by fine Al-Si eutectic particles as viewed at 200X magnification. The silicon particles shall be rounded, which indicates proper modification and heat treatment.

4. GENERAL INFORMATION

The information given below is provided for clarification and assistance in meeting the requirements of this specification. Contact gmfs@ford.com for questions concerning Engineering Material Specifications.

5. SUMMARY OF REVISIONS

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