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Magnesium alloy extruded shapes

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In the event of any doubts arising as to the contents,
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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by the Japan Magnesium Association (JMA)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently **JIS H 4204** : 2005 is replaced with this Standard.

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Magnesium alloy extruded shapes

Introduction

This Japanese Industrial Standard has been prepared based on the fourth edition of **ISO 3116** published in 2007 with some modifications of the technical contents.

The portions given sidelines or dotted underlines are the matters in which the contents of the corresponding International Standard have been modified. A list of modifications with the explanations is given in Annex JA.

1 Scope

This Standard specifies magnesium alloy extruded shapes (hereafter referred to as "shapes").

NOTE : The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 3116 : 2007 *Magnesium and magnesium alloys — Wrought magnesium alloys* (MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21-1**.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS H 0001 *Aluminium, magnesium and their alloys — Temper designation*

JIS H 0321 *General rules for inspection of non-ferrous metal materials*

JIS H 1332 *Methods for determination of aluminium in magnesium and magnesium alloys*

JIS H 1333 *Methods for determination of zinc in magnesium and magnesium alloys*

JIS H 1334 *Methods for determination of manganese in magnesium and magnesium alloys*

JIS H 1335 *Methods for determination of silicon in magnesium and magnesium alloys*

JIS H 1336 *Methods for determination of copper in magnesium and magnesium alloys*

JIS H 1337 *Method for determination of nickel in magnesium and magnesium alloys*

JIS H 1338 *Methods for determination of iron in magnesium and magnesium alloys*

JIS H 1340 *Method for determination of zirconium in magnesium alloys*

JIS H 1341 *Method for determination of calcium in magnesium alloys*

JIS H 1345 *Method for determination of rare earths in magnesium alloys*

JIS Z 2241 *Metallic materials — Tensile testing — Method of test at room temperature*

NOTE : Corresponding International Standard : ISO 6892-1 *Metallic materials — Tensile testing — Part 1 : Method of test at room temperature* (MOD)

3 Terms and definitions

For the purposes of this Standard, the following terms and definitions apply.

3.1 shapes

the wrought product with uniform cross section different from that of tube or bar through its whole length, which is provided in the form of straight or coil

3.2 solid shapes

shapes having no hollow in its cross section

3.3 hollow shapes

shapes having one or more hollows in its cross section

4 Classification and symbol

The classification and symbol shall be as given in table 1.

Table 1 Classification and symbol

Classification	Symbol	Corresponding symbol of ISO
Class 1 B	MS1B	ISO-MgAl3Zn1(A)
Class 1 C	MS1C	ISO-MgAl3Zn1(B)
Class 2	MS2	ISO-MgAl6Zn1
Class 3	MS3	ISO-MgAl8Zn
Class 5	MS5	ISO-MgZn3Zr
Class 6	MS6	ISO-MgZn6Zr
Class 8	MS8	ISO-MgMn2
Class 9	MS9	ISO-MgZn2Mn1
Class 10	MS10	ISO-MgZn7Cu1
Class 11	MS11	ISO-MgY5RE4Zr
Class 12	MS12	ISO-MgY4RE3Zr
The temper designations of table 3 and table 4 shall be attached to the symbol above with a hyphen "-". Example : MS1B-F		

5 Quality

5.1 Appearance

The shapes shall be free from flaws, cracks and other defects detrimental to use.

The acceptance criteria of appearance shall be upon the agreement between the purchaser and the manufacturer.

5.2 Chemical composition

The chemical composition of shapes shall be as given in table 2.

Table 2 Chemical composition

Unit : %

Class- sifica- tion	Sym- bol	Chemical composition														
		Mg	Al	Zn	Mn	RE ^{a)}	Zr	Y	Li	Fe	Si	Cu	Ni	Ca	Other ele- ments ^{b)}	Total of other ele- ments ^{b)}
Class 1B	MS1B	Re-main-der	2.4 to 3.6	0.50 to 1.5	0.15 to 1.0	—	—	—	—	0.005 max.	0.10 max.	0.05 max.	0.005 max.	0.04 max.	0.05 max.	0.30 max.
Class 1C	MS1C	Re-main-der	2.4 to 3.6	0.5 to 1.5	0.05 to 0.4	—	—	—	—	0.05 max.	0.1 max.	0.05 max.	0.005 max.	—	0.05 max.	0.30 max.
Class 2	MS2	Re-main-der	5.5 to 6.5	0.50 to 1.5	0.15 to 0.40	—	—	—	—	0.005 max.	0.10 max.	0.05 max.	0.005 max.	—	0.05 max.	0.30 max.
Class 3	MS3	Re-main-der	7.8 to 9.2	0.20 to 0.8	0.12 to 0.40	—	—	—	—	0.005 max.	0.10 max.	0.05 max.	0.005 max.	—	0.05 max.	0.30 max.
Class 5	MS5	Re-main-der	—	2.5 to 4.0	—	—	0.45 to 0.8	—	—	—	—	—	—	—	0.05 max.	0.30 max.
Class 6	MS6	Re-main-der	—	4.8 to 6.2	—	—	0.45 to 0.8	—	—	—	—	—	—	—	0.05 max.	0.30 max.
Class 8	MS8	Re-main-der	—	—	1.2 to 2.0	—	—	—	—	—	0.10 max.	0.05 max.	0.01 max.	—	0.05 max.	0.30 max.
Class 9	MS9	Re-main-der	0.1 max.	1.75 to 2.3	0.6 to 1.3	—	—	—	—	0.06 max.	0.10 max.	0.1 max.	0.005 max.	—	0.05 max.	0.30 max.
Class 10	MS10	Re-main-der	0.2 max.	6.0 to 7.0	0.5 to 1.0	—	—	—	—	0.05 max.	0.10 max.	1.0 to 1.5	0.01 max.	—	0.05 max.	0.30 max.
Class 11	MS11	Re-main-der	—	0.2 max.	0.03 max.	1.5 to 4.0	0.4 to 1.0	4.75 to 5.5	0.2 max.	0.010 max.	0.01 max.	0.02 max.	0.005 max.	—	0.01 max.	0.30 max.
Class 12	MS12	Re-main-der	—	0.2 max.	0.03 max.	2.4 to 4.4	0.4 to 1.0	3.7 to 4.3	0.2 max.	0.010 max.	0.01 max.	0.02 max.	0.005 max.	—	0.01 max.	0.30 max.
NOTE : The value of other elements means the value of respective components other than elements in this table. The total of other elements means the total value of respective components. Notes ^{a)} RE means neodymium (Nd) and other heavy rare earth elements. ^{b)} Any other element shall be analyzed at the discretion of the manufacturer only when its existence is known beforehand or there is any probability to exceed the specification in the normal analysis process.																