

Magnesium Sand and Permanent Mold Casting Alloy Compositions



Provided Courtesy of Materials Technology@TMS

The following is a summary of the compositions of typical magnesium sand & permanent mold casting alloys. Compositions are limits where a range is given for major alloying additions. Compositions are nominal if a single value is given for intentional alloying additions.

For additional resources, visit <http://www.materialstechnology.org>

Designations in parentheses are British designations for the ASTM designations which precede them.

Alloy	COMPOSITION wt.%													Reference	Link		
	Al	Zn	RE	Zr	Ag	Mn	Y	Th	Li	Cu	Si	Sr	Ca			Others	
AZ91E	8.1-9.3	0.4-1.0				0.17-0.35										Magnesium-Elektron Corporate Website	Magnesium-Elektron
AZ81A (ElektronA8)	7.5-8.5	0.3-1.0				0.2-0.4										Magnesium-Elektron Corporate Website	Magnesium-Elektron
AZ92A	8.3-9.7	1.6-2.4				0.10-0.35				0.25 max	0.30 max			0.01 Ni max, 0.30 max others total	ASM Specialty Handbook: Magnesium and Magnesium Alloys, eds. M. M. Avedesian and H. Baker, ASM International, 1999.	Acquire the Book	
ZC63A		5.5-6.5				0.25-0.75				2.4-3.0	0.20 max			0.01 max Ni, 0.30 max others total	ASM Specialty Handbook: Magnesium and Magnesium Alloys, eds. M. M. Avedesian and H. Baker, ASM International, 1999.	Acquire the Book	
ZE63A		5.8	2.6	0.7											Handbook of Materials Selection, ed. Kutz, Myer, 2002 John Wiley & Sons	Read the Full Article	
ZK51A		3.6-5.5		0.5-1.0						0.10 max				0.01 max Ni, 0.30 max others total	ASM Specialty Handbook: Magnesium and Magnesium Alloys, eds. M. M. Avedesian and H. Baker, ASM International, 1999.	Acquire the Book	
ZK61A		5.5-6.0		0.6-1.0						0.10 max				0.01 max Ni, 0.30 max others total	ASM Specialty Handbook: Magnesium and Magnesium Alloys, eds. M. M. Avedesian and H. Baker, ASM International, 1999.	Acquire the Book	
ZE41A (RZ5)		3.5-5.0	0.8-1.7	0.4-1.0											Magnesium-Elektron Corporate Website	Magnesium-Elektron	
		4.2	1.2	0.7		0.15									Handbook of Materials Selection, ed. Kutz, Myer, 2002 John Wiley & Sons	Read the Full Article	

Magnesium Sand and Permanent Mold Casting Alloy Compositions



Provided Courtesy of Materials Technology@TMS

The following is a summary of the compositions of typical magnesium sand & permanent mold casting alloys. Compositions are limits where a range is given for major alloying additions. Compositions are nominal if a single value is given for intentional alloying additions.

For additional resources, visit <http://www.materialstechnology.org>

Designations in parentheses are British designations for the ASTM designations which precede them.

Alloy	COMPOSITION wt.%													Reference	Link		
	Al	Zn	RE	Zr	Ag	Mn	Y	Th	Li	Cu	Si	Sr	Ca			Others	
QE22A			2.0 ^	0.6	2.5										^ Nd rich rare earth elements	Magnesium-Elektron Corporate Website	Magnesium-Elektron
			2.2	0.7	2.5											Handbook of Materials Selection, ed. Kutz, Myer, 2002 John Wiley & Sons	Read the Full Article
MSR-B			2.0-3.0	0.4-1.0	2.0-3.0											Magnesium-Elektron Corporate Website	Magnesium-Elektron
EQ21A			1.5-3.0	0.4-1.0	1.3-1.7					0.05-0.10						Magnesium-Elektron Corporate Website	Magnesium-Elektron
WE54A			*	0.4 min			4.75-5.5								* 1.0 - 2.0 heavy rare earths (mainly Yb, Er, Dy & Gd), 1.5-2.0 Nd	Magnesium-Elektron Corporate Website	Magnesium-Elektron
			**	0.7		0.15									** 5.1 Y, 4 RE, 0.005 max Ni	Handbook of Materials Selection, ed. Kutz, Myer, 2002 John Wiley & Sons	Read the Full Article
WE43A			2.4-4.4	0.4 min			3.7-4.3									Magnesium-Elektron Corporate Website	Magnesium-Elektron
			#	0.7		0.15									# 4 Y, 3 RE, 0.01 max Fe, 0.005 max Ni	Handbook of Materials Selection, ed. Kutz, Myer, 2002 John Wiley & Sons	Read the Full Article
EZ33A (ZRE1)		2.0 - 3.0	2.5 - 4.0	0.4 - 1.0												Magnesium-Elektron Corporate Website	Magnesium-Elektron
		2.5	3.2	0.7												Handbook of Materials Selection, ed. Kutz, Myer, 2002 John Wiley & Sons	Read the Full Article

Magnesium Sand and Permanent Mold Casting Alloy Compositions



Provided Courtesy of Materials Technology@TMS

The following is a summary of the compositions of typical magnesium sand & permanent mold casting alloys. Compositions are limits where a range is given for major alloying additions. Compositions are nominal if a single value is given for intentional alloying additions.

For additional resources, visit <http://www.materialstechnology.org>

Designations in parentheses are British designations for the ASTM designations which precede them.

Alloy	COMPOSITION wt.%														Reference	Link
	Al	Zn	RE	Zr	Ag	Mn	Y	Th	Li	Cu	Si	Sr	Ca	Others		
EV31A (Elektron 21)		0.2-0.5	see note	sat.										2.6 - 3.1 Nd, 1.0-1.7 Gd	Magnesium-Elektron Corporate Website	Magnesium-Elektron
MRI-201S															NOT AVAILABLE	
MRI-202S															NOT AVAILABLE	
AM-SC1															NOT AVAILABLE	