

# Magnesium Die Casting Alloy Compositions



Provided Courtesy of Materials Technology@TMS

The following is a summary of the compositions of typical magnesium die casting alloys.

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

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.

Alloy	COMPOSITION wt.%													Reference	Link	
	Al	Zn	RE	Zr	Ag	Mn	Y	Th	Li	Cu	Si	Sr	Ca			
AZ91D	8.5-9.5	0.45-0.9				0.17-0.40				0.025	0.05			0.001 Ni, 0.004 Fe, 0.01 others	Dead Sea Magnesium Corporate Website	<a href="#">Dead Sea Magnesium</a>
	9	0.5				0.3									Magnesium-Elektron Corporate Website	<a href="#">Magnesium-Elektron</a>
	8.5-9.5	0.45-0.9				0.17-0.40				0.025 max	0.05 max			0.01 max Ni, 0.004 max Fe, 0.01 max others	AVISMA Corporate Website	<a href="#">AVISMA</a>
	8.5-9.5	0.45-0.90				0.17-0.40				0.025 max	0.05 max			0.001 max Ni, 0.004 max Fe, 0.01 max others	Rima Industrial S/A Corporate Website	<a href="#">Rima Industrial S/A</a>
	9	0.7				0.26								0.001 max Ni, 0.005 max Fe	Handbook of Materials Selection, ed. Kutz, Myer, 2002 John Wiley & Sons	<a href="#">Read the Full Article</a>
AM-lite															NOT AVAILABLE	
AM20	2.1					0.4									ASM Specialty Handbook: Magnesium and Magnesium Alloys, eds. M. M. Avedesian and H. Baker, ASM International, 1999.	<a href="#">Acquire the Book</a>
AM50A	4.5 - 5.3	0.2				0.28-0.50				0.008	0.05			0.001 Ni, 0.004 Fe, 0.01 others	Dead Sea Magnesium Corporate Website	<a href="#">Dead Sea Magnesium</a>
	5					0.5									Magnesium-Elektron Corporate Website	<a href="#">Magnesium-Elektron</a>
	4.5-5.3	0.20 max				0.28-0.5				0.008 max	0.05 max			0.001 max Ni, 0.004 max Fe, 0.0005 - 0.0015 Be, 0.01 max	AVISMA Corporate Website	<a href="#">AVISMA</a>
	4.5-5.3	0.20 max				0.28-0.50				0.008 max	0.050 max			0.001 max Ni, 0.004 max Fe, 0.01 max others	Rima Industrial S/A Corporate Website	<a href="#">Rima Industrial S/A</a>
	4.9	0.22				0.32								0.002 max Ni, 0.004 max Fe	Handbook of Materials Selection, ed. Kutz, Myer, 2002 John Wiley & Sons	<a href="#">Read the Full Article</a>

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COMPOSITION wt.%														Reference	Link	
Alloy	Al	Zn	RE	Zr	Ag	Mn	Y	Th	Li	Cu	Si	Sr	Ca	Others	Reference	Link
AM60B	5.6-6.4	0.2				0.26 - 0.50				0.008	0.05			0.001 Ni, 0.004 Fe, 0.01 others	Dead Sea Magnesium Corporate Website	<a href="#">Dead Sea Magnesium</a>
	6					0.5									Magnesium-Elektron Corporate Website	<a href="#">Magnesium-Elektron</a>
	5.6-6.4	0.20 max				0.26-0.50				0.008 max	0.05 max			0.001 max Ni, 0.004 max Fe, 0.0005 - 0.0015 Be, 0.01 max	AVISMA Corporate Website	<a href="#">AVISMA</a>
	5.6-6.4	0.20 max				0.26-0.50				0.008 max	0.05 max			0.001 Ni, 0.004 Fe, 0.01 others	Rima Industrial S/A Corporate Website	<a href="#">Rima Industrial S/A</a>
	6.9	0.22 max				0.42								0.002 max Ni, 0.005 max Fe	Handbook of Materials Selection, ed. Kutz, Myer, 2002 John Wiley & Sons	<a href="#">Read the Full Article</a>
AE42	4		2.5			0.2									ASM Specialty Handbook: Magnesium and Magnesium Alloys, eds. M. M. Avedesian and H. Baker, ASM International, 1999.	<a href="#">Acquire the Book</a>
AE44															NOT AVAILABLE	
AS41A	3.7-4.8	0.10 max				0.22-0.48				0.04 max	0.60-1.4			0.01max Ni, 0.30 max others	Rima Industrial S/A Corporate Website	<a href="#">Rima Industrial S/A</a>
AS41B	3.7-4.8	0.10 max				0.35-0.6				0.015	0.60-1.4			0.001 Ni, 0.0035 Fe	AVISMA Corporate Website	<a href="#">AVISMA</a>
	4.2	0.12				0.52					1			0.002 max Ni, 0.0035 max Fe	Handbook of Materials Selection, ed. Kutz, Myer, 2002 John Wiley & Sons	<a href="#">Read the Full Article</a>
AS21	1.9-2.5	<0.10				<0.35				<0.004	0.7-1.2			<0.002 Ni, < 0.004 Fe, <0.01 other impurities	AVISMA Corporate Website	<a href="#">AVISMA</a>
	1.9-2.5	0.15-0.20				0.35				0.04	0.7-1.2			0.002 Ni	Y. Durandet, M. Mandagie, M. Brandt and M. Jahedi, "Microstructure and Wear Characteristics of Laser Clad Al-12%Si, Al-30% Si and AlSi/WC on AS21 Magnesium Alloy", Magnesium Technology 2005, TMS, pp. 509-514.	<a href="#">Acquire the Article</a>

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	Al	Zn	RE	Zr	Ag	Mn	Y	Th	Li	Cu	Si	Sr	Ca			Others	
AM-HP2																NOT AVAILABLE	
MRI-230D																NOT AVAILABLE	
MRI-153M																NOT AVAILABLE	
AJ52	4.5-5.7	0.2 max				0.3 - 0.5				0.008 max	0.05 max	1.7-2.3			0.004 max Fe, 0.001 max Ni, 0.01 max each other metallic	D. Argo, M. Pekguleryuz, P. Labelle, P. Vermette, R. Bouchard and M. Lefebvre, "Process Parameters and Diecasting of Noranda's AJ52 High Temperature Mg-Al-Sr Alloy", Magnesium Technology 2002, TMS, pp. 87-93.	<a href="#">Read the Full Article</a>
AJ62	5.6-6.4											2.0-2.4				M. Pekguleryuz, P. Labelle, D. Argo, and E. Baril, "Magnesium Diecasting Alloy AJ62x with Superior Creep Resistance, Ductility and Diecastability", Kaplan, H.I. ed. (2003), Magnesium Technology 2003, TMS, pp. 201-206.	<a href="#">Read the Full Article</a>
AJ62L	5.6-6.4											1.7-2.2				M. Pekguleryuz, P. Labelle, D. Argo, and E. Baril, "Magnesium Diecasting Alloy AJ62x with Superior Creep Resistance, Ductility and Diecastability", Kaplan, H.I. ed. (2003), Magnesium Technology 2003, TMS, pp. 201-206.	<a href="#">Read the Full Article</a>
AXJ530	4.5					0.25				< 0.005		0.14	3	<0.005 Fe, <0.002 Ni	A. Suzuki, N. D. Saddock, J. W. Jones and T. M. Pollack, "Phase Transformation and Creep of Mg-Al-Ca Based Die-Cast Alloys", Magnesium Technology 2005, TMS, pp. 111-116.	<a href="#">Acquire the Article</a>	