UDC 669.71-122 : 539.3/.4

Ref. No. : ISO/R 826-1968 (E)

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 826

MECHANICAL PROPERTY LIMITS FOR ROLLED PRODUCTS OF ALUMINIUM AND ALUMINIUM ALLOYS

1st EDITION
September 1968

Printed in Switzerland

Also issued in French and Russian. Copies to be obtained through the national standards organizations.

BRIEF HISTORY

The ISO Recommendation R 826, *Mechanical property limits for rolled products of aluminium and aluminium alloys*, was drawn up by Technical Committee ISO/TC 79, *Light metals and their alloys*, the Secretariat of which is held by the Association Française de Normalisation (AFNOR).

Work on this question by the Technical Committee began in 1959 and led, in 1965, to the adoption of a Draft ISO Recommendation.

In October 1966, this Draft ISO Recommendation (No. 1116) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Austria	Ireland	South Africa, Rep. of
Belgium	Israel	Turkey
Canada	Italy	U.A.R.
Chile	Japan	United Kingdom
Czechoslovakia	Netherlands	U.S.A.
France	Norway	U.S.S.R.
Hungary	Sweden	Yugoslavia
India	Switzerland	

No Member Body opposed the approval of the Draft.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in September 1968, to accept it as an ISO RECOMMENDATION.

ISO Recommendation R 826 September 1968

MECHANICAL PROPERTY LIMITS FOR ROLLED PRODUCTS OF ALUMINIUM AND ALUMINIUM ALLOYS

1. SCOPE

The grades or alloys listed in this ISO Recommendation are those the designation and chemical composition of which are specified in ISO Recommendation R 209-1968, *Composition of wrought products of aluminium and aluminium alloys.*

Before comparing them with the limiting values listed in section 3, the measured or calculated values of 0.2 % proof stress or yield strength [$R_c(0.2)$], or of tensile strength (R_m), should be rounded off to the nearest 0.1 kgf/mm^2 (or 100 lbf/in^2) and those of the percentage elongation (A) to the nearest 1 % (see Annexes A and B).

For products up to 2.6 mm (0.102 in) thick, national standards may contain either elongation requirements or bend test requirements, or both.

The values given for alloys A1-Cu4MgSi, A1-Cu4Mgl and A1-Cu4SiMg apply to the material delivered by the supplier in the "solution treated and naturally aged" condition (or "solution treated and precipitation treated" condition). If the user reheat-treats the material, these values may not be attained.

2. SYMBOLS AND ABBREVIATIONS

The symbols and abbreviations used in section 3 have the following meanings :

R_c (0.2)	:	0.2 % proof stress or yield strength
R_m	:	Tensile strength
A	:	Percentage elongation after rupture
S_o	:	Original cross-sectional area of the gauge length of the test piece
1 kgf/mm^2	:	1 kilogramme-force per square millimetre = about 9.8 N/mm^2 (newton per square millimetre)
1000 lbf/in^2	:	1000 pounds-force per square inch = about 6.9 N/mm^2

3. MECHNICAL PROPERTY LIMITS

1	2	3	4	5	6	7	8	9	10	11	12	13
Grade or alloy	Condition	Thickness e		$R_c(0.2)$ min.		R_m				A min. on		Bend radius
		millimetres	inches	kgf/mm²	1000 lbf/in²	kgf/mm²		1000 lbf/in²		$5.65\sqrt{S_o}$	50 mm(2 in)	
						min.	max.	min.	max.	%	%	
Al 99.0 and Al 99.0 Cu	annealed	$0.5 \leqslant e \leqslant 0.8$	$0.020 \leqslant e \leqslant 0.031$	–	–	7.0	11.0	10.0	16.0	30	20	flat
		$0.8 < e \leqslant 1.3$	$0.032 \leqslant e \leqslant 0.050$	–	–	7.0	11.0	10.0	16.0	30	25	flat
		$1.3 < e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	–	–	7.0	11.0	10.0	16.0	30	30	flat
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	–	–	7.0	11.0	10.0	16.0	30	30	–
		$6.3 < e \leqslant 25$	$0.250 \leqslant e \leqslant 1.0$	–	–	7.0	11.0	10.0	16.0	28	28	–
	intermediate temper	$0.5 \leqslant e \leqslant 0.8$	$0.020 \leqslant e \leqslant 0.031$	–	–	11.0	15.0	16.0	21.0	5	3	0.5 e
		$0.8 < e \leqslant 1.3$	$0.032 \leqslant e \leqslant 0.050$	–	–	11.0	15.0	16.0	21.0	5	4	0.5 e
		$1.3 < e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	–	–	11.0	15.0	16.0	21.0	5	5	0.5 e
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	–	–	11.0	15.0	16.0	21.0	5	5	–
		$6.3 < e \leqslant 25$	$0.250 \leqslant e \leqslant 1.0$	–	–	11.0	15.0	16.0	21.0	5	6	–
Al 99.5	annealed	$0.5 \leqslant e \leqslant 0.8$	$0.020 \leqslant e \leqslant 0.031$	–	–	5.5	10.0	8.0	14.0	32	22	flat
		$0.8 < e \leqslant 1.3$	$0.032 \leqslant e \leqslant 0.050$	–	–	5.5	10.0	8.0	14.0	32	25	flat
		$1.3 < e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	–	–	5.5	10.0	8.0	14.0	32	30	flat
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	–	–	5.5	10.0	8.0	14.0	32	32	–
		$6.3 < e \leqslant 25$	$0.250 \leqslant e \leqslant 1.0$	–	–	5.5	10.0	8.0	14.0	30	30	–
	intermediate temper	$0.5 \leqslant e \leqslant 0.8$	$0.020 \leqslant e \leqslant 0.031$	–	–	10.0	14.0	14.0	20.0	6	4	0.5 e
		$0.8 < e \leqslant 1.3$	$0.032 \leqslant e \leqslant 0.050$	–	–	10.0	14.0	14.0	20.0	6	5	0.5 e
		$1.3 < e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	–	–	10.0	14.0	14.0	20.0	6	6	0.5 e
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	–	–	10.0	14.0	14.0	20.0	6	6	–
		$6.3 < e \leqslant 25$	$0.250 \leqslant e \leqslant 1.0$	–	–	10.0	14.0	14.0	20.0	6	7	–
Al 99.7	annealed	$0.5 \leqslant e \leqslant 2.6$	$0.020 \leqslant e \leqslant 0.102$	–	–	–	10.0	–	14.0	34	29	flat
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	–	–	–	10.0	–	14.0	34	34	–
Al 99.8	annealed	$0.5 \leqslant e \leqslant 2.6$	$0.020 \leqslant e \leqslant 0.102$	–	–	–	9.0	–	13.0	34	29	flat
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	–	–	–	9.0	–	13.0	34	34	–

Mechanical property limits *(continued)*

1	2	3	4	5	6	7	8	9	10	11	12	13
Al-Mn1	annealed	$0.5 \leqslant e \leqslant 0.8$	$0.020 \leqslant e \leqslant 0.031$	–	–	9.0	13.5	13.0	19.0	24	20	flat
		$0.8 < e \leqslant 1.3$	$0.032 \leqslant e \leqslant 0.050$	–	–	9.0	13.5	13.0	19.0	24	23	flat
		$1.3 < e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	–	–	9.0	13.5	13.0	19.0	24	24	flat
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	–	–	9.0	13.5	13.0	19.0	24	24	–
		$6.3 < e \leqslant 25$	$0.250 \leqslant e \leqslant 1.0$	–	–	9.0	13.5	13.0	19.0	22	22	–
	intermediate temper	$0.5 \leqslant e \leqslant 0.8$	$0.020 \leqslant e \leqslant 0.031$	–	–	14.0	18.0	20.0	26.0	5	3	0.5 e
		$0.8 < e \leqslant 1.3$	$0.032 \leqslant e \leqslant 0.050$	–	–	14.0	18.0	20.0	26.0	5	4	0.5 e
		$1.3 < e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	–	–	14.0	18.0	20.0	26.0	5	5	0.5 e
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	–	–	14.0	18.0	20.0	26.0	5	5	–
		$6.3 < e \leqslant 25$	$0.250 \leqslant e \leqslant 1.0$	–	–	14.0	18.0	20.0	26.0	5	6	–
Al-Mn1Cu	annealed	$0.5 \leqslant e \leqslant 0.8$	$0.020 \leqslant e \leqslant 0.031$	–	–	10.0	14.0	14.0	20.0	25	20	flat
		$0.8 < e \leqslant 1.3$	$0.032 \leqslant e \leqslant 0.050$	–	–	10.0	14.0	14.0	20.0	25	23	flat
		$1.3 < e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	–	–	10.0	14.0	14.0	20.0	25	25	flat
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	–	–	10.0	14.0	14.0	20.0	25	25	–
		$6.3 < e \leqslant 25$	$0.250 \leqslant e \leqslant 1.0$	–	–	10.0	14.0	14.0	20.0	23	23	–
	intermediate temper	$0.5 \leqslant e \leqslant 0.8$	$0.020 \leqslant e \leqslant 0.031$	–	–	14.0	18.0	20.0	26.0	5	3	0.5 e
		$0.8 < e \leqslant 1.3$	$0.032 \leqslant e \leqslant 0.050$	–	–	14.0	18.0	20.0	26.0	5	4	0.5 e
		$1.3 < e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	–	–	14.0	18.0	20.0	26.0	5	5	0.5 e
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	–	–	14.0	18.0	20.0	26.0	5	5	–
		$6.3 < e \leqslant 25$	$0.250 \leqslant e \leqslant 1.0$	–	–	14.0	18.0	20.0	26.0	5	6	–
Al-Mg1	annealed	$0.5 \leqslant e \leqslant 2.6$	$0.020 \leqslant e \leqslant 0.102$	–	–	10.0	15.0	14.0	21.0	22	18	flat
		$2.6 < e \leqslant 25$	$0.103 \leqslant e \leqslant 1.0$	–	–	10.0	15.0	14.0	21.0	22	22	–
	intermediate temper	$0.5 \leqslant e \leqslant 1.3$	$0.020 \leqslant e \leqslant 0.050$	10.0	14.0	14.0	19.0	20.0	27.0	6	3	
		$1.3 < e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	10.0	14.0	14.0	19.0	20.0	27.0	6	5	
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	10.0	14.0	14.0	19.0	20.0	27.0	6	6	
		$6.3 < e \leqslant 12.5$	$0.250 \leqslant e \leqslant 0.499$	10.0	14.0	14.0	19.0	20.0	27.0	6	7	
		$12.5 < e \leqslant 25$	$0.500 \leqslant e \leqslant 1.0$	10.0	14.0	14.0	19.0	20.0	27.0	6	8	

Mechanical property limits *(continued)*

1	2	3	4	5	6	7	8	9	10	11	12	13
Grade or alloy	Condition	Thickness e		$R_c(0.2)$ min.		R_m				A min. on		Bend radius
		millimetres	inches	kgf/mm²	1000 lbf/in²	kgf/mm²		1000 lbf/in²		$5.65\sqrt{S_o}$	50 mm(2 in)	
						min.	max.	min.	max.	%	%	
Al-Mg1.5	annealed	$0.5 \leqslant e \leqslant 2.6$	$0.020 \leqslant e \leqslant 0.102$	–	–	12.5	17.0	18.0	24.0	19	18	flat
		$2.6 < e \leqslant 25$	$0.103 \leqslant e \leqslant 1.0$	–	–	12.5	17.0	18.0	24.0	19	19	–
	intermediate temper	$0.5 \leqslant e \leqslant 1.3$	$0.020 \leqslant e \leqslant 0.050$	13.0	18.5	17.0	22.0	24.0	31.0	5	3	
		$1.3 < e \leqslant 6.3$	$0.051 \leqslant e \leqslant 0.249$	13.0	18.5	17.0	22.0	24.0	31.0	5	5	
		$6.3 < e \leqslant 25$	$0.250 \leqslant e \leqslant 1.0$	13.0	18.5	17.0	22.0	24.0	31.0	5	7	
Al-Mg2	annealed	$0.5 \leqslant e \leqslant 2.6$	$0.020 \leqslant e \leqslant 0.102$	6.0	8.5	15.0	20.0	21.0	28.5	18	18	flat
		$2.6 < e \leqslant 25$	$0.103 \leqslant e \leqslant 1.0$	6.0	8.5	15.0	20.0	21.0	28.5	18	18	–
	intermediate temper	$0.5 \leqslant e \leqslant 1.3$	$0.020 \leqslant e \leqslant 0.050$	16.0	23.0	20.5	26.0	29.0	37.0	7	5	0.5 e
		$1.3 < e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	16.0	23.0	20.5	26.0	29.0	37.0	7	6	0.5 e
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	16.0	23.0	20.5	26.0	29.0	37.0	7	7	–
		$6.3 < e \leqslant 25$	$0.500 \leqslant e \leqslant 1.0$	16.0	23.0	20.5	26.0	29.0	37.0	7	8	–
Al-Mg2.5	annealed	$0.5 \leqslant e \leqslant 2.6$	$0.020 \leqslant e \leqslant 0.102$	6.5	9.5	17.5	22.0	25.0	31.0	18	18	flat
		$2.6 < e \leqslant 25$	$0.103 \leqslant e \leqslant 1.0$	6.5	9.5	17.5	22.0	25.0	31.0	18	18	–
	intermediate temper	$0.5 \leqslant e \leqslant 1.3$	$0.020 \leqslant e \leqslant 0.050$	18.0	26.0	24.0	29.0	34.0	41.0	7	4	e
		$1.3 < e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	18.0	26.0	24.0	29.0	34.0	41.0	7	6	e
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	18.0	26.0	24.0	29.0	34.0	41.0	7	7	–
		$6.3 < e \leqslant 25$	$0.250 \leqslant e \leqslant 1.0$	18.0	26.0	24.0	29.0	34.0	41.0	7	8	–
Al-Mg3	annealed	$0.5 \leqslant e \leqslant 2.6$	$0.020 \leqslant e \leqslant 0.102$	7.0	10.0	18.0	24.0	26.0	34.0	18	16	flat
		$2.6 < e \leqslant 25$	$0.103 \leqslant e \leqslant 1.0$	7.0	10.0	18.0	24.0	26.0	34.0	18	18	–
	intermediate temper	$0.5 \leqslant e \leqslant 1.3$	$0.020 \leqslant e \leqslant 0.050$	18.0	26.0	24.0	30.0	34.0	43.0	7	4	
		$1.3 < e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	18.0	26.0	24.0	30.0	34.0	43.0	7	6	
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	18.0	26.0	24.0	30.0	34.0	43.0	7	7	
		$6.3 < e \leqslant 25$	$0.250 \leqslant e \leqslant 1.0$	18.0	26.0	24.0	30.0	34.0	43.0	7	8	

Mechanical property limits *(continued)*

1	2	3	4	5	6	7	8	9	10	11	12	13
Al-Mg3 Mn	annealed	$0.5 \leqslant e \leqslant 1.3$	$0.020 \leqslant e \leqslant 0.050$	8.5	12.0	21.0	29.0	30.0	41.0	18	12	flat
		$1.3 < e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	8.5	12.0	21.0	29.0	30.0	41.0	18	16	flat
		$2.6 < e \leqslant 25$	$0.103 \leqslant e \leqslant 1.0$	8.5	12.0	21.0	29.0	30.0	41.0	18	18	–
	intermediate temper	$0.5 \leqslant e \leqslant 1.3$	$0.020 \leqslant e \leqslant 0.050$	20.0	28.5	27.0	33.0	38.0	47.0	6	4	2 *e*
		$1.3 < e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	20.0	28.5	27.0	33.0	38.0	47.0	6	6	2 *e*
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	20.0	28.5	27.0	33.0	38.0	47.0	6	6	–
		$6.3 < e \leqslant 25$	$0.250 \leqslant e \leqslant 1.0$	20.0	28.5	27.0	33.0	38.0	47.0	6	8	–
Al-Mg3.5	annealed	$0.5 \leqslant e \leqslant 1.3$	$0.020 \leqslant e \leqslant 0.050$	8.0	11.0	21.0	29.0	30.0	41.0	18	12	flat
		$1.3 < e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	8.0	11.0	21.0	29.0	30.0	41.0	18	16	flat
		$2.6 < e \leqslant 25$	$0.103 \leqslant e \leqslant 1.0$	8.0	11.0	21.0	29.0	30.0	41.0	18	18	–
	intermediate temper	$0.5 \leqslant e \leqslant 1.3$	$0.020 \leqslant e \leqslant 0.050$	20.0	28.5	27.0	33.0	38.0	47.0	6	4	2 *e*
		$1.3 < e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	20.0	28.5	27.0	33.0	38.0	47.0	6	6	2 *e*
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	20.0	28.5	27.0	33.0	38.0	47.0	6	6	–
		$6.3 < e \leqslant 25$	$0.250 \leqslant e \leqslant 1.0$	20.0	28.5	27.0	33.0	38.0	47.0	6	8	–
Al-Mg4	annealed	$0.5 \leqslant e \leqslant 1.3$	$0.020 \leqslant e \leqslant 0.050$	10.0	14.0	24.5	30.0	35.0	43.0	17	15	flat
		$1.3 < e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	10.0	14.0	24.5	30.0	35.0	43.0	17	17	flat
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	10.0	14.0	24.5	30.0	35.0	43.0	17	17	–
		$6.3 < e \leqslant 25$	$0.250 \leqslant e \leqslant 1.0$	10.0	14.0	24.5	30.0	35.0	43.0	16	16	–
	intermediate temper	$0.5 \leqslant e \leqslant 1.3$	$0.020 \leqslant e \leqslant 0.050$	24.0	34.0	31.0	36.0	44.0	51.0	6	5	3 *e*
		$1.3 < e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	24.0	34.0	31.0	36.0	44.0	51.0	6	6	3 *e*
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	24.0	34.0	31.0	36.0	44.0	51.0	6	6	–
		$6.3 < e \leqslant 25$	$0.250 \leqslant e \leqslant 1.0$	24.0	34.0	31.0	36.0	44.0	51.0	6	7	–
Al-Mg4.5 Mn	annealed	$1.3 \leqslant e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	12.5	18.0	28.0	36.0	40.0	51.0	16	16	flat
		$2.6 < e \leqslant 25$	$0.103 \leqslant e \leqslant 1.0$	12.5	18.0	28.0	36.0	40.0	51.0	16	16	flat
	intermediate temper	$1.3 \leqslant e \leqslant 2.6$	$0.051 \leqslant e \leqslant 0.102$	27.5	39.0	35.0	41.5	50.0	59.0	6	5	3 *e*
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	27.5	39.0	35.0	41.5	50.0	59.0	6	6	–
		$6.3 < e \leqslant 25$*	$0.250 \leqslant e \leqslant 1.0$*	22.0	31.0	31.0	39.5	44.0	56.0	8	10	–

* Plates of this alloy are not normally manufactured in a condition as hard as the one used for all thicknesses of the preceding alloys or for sheets of this same alloy, due to the difficulties of cold rolling the thick wide plates generally required.

Mechanical property limits *(continued)*

1	2	3	4	5	6	7	8	9	10	11	12	13
Grade or alloy	Condition	Thickness e		$R_c(0.2)$ min.		R_m				A min. on		Bend radius
		millimetres	inches	kgf/mm²	1000 lbf/in²	kgf/mm²		1000 lbf/in²		$5.65\sqrt{S_o}$	50 mm(2 in)	
						min.	max.	min.	max.	%	%	
Al-Si1Mg	annealed	$0.5 \leqslant e \leqslant 2.6$	$0.020 \leqslant e \leqslant 0.102$	–	–	–	16.0	–	23.0	16	16	flat
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	–	–	–	16.0	–	23.0	16	16	–
		$6.3 < e \leqslant 25$	$0.250 \leqslant e \leqslant 1.0$	–	–	–	16.0	–	23.0	16	17	–
	solution treated and naturally aged	$0.5 \leqslant e \leqslant 2.6$	$0.020 \leqslant e \leqslant 0.102$	11.0	16.0	20.5	–	29.0	–	15	15	2 e
		$2.6 < e \leqslant 25$	$0.103 \leqslant e \leqslant 1.0$	11.0	16.0	20.5	–	29.0	–	15	15	–
	solution treated and precipitation treated	$0.5 \leqslant e \leqslant 2.6$	$0.020 \leqslant e \leqslant 0.102$	24.0	34.0	29.0	–	41.0	–	8	8	3 e
		$2.6 < e \leqslant 25$	$0.103 \leqslant e \leqslant 1.0$	24.0	34.0	29.0	–	41.0	–	8	8	–
Al-Mg1SiCu	annealed	$0.5 \leqslant e \leqslant 2.6$	$0.020 \leqslant e \leqslant 0.102$	9.0 max. *	13.0 max. *	–	16.0	–	23.0	16	16	flat
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$			–	16.0	–	23.0	16	16	–
		$6.3 < e \leqslant 25$	$0.250 \leqslant e \leqslant 1.0$			–	16.0	–	23.0	16	17	–
	solution treated and naturally aged	$0.5 \leqslant e \leqslant 2.6$	$0.020 \leqslant e \leqslant 0.102$	11.0	16.0	20.5	–	29.0	–	15	15	2 e
		$2.6 < e \leqslant 25$	$0.103 \leqslant e \leqslant 1.0$	11.0	16.0	20.5	–	29.0	–	15	15	–
	solution treated and precipitation treated	$0.5 \leqslant e \leqslant 2.6$	$0.020 \leqslant e \leqslant 0.102$	24.0	34.0	29.0	–	41.0	–	8	8	3 e
		$2.6 < e \leqslant 25$	$0.103 \leqslant e \leqslant 1.0$	24.0	34.0	29.0	–	41.0	–	8	8	–
Al-Cu4MgSi	solution treated and naturally aged	$0.5 \leqslant e \leqslant 2.6$	$0.020 \leqslant e \leqslant 0.102$	24.5	35.0	39.5	–	56.0	–	14	14	3 e
		$2.6 < e \leqslant 6.3$	$0.103 \leqslant e \leqslant 0.249$	24.5	35.0	39.5	–	56.0	–	14	14	–
		$6.3 < e \leqslant 12.5$	$0.250 \leqslant e \leqslant 0.499$	24.5	35.0	39.5	–	56.0	–	12	12	–
		$12.5 < e \leqslant 25$	$0.500 \leqslant e \leqslant 1.0$	24.5	35.0	39.5	–	56.0	–	8	8	–

* Values given for information only.

Mechanical property limits *(concluded)*

1	2	3	4	5	6	7	8	9	10	11	12	13
Al-Cu4 Mg1	solution treated and naturally aged	$0.5 \leqslant e \leqslant 2.6$ $2.6 < e \leqslant 6.3$ $6.3 < e \leqslant 12.5$ $12.5 < e \leqslant 25$	$0.020 \leqslant e \leqslant 0.102$ $0.103 \leqslant e \leqslant 0.249$ $0.250 \leqslant e \leqslant 0.499$ $0.500 \leqslant e \leqslant 1.0$	27.0 27.0 27.0 27.0	38.0 38.0 38.0 38.0	43.5 43.5 43.5 43.5	– – – –	62.0 62.0 62.0 62.0	– – – –	14 14 12 8	14 14 12 8	3 *e* – – –
Al-Cu4 Si Mg	solution treated and naturally aged	$0.5 \leqslant e \leqslant 2.6$ $2.6 < e \leqslant 6.3$ $6.3 < e \leqslant 25$	$0.020 \leqslant e \leqslant 0.102$ $0.103 \leqslant e \leqslant 0.249$ $0.250 \leqslant e \leqslant 1.0$	24.5 24.5 24.5	35.0 35.0 35.0	39.5 39.5 39.5	– – –	56.0 56.0 56.0	– – –	14 14 12	14 14 12	3 *e* – –
	solution treated and precipitation treated	$0.5 \leqslant e \leqslant 2.6$ $2.6 < e \leqslant 12.5$ $12.5 < e \leqslant 25$	$0.020 \leqslant e \leqslant 0.102$ $0.103 \leqslant e \leqslant 0.499$ $0.500 \leqslant e \leqslant 1.0$	38.5 38.5 38.5	55.0 55.0 55.0	44.0 45.0 45.0	– – –	62.5 64.0 64.0	– – –	7 7 6	6 7 6	5 *e* – –