

ALUMINUM AND ITS PROPERTIES

Chemical composition of alloys used in our aluminum die casting shops

The numbers in brackets quote contents by weight differing from the casting composition (contents quoted as percentages by weight)

Secondary aluminum alloys

Abbreviation	Designation of alloy according to DIN - EN 1706		Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Other additions		Aluminum
	Numerical	Chemical												Individual	Total	
226 D	EN AC-46000	EN AC - Al Si9 Cu3 (Fe)	8,0–11,0	1,3 (0,6–1,1)	2,0–4,0	0,55	0,05–0,55 (0,15–0,55)	0,15	0,55	1,2	0,35	0,25	0,25 (0,20)	0,05	0,25	remainder
230 D	EN AC-44300	EN AC - Al Si12 (Fe)	10,5–13,5	1,0 (0,45–0,9)	0,10 (0,08)	0,55	—	—	—	0,15	—	—	0,15	0,05	0,25	remainder
231 D	EN AC-47100	EN AC - Al Si12 Cu1 (Fe)	10,5–13,5	1,3 (0,6–1,1)	0,7–1,2	0,55	0,35	0,10	0,30	0,55	0,20	0,10	0,20 (0,15)	0,05	0,25	remainder
239 D	EN AC-43400	EN AC - Al Si10 Mg (Fe)	9,0–11,0	1,0 (0,45–0,9)	0,10 (0,08)	0,55	0,2–0,5 (0,25–0,5)	—	0,15	0,15	0,15	0,05	0,20 (0,15)	0,05	0,15	remainder

Primary aluminum alloys

Abbreviation	Designation of alloy according to DIN - EN 1706		Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Other additions	Aluminum
	Numerical	Chemical													
Silafont 09	EN AC-44400	EN AC - Al Si9	9,5–10,6	0,4	0,02	0,4	0,05	—	—	0,10	—	—	0,10	—	remainder
Silafont 36	EN AC-43500	EN AC - Al Si10 Mn Mg	9,5–11,5	0,15	0,03	0,5–0,8	0,1–0,5	—	—	0,10	—	—	0,15	Sr	remainder

Mechanical features (for test specimens that have been separately cast)

Secondary aluminum alloys

Abbreviation	Designation of alloy according to DIN - EN 1706		Physical condition of material Rm	Tensile strength Rm N/mm <sup>2</sup>	Proof limit Rp 0.2 N/mm <sup>2</sup>	Elongation at rupture A5%	Brinell hardness HBS
	Numerical	Chemical					
226 D	EN AC-46000	EN AC - Al Si9 Cu3 (Fe)	ready for casting	240–310	140–240	0,5–1	80–120
230 D	EN AC-44300	EN AC - Al Si12 (Fe)	ready for casting	240–280	130–180	1,0–3	60–100
231 D	EN AC-47100	EN AC - Al Si12 Cu1 (Fe)	ready for casting	240–300	140–200	1,0–3	70–100
239 D	EN AC-43400	EN AC - Al Si10 Mg (Fe)	ready for casting	240–300	140–200	1,0–3	70–100

Primary aluminum alloys

Abbreviation	Designation of alloy according to DIN - EN 1706		Physical condition of material Rm	Tensile strength Rm N/mm <sup>2</sup>	Proof limit Rp 0.2 N/mm <sup>2</sup>	Elongation at rupture A5%	Brinell hardness HBS
	Numerical	Chemical					
Silafont 09	EN AC-44400	EN AC - Al Si9	ready for casting	240–280	140–180	5,0–10	60–80
Silafont 36	EN AC-43500	EN AC - Al Si10 Mn Mg	ready for casting	250–290	120–150	5,0–10	75–95

Cast properties, density, properties in terms of application and machining

Secondary aluminum alloys

Abbreviation	Designation of alloy according to DIN - EN 1706		Flowability	kg/dm <sup>3</sup> approximate width	Rigidity	Suitability for cutting	Weldability	Suitability for polishing
	Numerical	Chemical						
226 D	EN AC-46000	EN AC - Al Si9 Cu3 (Fe)	excellent	2,75	good	very good	limited	good
230 D	EN AC-44300	EN AC - Al Si12 (Fe)	very good	2,65	good	good	limited	good
231 D	EN AC-47100	EN AC - Al Si12 Cu1 (Fe)	excellent	2,65	good	good	limited	good
239 D	EN AC-43400	EN AC - Al Si10 Mg (Fe)	excellent	2,65	good to very good	good	limited	good

Primary aluminum alloys

Abbreviation	Designation of alloy according to DIN - EN 1706		Flowability	kg/dm <sup>3</sup> approximate width	Rigidity	Suitability for cutting	Weldability	Suitability for polishing
	Numerical	Chemical						
Silafont 09	EN AC-44400	EN AC - Al Si9	excellent	2,65	—	good	limited	good
Silafont 36	EN AC-43500	EN AC - Al Si10 Mn Mg	excellent	2,64	—	very good	limited	good

Errors and omissions excepted