Comparison table for mechanical and physical properties

Alteams

Mechanical and physical properties are affected much by part design and casting process, which need to be considered.

PDC = Pressure die casting
LP = Low pressure die casting
G = Gravity die casting
S = Sand casting
SM = Shell mould casting

			Aluminium casting alloys										Magnesium	Zinc	Cast iron
			AlSi12			AlSi10Mg					AlSi7Mg		AlSi9Cu3	AZ91HP	ZnA14Cu1	GRS200
			PDC	G / LP	S / SM	PDC	G / LP		S / SM		G / LP	S / SM	PDC	PDC	PDC	S / SM
			As cast			As cast	As cast	Heattr. T6	As cast	Heattr. T6	Heattr. T6	Heattr. T6	As cast	As cast	As cast	As cast
Yield strength	$R_{p0,2}$	N/mm²	140-180	80-110	70-100	140-200	90-120	210-280	80-110	180-260	200-280	190-240	140-240	150-170	230	-
Tensible strength	R_m	N/mm²	220-280	170-230	150-200	230-300	180-240	240-320	160-210	220-320	150-340	230-310	240-310	200-250	335	200-290
Break elongation	A_5	%	1-3	6-12	5-10	1-3	2-6	1-4	2-6	1-4	5-9	2-5	0.5-3	0.5-3	9	0.7
Hardness	HB 5/250	HB	60-100	50-65	45-60	70-100	60-80	85-115	50-60	80-110	80-115	75-110	80-120	65-85	85-92	140-200
Bending fatigue strength		N/mm²	60-90	70-90	50-70	60-90	70-90	80-110	50-70	70-100	80-110	70-100	70-100	50-70	57	100-110
Modulus of elasticity		kN/mm²	75			74					73		75	40-45	127	90-115
Density		g/cm³	2.65			2.65					2.65		2.75	1.8	6.7	7.2
Thermal coeff. of exp.		10-6/K	21			22					22		21	27	27	10-11
Thermal conductivity		W/Km	120	130-190		120-150	130-190				160-170		110-130	50-84	110	45-55
Specific heat		J/KKg	900-960			910-960					900-960		880-960	1005-1050	420	450-550
Electrical conductivity		m/Ωmm²	16-20	17-26		16-20	17-26				22-24		14-17	6-10	15	1-2