

Table 18.4 Overview of the technical data of different secondary batteries based on actual available products. All numbers are typical data based on the data sheets of existing products. The data are not the theoretical limits for the different technologies. Products for special applications may have technical parameters outside the ranges displayed in the table

Battery technology	Electrolyte	Energy density [Wh/kg]	Energy density [Wh/l]	Efficiency η_{wh} [%]	Life-time [a]	Typ. cycle-lifetime [cycles]	Temperature for operation		Typical applications (examples)
							Standard charging [°C]	Discharging [°C]	
Lead acid	H ₂ SO ₄	20–40	50–120	80–90	3–20	250–500	–10 to +40	–15 to +50	Stationary application (UPS, autonomous power supplies), traction, SLI
NiCd	KOH	30–50	100–150	60–70	3–25	300–700	–20 to +50	–45 to +50	Power tools, hobby toys, consumer products, traction, applications as for lead acid batteries with higher power requirements or lower ambient temperature, electrical cars
NiMH	KOH	40–90	150–320	80–90	2–5	300–600	0 to +45	–20 to +60	Laptop, mobile phones, camcorder, electric vehicles, hybrid cars, hobby toys
Li-ion, Li-polymer	Organic, polymers	90–150	230–330	90–95	–	500–1000	0 to +40	–20 to +60	Laptop, mobile phones, Camcorder, smart cards
RAM		70–100	200–300	75–90	–	20–50	–10 to +60	–20 to +50	Consumer products, hobby toys
SuperCaps		1–10	2–15	90–95	~10	500 000	–25 to +75	–25 to +75	For applications with typical cycle periods of less than 10 s at very high power requirements
NaNiCl	β -AlO ₂	~100	~150	80–90	–	~1000	+270 to +300	+270 to +300	Hybrid vehicles, electric vehicles (prototypes available)