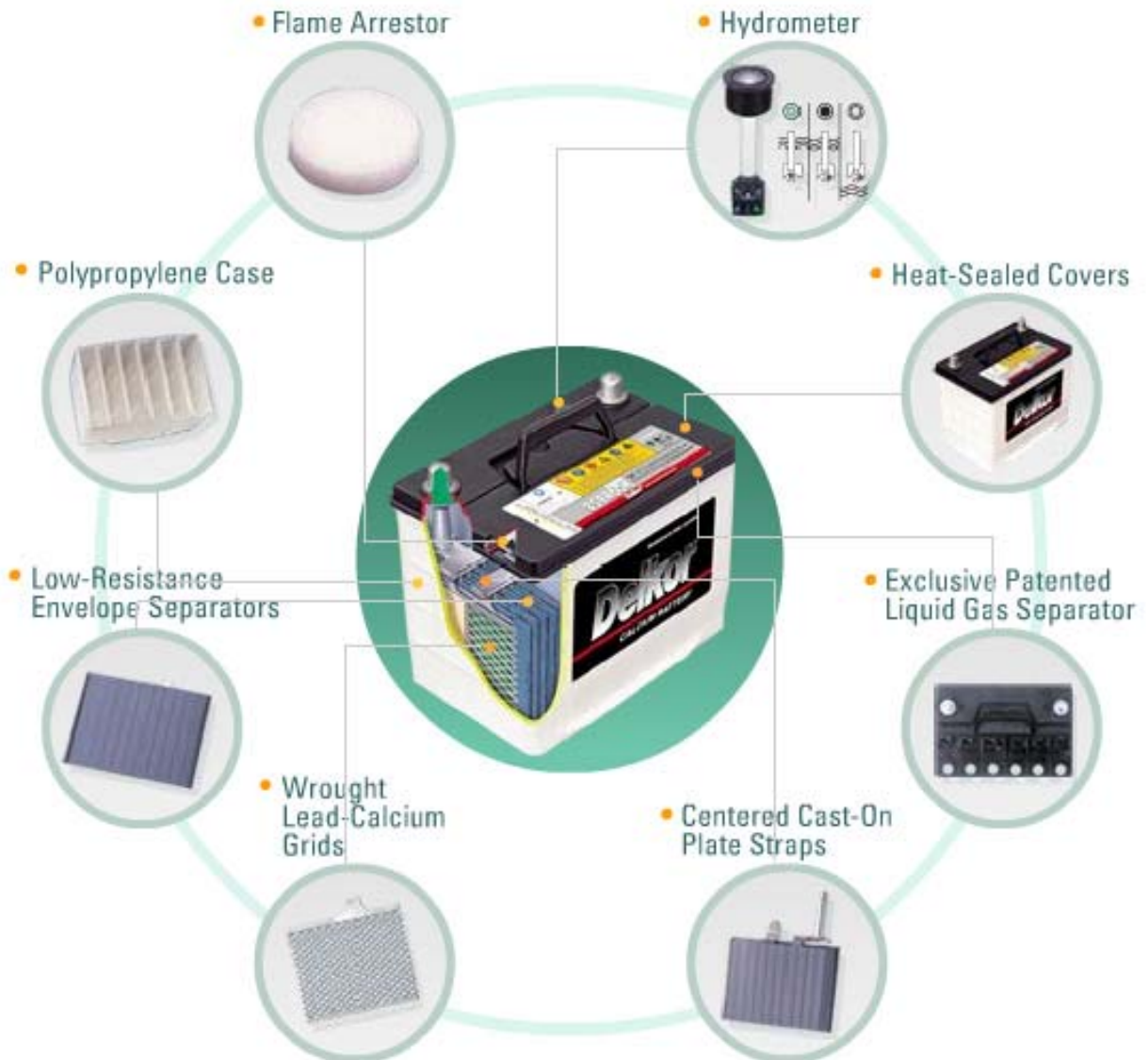


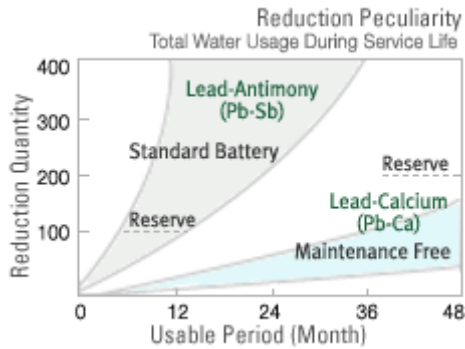


Structure and Characteristics



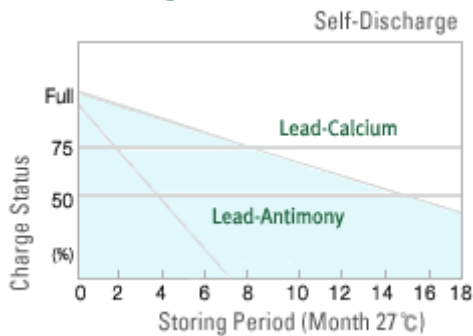
Benefits of the Lead-Calcium Grid Technology

Benefit 1 : No Need to Replenish Distilled Water



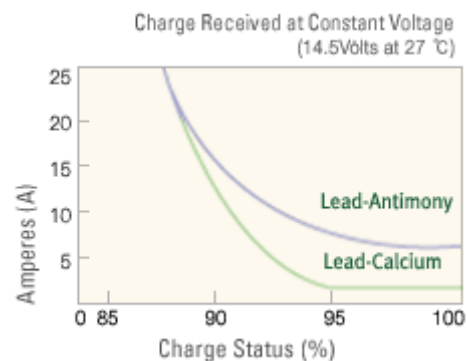
The local action of conventional lead-antimony batteries, due to the effects of the antimony ions during battery use, electrolyzes battery fluid (electrolytes) into oxygen and hydrogen to deplete the battery of fluid. In such conventional batteries, users need to replenish the battery with distilled water or risk the deterioration of battery performance and life. Delkor batteries, however, use a special alloy calcium-lead, which leads to extremely low levels of fluid loss. Hence, as long as the charging system of the car remains error-free throughout the life of the battery, there is no need to supplement the battery with distilled water.

Benefit 2 : No Need to Recharge



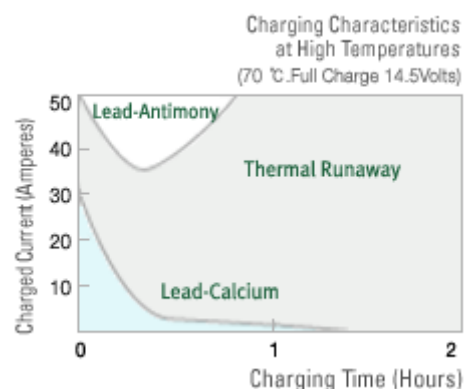
The phenomenon of self-discharge causes lead-acid batteries to consume charged power, even when the battery is not in use (i.e. during storage). This is due to the impurities contained in the lead alloy, which induces local action and, thus, consumption of electrical energy. Delkor batteries, on the other hand, uses highly-refined, hand-selected lead alloys that render extremely low rates of self-discharge and maintains high battery performance even after long periods of disuse.

Benefit 3 : Prevent Risk of Overcharge



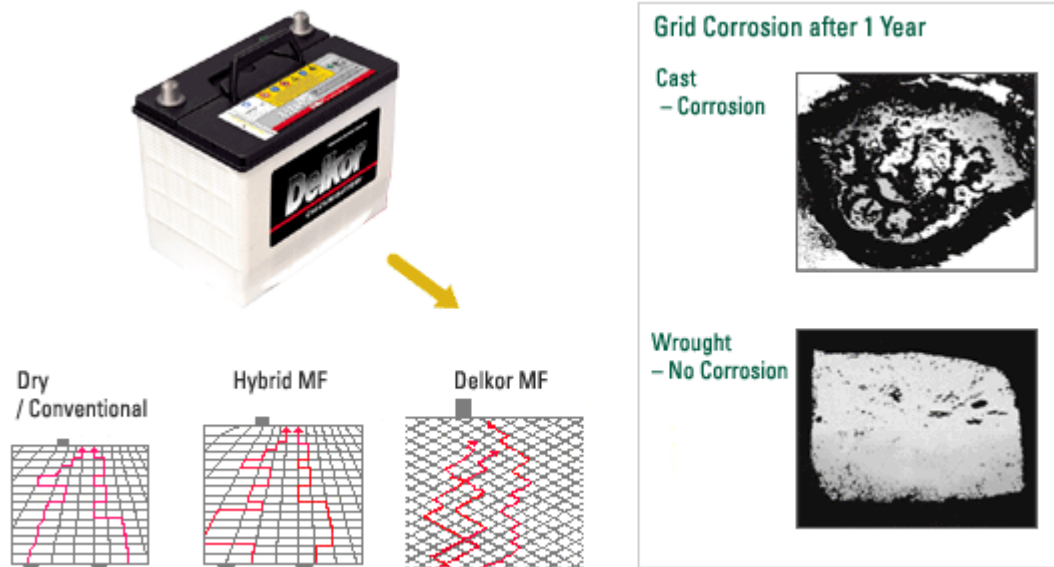
Car batteries can be charged even when the car is in motion. In general, the charged current is adjusted to high or low levels by the voltage regulator. Given the preset voltage in the voltage regulator (14.5V), when a battery is nearly charged to full, the charged current must be reduced to prevent overcharging, which can diminish battery performance. As shown on the graph, the charged current of Delkor calcium batteries are reduced to an extremely low level when the battery is nearly charged to full, thereby minimizing (almost eliminating) the risk of overcharging.

Benefit 4 : Prevent Thermal Runaway



When using the nearly fully charged battery in high temperatures (approximately 70 degrees Celsius), the charged current must be decreased to prevent overcharging and subsequent battery damage. However, in lead-acid batteries, due to the contents of the grid alloy, the charging current decreases during the initial stage, but increases soon thereafter, leading to damages to the grid and deteriorated performance. However, Delkor batteries do not contain such substances and thus, the charged current remains at extremely low levels when the nearly fully charged battery is used in high temperatures to prevent overcharging.

Comparison of Grid Manufacturing Technologies



Comparison

	Cast Grid		Wrought Grid
Type	Cast Antimony (Dry/Conventional)	Cast Calcium (Hybrid MF)	Delkor MF
Technology	Large grain size Poor resistance to deep corrosion Poor resistance to 'buckling' Loss of physical and electrical integrity Poor resistance to cycling Poor high temperature performance		Wrought expanded lead calcium alloy Fine grain structure High resistance to corrosion High resistance to 'buckling' Retains physical and electrical integrity Eliminates electro-chemical effect of arsenic-antimony (gassing, water loss, self-discharge) Improved high temperature performance

Grid Comparison After 1 Year of Use

Cast Grid	Wrought Grid
Deep penetrating corrosion Reduced electrical performance Reduced physical strength (Broken grid wire – Loss of electrical contact)	No deep inter-granular corrosion No loss in performance