

Established in 1843, Hollingsworth & Vose Company is a global leader in the supply of technically advanced nonwoven and specialty papers used in electronics, battery, filtration, and industrial applications. H&V drives value in customers' products by inventing next-generation materials with superior performance. The company operates manufacturing sites and research centers in the Americas, Europe, and Asia.

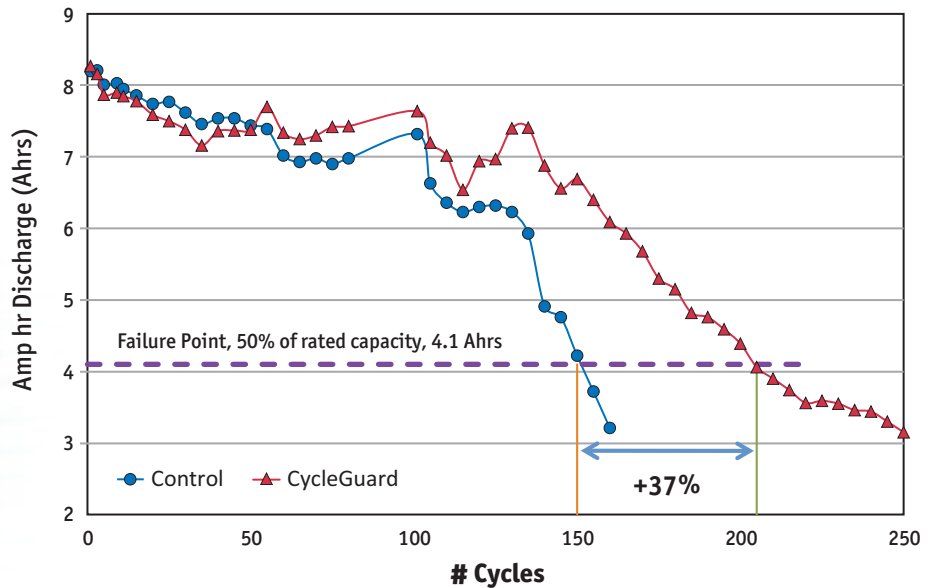
CycleGuard™ is the next generation of the patented EnergyGuard® family of high-strength, uniform battery separator products. It's the first battery separator designed specifically for partial state of charge (PSoC) applications. These separators increase a battery's cycle life by up to 20% under PSoC conditions while providing dramatically better charge acceptance. These capabilities result in improved battery performance for demanding SLI start-stop, e-bike, telecommunications, grid storage, and industrial (mobility/traction) applications.

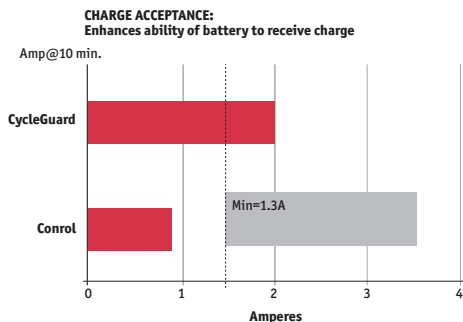
CycleGuard separator media improves the performance of your battery with a new proprietary synthetic glass fiber technology plus high acid capacity, increased surface area, and greater media strength. These features ensure greater and longer battery performance. In addition, the new separator's high-strength AGM enables high-speed processing and puncture resistance.

Increased cycle life: CycleGuard's patented technical properties increase the number of charge cycles over an extended battery life. It also improves the ability of the battery to better accept charge during cycling. Batteries with this separator will perform significantly longer with a continued robust cycle rate.

CYCLE LIFE: Improves ability of battery to cycle without complete charging

12 Ah Started Battery Endurance Cycling
Disch 25 A to 10 V, Recharge @ 14.4 V

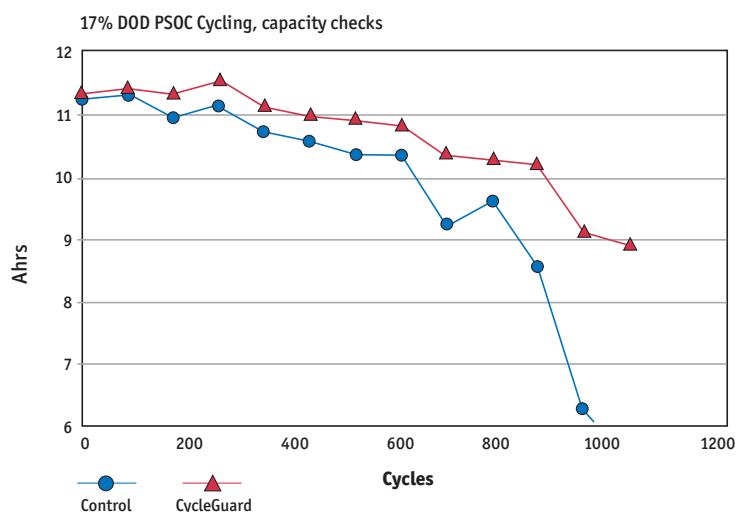




Higher charge acceptance: CycleGuard's patented synthetic technology enhances charge acceptance capability over conventional AGM separators due to its unique material components. The battery's ability to cycle without having a complete charge is dramatically improved.

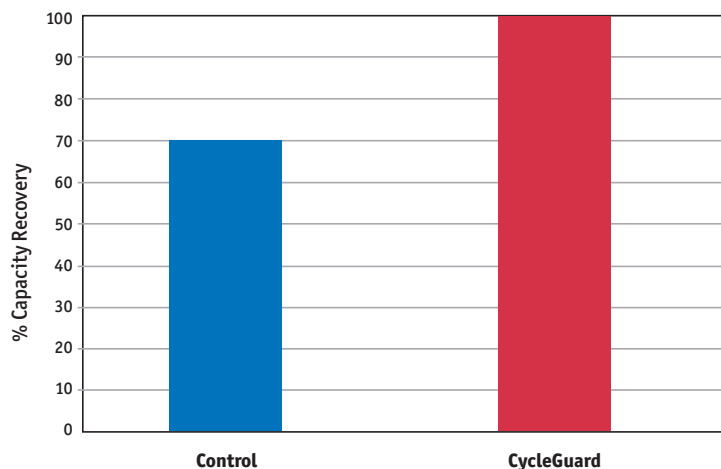
Better PSoC performance: With CycleGuard, batteries perform better in a partially charged state. The separator improves the ability of the battery to cycle without a complete charging. Demanding applications, such as stop-start vehicle systems, require batteries to deliver power and accept charges at unprecedented rates. CycleGuard's unique design is strong enough to handle the most extreme cycling conditions.

PSOC Life: Improves ability of battery to cycle without complete charging



Greater dead battery recovery: Batteries typically have difficulty restoring their charges. But H&V's exclusive technology resolves the problem of reviving a discharged battery. With CycleGuard, more of the battery's capacity will return when charging from a dead battery state.

DEAD BATTERY RECOVERY: Indicates complete capacity recovery, with CycleGuard all of the capacity is returned



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