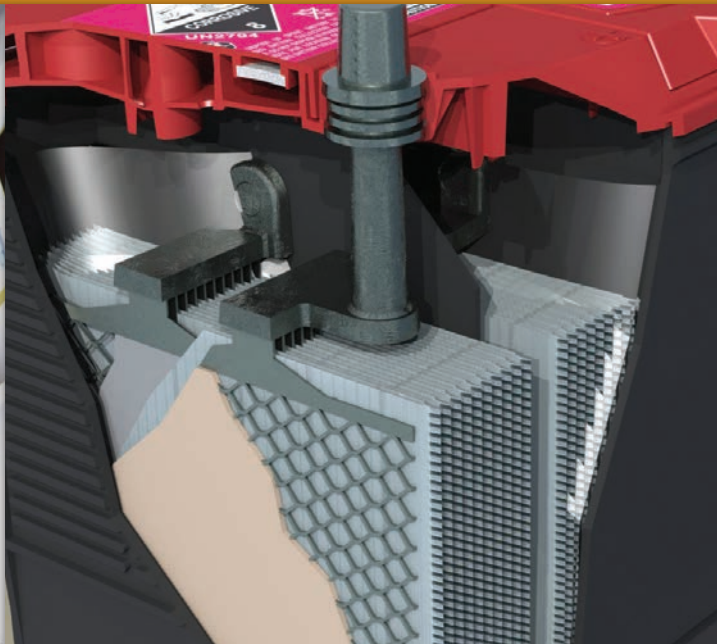


*Power your world*



**EXIDE**®  
**Batteries**  
SINCE 1935

## ***Our Technology Advantage 2xT & Ap9***



*Exide has developed new and technologically advanced products, that will provide superior performance and life to our customers and Australian & New Zealand motorists.*



**Scan here**

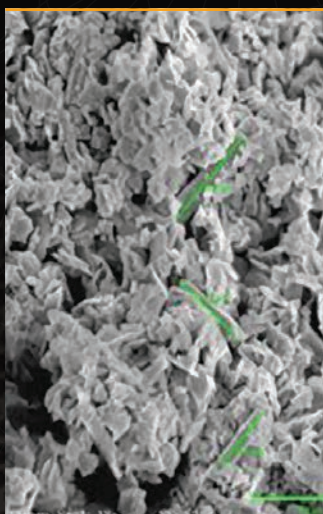
- for fitment guide
- for fitting instructions

\* Trademark of Exide Australia Pty Ltd.



## The 2XT Additive Advantage

### The Demands of Modern Vehicles



*Advances in technology have allowed vehicle manufacturers to incorporate smart additions into their vehicle designs. Intelligent engine management systems and safety devices are considered standard equipment these days – remember when ABS and airbags were an optional extra?*

*As more devices are featured in a vehicle, more load is placed on the electrical system, demanding increased performance from the vehicle battery.*

*Exide has developed batteries that provide a totally balanced performance philosophy. As part of this approach the cold cranking amps (CCA), reserved capacity (RC) and amp hours (AH) ratings are considered equally important to meet modern motor vehicle requirements and provide total battery performance.*

### More Durability and Longer Life

OEM Design Engineers continue to squeeze batteries into tighter locations creating an environment with increased heat and less ventilation. Despite today's higher electrical demands, deprived charge rate return to the battery and constant road vibration, the consumer still expects battery durability and longer life.

To satisfy the demands of the modern motor vehicle, the heart of the battery (its active material in each pasted plate) need to withstand corrosion and high power discharges.

**Exide Batteries 2XT is the solution to these growing requirements; providing extreme performance in the most demanding conditions including totally balanced performance as evidenced by our market leading ability to provide industry leading warranty terms.**

The premium Exide Extreme range now comes with the 2XT additive advantage in specific products. 2XT combines important elements for durable and reliable plates. It is formulated from a special mixture of lead-calcium-tin that improves plate strength, life cycle performance, and corrosion and creep resistance. This prevents premature failures providing longer life.

### Longer Life Batteries & Lower Warranty Costs

- Longer life reduces warranty costs
- Exceptionally strong plates
- More uniform and fully cured plates

### Superior Performance

- Improved cold cranking amps
- Improved reserve capacity
- Improved AH capacity
- Significantly less plate to plate variation than conventional plates

# Reliability Second to None - Install and Forget

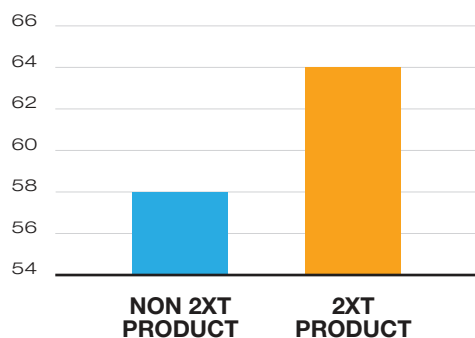
Consumers demand truly "Maintenance- Free" battery options. Exide Extreme batteries with 2XT require no ongoing maintenance, making them a true fit and forget battery. Unlike antimony and other low maintenance battery technologies, batteries with the 2XT Advantage are made with a combination of Lead-Calcium-Tin alloy at appreciative percentages. This combination delivers low gassing, an important quality of true maintenance free batteries.

Topping-up of water is NOT necessary for the duration of the battery's life but as always, accessible batteries should always be maintained to maximise life.

The 2XT advantage should always be promoted along with the other Exide benefits for great customer value.

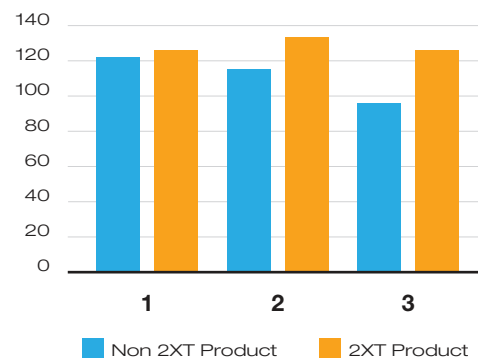
On tests conducted, 2XT outperformed the standard product every time in AH ratings with an increased performance average of 12.81%, peaking at 23.2% improvement.

## 20AH CAPACITY TEST



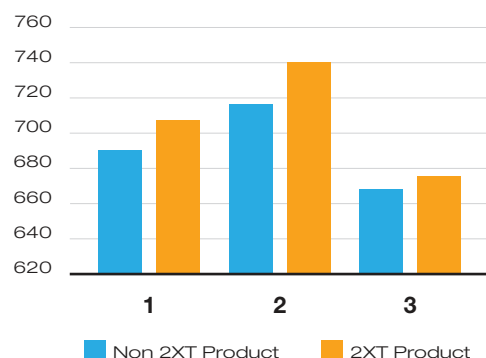
On tests conducted, 2XT outperformed the standard product every time in RC ratings with an increased performance average of 9%.

## RESERVE CAPACITY TEST



On tests conducted 2XT outperformed the standard product in CCA capacity ratings with an increased performance of 9.1%.

## CCA TEST



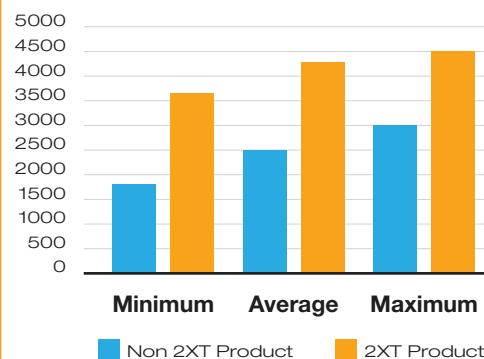
2XT provided longer life by up to 40.08% as observed in laboratory life cycle testing. Other benefits observed were:

- Significant drop in plate shedding.
- Significant reduction in corrosion of plates.

This all adds up too:

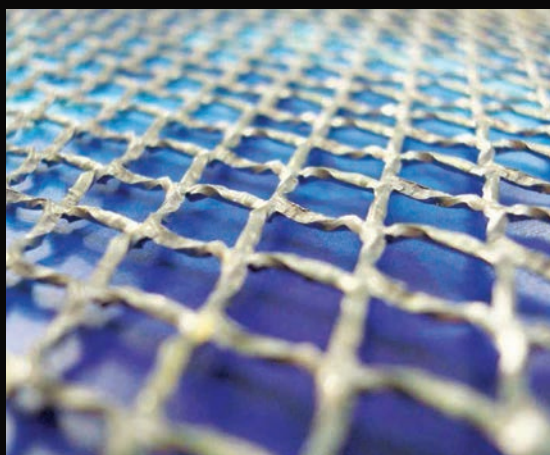
- Improved performance in CCA, RC, 20AH and cycle life.
- Importantly added confidence in the life span of the products.

## LIFE CYCLE TEST



## The AP9 Additive Advantage

### The Demands of the Modern Automotive Battery



Ongoing advancements in technology and research & development from vehicle and equipment manufacturers along with the increased demands on the modern automotive battery have resulted in an ever-present need for battery manufacturers to provide products that can meet these expectations. Along with the demand of an ever expanding infrastructure into the rugged and remote areas of the region and consumer and industry demand for longer life and durable batteries the emphasis on product reliability is paramount.



# The Next Generation

Exide has taken a fundamental shift away from the standard current additive of Silver (Ag9) to the next generation of proven additives – Tin-Alloy (Ap9). The influence of tin, silver and calcium content has been investigated with rolled, expanded and gravity cast grids, in order to compare their effect on the mechanical properties of the grids and on battery performance.

The addition of Ap9 to the Exide range of products helps support the mechanical properties of rolled expanded grids, whereas the traditional silver additive has proven to have no impact.

Due to the specific microstructure of grids obtained via the rolling expansion and gravity casting processes in these various alloy compositions, tin and silver precipitation operates in different ways.

This has been confirmed by microprobe analysis carried out on a cross-section of a wire from the centre of the grid wire surface.

On rolled expanded grids, the microprobe scanning has been made perpendicularly to the rolling direction, passing through a maximum number of grain boundaries.

## Longer Life

Test results indicate that in extreme conditions (low acid density) grid corrosion is limited by the addition of Ap9 and by a low calcium content, with the addition of silver proving to have no effect.

## Overcharge - Storage

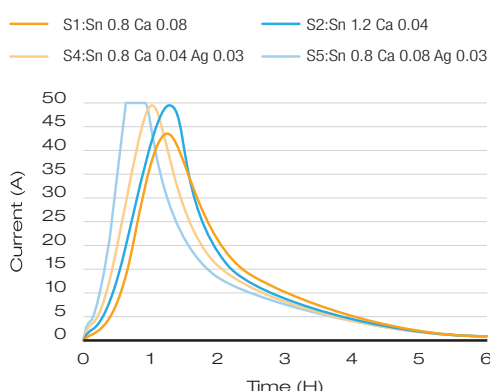
Ap9 improves the battery rechargeability after a discharge. The addition of silver has only a poor impact on the behaviour of rolled expanded grids. In high temperature conditions and during overcharge and storage, the extended battery life obtained with rolled expanded grids is higher than that with gravity cast grids whatever the alloy.

## Open Circuit Storage

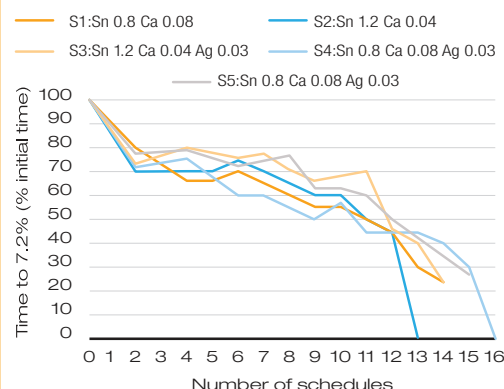
Based on 24 weeks of storage, the corrosion rate of the positive grid is only slightly dependent on the alloy composition. The corrosion layer has been found to be homogeneous. Positive grid growth is reduced when tin content is increased to 1.2%.

The addition of silver reduces the positive grid growth when tin content is low, but this effect declines with time. The same effect is noticed with a high calcium level. The self-discharge rate is not influenced by the alloy composition.

Deep discharge test on rolled expanded grids: evolution of the charging current vs. time for different alloy compositions.



Overcharge storage test on rolled expanded grids: time to 7.2 V on cold cranking test vs. number of schedules for different alloy composition.



Reference Material: S. Fouache, A. Chabrol, G. Fossati, M. Bassini, M. J. Sainz, L. Atkins 1999: Effect of calcium, tin and silver contents in the positive grids of automotive batteries with respect to the grid manufacturing process. Journal of Power Sources Vol 78, pp12–22



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