EXPERIMENTAL 3 PLATE CELL STUDY

2 positive electrodes and 1 negative electrode. 2:1 ratio emphasizes the influence of the additive on the performance of negative electrode.

Negative electrode:

- Grid alloy: Lead-calcium-tin
- Dimensions: 14.5 cm x 11 cm
- NAM: 70 g

EXPANDER COMPONENTS

Expressed on weight of lead oxide

Organic additive	0.2%
Barium sulfate	0.7%
Carbon black	0.1%

Data is expressed as a percentage of the traditional **Vanisperse® HT-1** control. One of the hallmark advantages of **Vanisperse® A** is its exceptional performance at low dosages, circa 0.2%. The data presented above demonstrates the exceptional performance of the improved **Vanisperse® HT-1** compared to **Vanisperse® A** and traditional **Vanisperse® HT-1** and illustrates the improvement undergone in its manufacture. Its performance closely parallels that of **Vanisperse® A** in all respects and shows that the improved **Vanisperse® HT-1** is up to the task. Improved **Vanisperse® HT-1** demonstrated charge acceptance comparable to **Vanisperse® A**. It has also been seen (Fig. 2) that cold crank has been improved by 2% in commercial use compared to **Vanisperse® A**. Figure 3. shows that reserve capacity is improved over traditional **Vanisperse® HT-1**, and nearly matches that of **Vanisperse® A**.

Paste Preparation Observation: **Vanisperse HT-1** is a potent dispersant of lead oxide pastes. This can lead to pastes with a soft consistency in place of the usual "stiff" pastes. As a result, some difficulty pasting grids may be experienced. Therefore, adjusting the volume of makeup water may be required to attain paste of desired consistency for efficient pasting. To determine the required water content, we recommend withholding 1% to 4% of the make-up water at the beginning of paste preparation, and then at the final stages, adding water back incrementally with mixing until the desired consistency is attained.

Fig. 2 **RELATIVE CELL COLD CRANK**

59 A to 1.2 V @ -18°C with 0.2% organic additive content

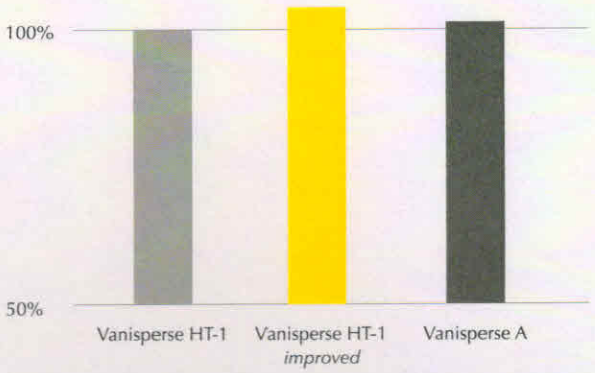
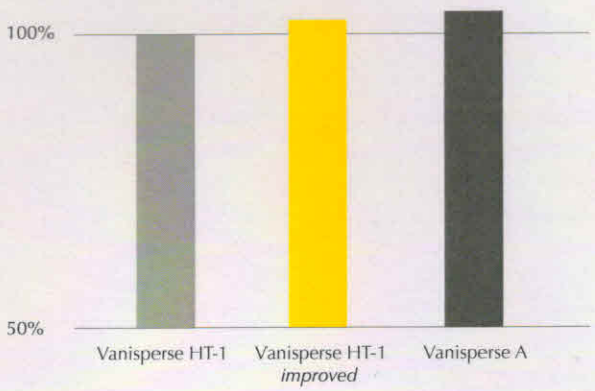


Fig. 3 **RELATIVE CELL RESERVE CAPACITY**

5 a to 1.70v with 0.2% organic additive content



SALES SPECIFICATIONS

pH (10% solution)	10.5 +/- 0.5
Dry matter	Min. 93%
Insolubles (w/w)%	Max. 0.07
Calcium ppm	Max. 3000
Chromium, ppm	Max. 5
Copper, ppm	Max. 70
Iron, ppm	Max. 100
Magnesium, ppm	Max. 1800
Manganese, ppm	Max. 10
Nickel, ppm	Max. 2.5

All values are calculated on solids basis.

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