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Grace DAKASEP Alkaline Battery Separator

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The Grace DAKASEP separator was originally developed as a wicking layer for nickel-zinc alkaline batteries. DAKASEP is a filled non-woven separator which is flexible and heat sealable. Through modification of formulation and processing variables, products with a variety of properties can be produced. Variations of DAKASEP have been tested in Ni-H₂, Ni-Zn, Ni-Cd and primary alkaline batteries with good results.

Table I shows properties of DAKASEP which are optimized for Hg-Zn primary batteries. This separator has high tensile strength, 12 micron average pore size, relatively low porosity at 46-48% and consequently moderately high resistivity. Versions have been produced with greater than 70% porosity and resistivities in 33 wt% KOH as low as 3 ohm cm.

Performance data for Hg-Zn E-1 size cells containing DAKASEP with properties shown in Table I are more reproducible than data obtained with a competitive polypropylene non-woven separator. In addition, utilization of active material is in general considerably improved.

* Person to whom inquiries about DAKASEP should be addressed.

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Table I

GRACE DAKASEP Alkaline Battery Separator Characteristics*

<u>Production Run Number</u>	<u>47</u>	<u>48</u>
Ream Weight (pounds/3000 ft ²)	74.2	71.7
Thickness (mils)	11.5	11.5
Tensile strength (pounds/in ²)	1260	1190
Tensile (pounds/in)	14.5	13.7
Maximum pore size (micron)	21.1	21.1
Average pore size (micron)	12.0	12.2
Porosity (volume percent)	46	48
Wetout time (sec in 33% KOH)	<3	<3
Resistivity (ohm cm)	15.0	14.8

* Note that properties of DAKASEP can be tailored to customer specifications.

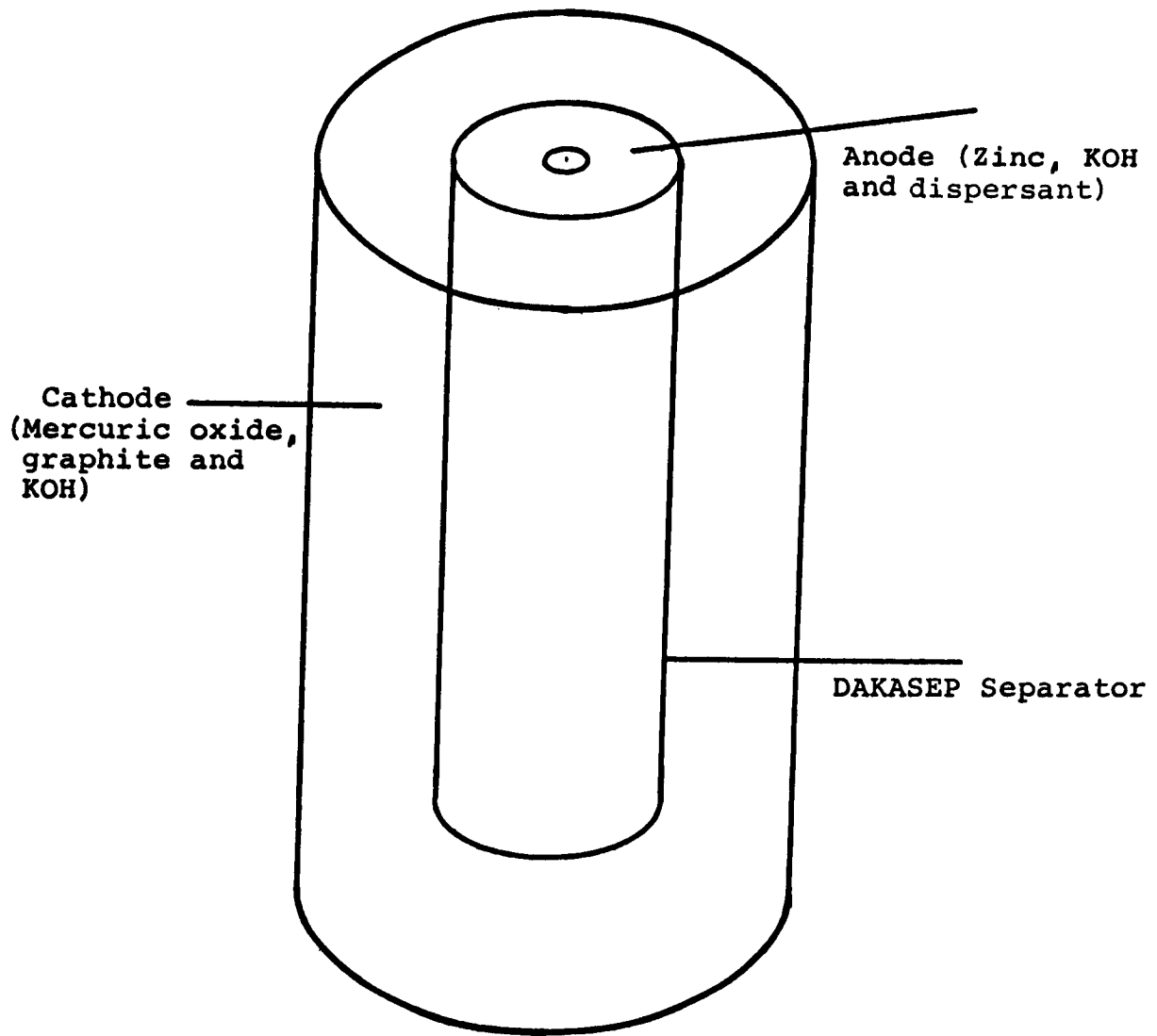
GRACE DAKASEP Alkaline Battery Separator Development

- Grace has developed a separator for alkaline batteries.
- DAKASEP is a filled non-woven (flexible and heat sealable) separator.
- Properties of DAKASEP can be tailored to battery manufacturers specifications.
- Variations of DAKASEP have been tested in Ni-H₂, Ni-Zn, Ni-Cd and primary alkaline batteries with promising results.

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Figure 1. GRACE DAKASEP Alkaline Battery Separator Characteristics.*



**Schematic Representation of a
Hg - Zn Cell**

Figure 2.

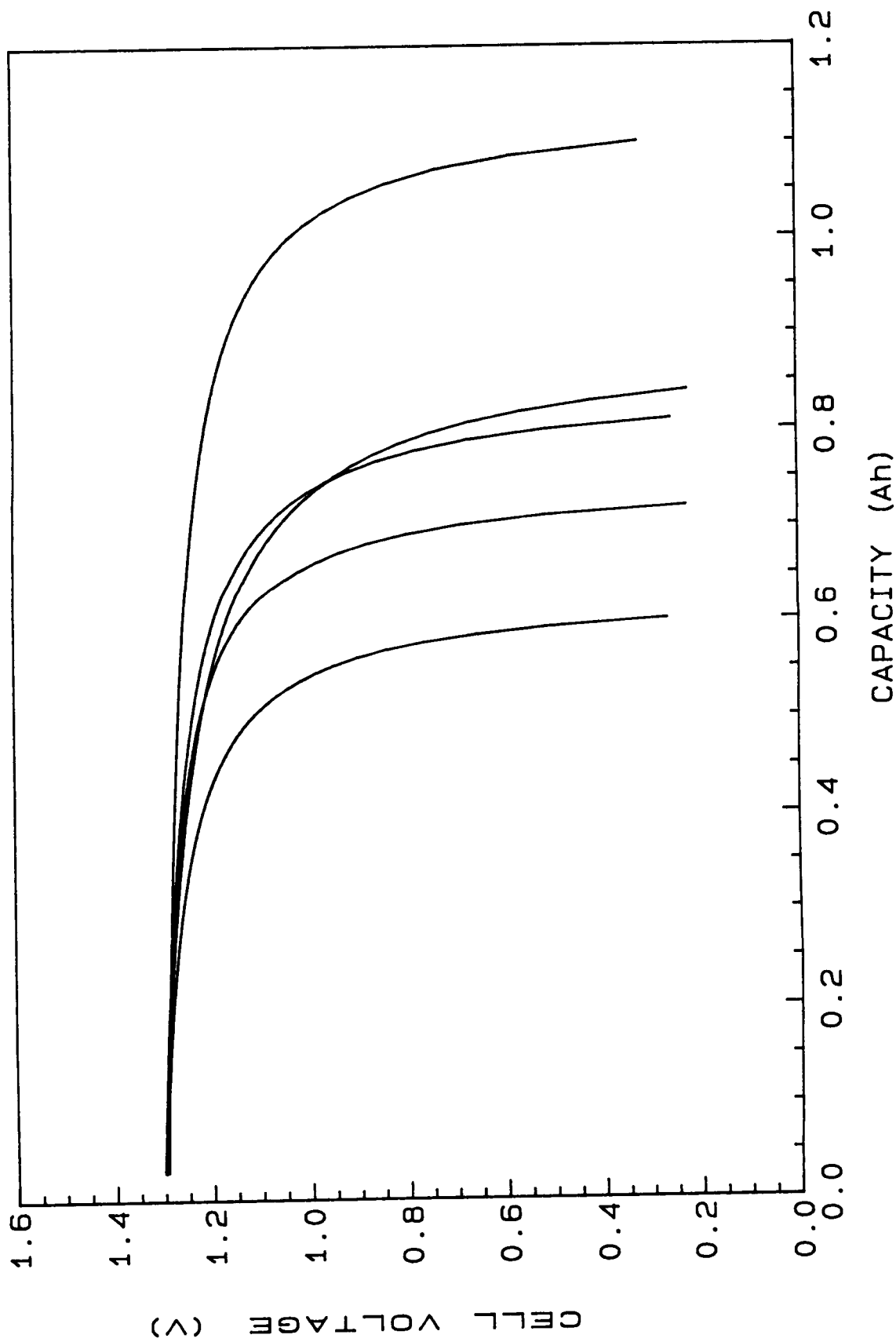


Figure 3. Performance of E-1-Size HG/ZN Cells ($R = 35 \text{ OHM}$); Competitive Separator (Polypropylene Nonwoven).

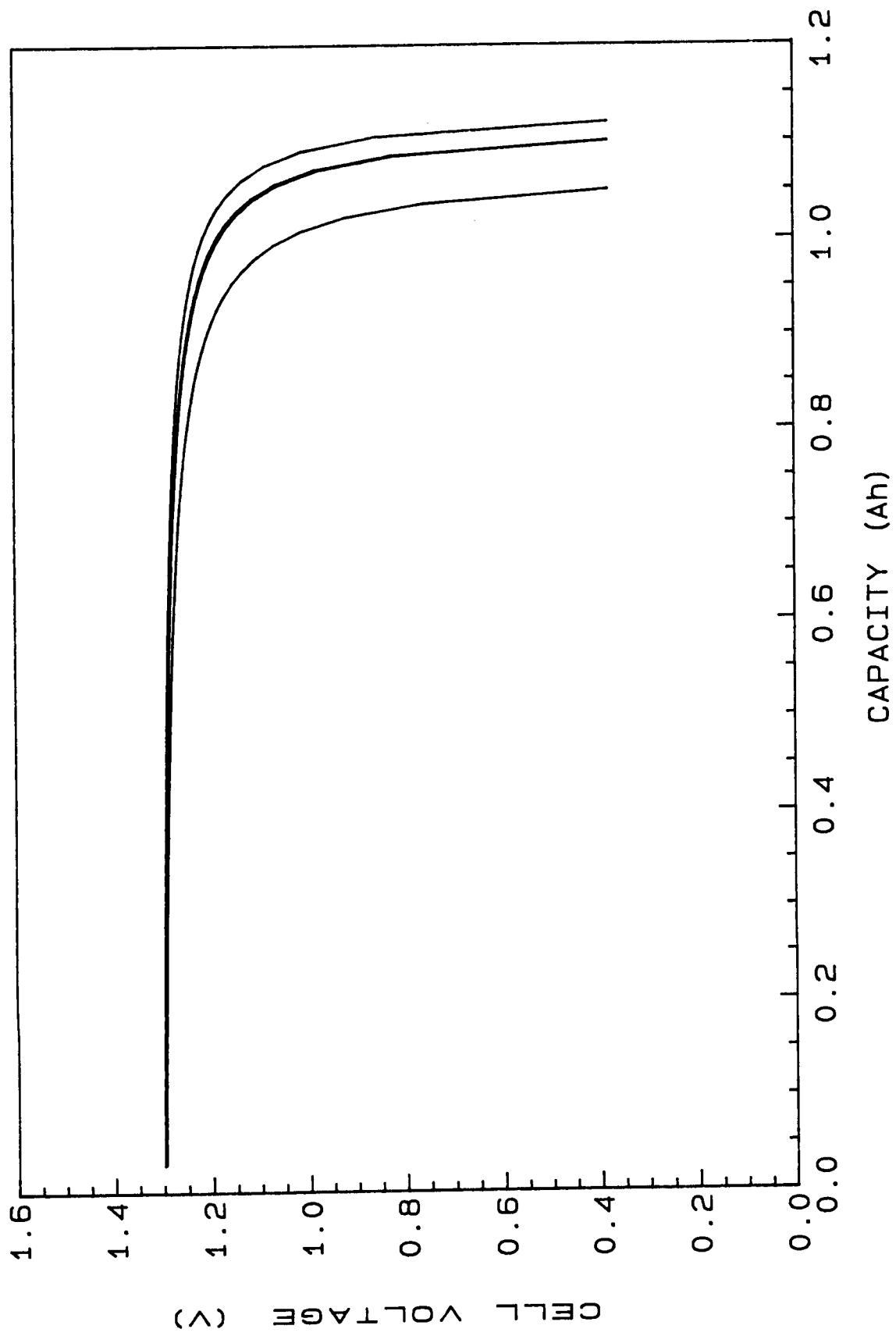


Figure 4. Performance of E-1-Size HG/ZN Cells (R = 35 OHM); Grace DAKASEP Separator.

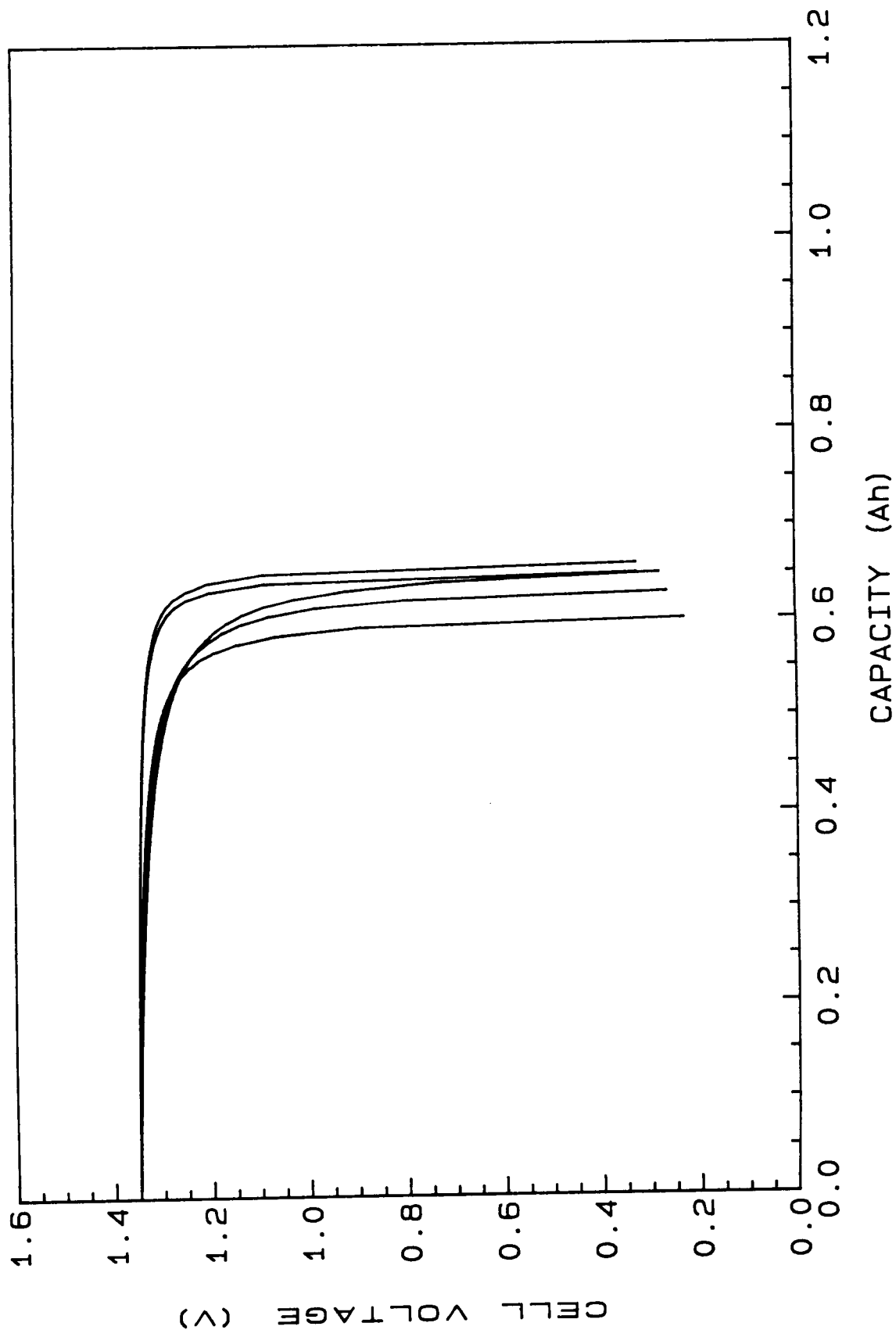


Figure 5. Performance of E-1-Size HG/ZN Cells ($R = 15 \text{ OHM}$); Grace DAKASEP Separator.