

Power*Safe*TM SBS



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Overview of Range



Top Terminal series (7 – 360Ah)

- 12 volt: SBS 8, 15, 30, HB30, 40 and 60
- 6 volt: SBS 110 and 130
- 2 volt: SBS 300 and 390



J series* (12 – 64Ah)

- 12 volt: SBS J13, J16, J30, J40 and J70

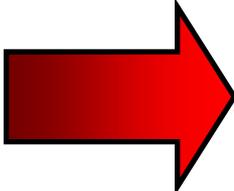
Front Terminal series (31 – 92Ah)

- 12 volt: SBS B8, B10, B14 and C11



* sizes based upon a Japanese industrial standard ("JIS")

Brand History



Features & Benefits



- Pure lead, VRLA, AGM technology
- High grade acid & superior quality separator
- UL94 V-0 flame retardant ABS container and lid (Noryl for J types)
- 15 year design life at 20°C
- Compact footprint
- Maximum volumetric energy density
- Easily fits 19", 23" and ETSI telecom racking
- Compliant with BS6290 Part 4, IEC 60896-21/22 & Telcordia SR-4228
- Wide operating temperature range: -40°C to +50°C
- Up to two year shelf life
- Unique manufacturing process

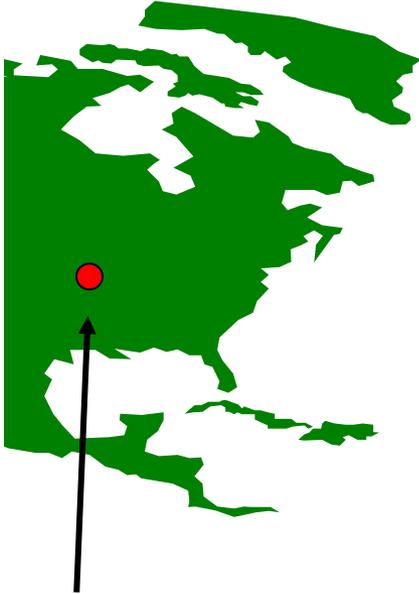
Applications



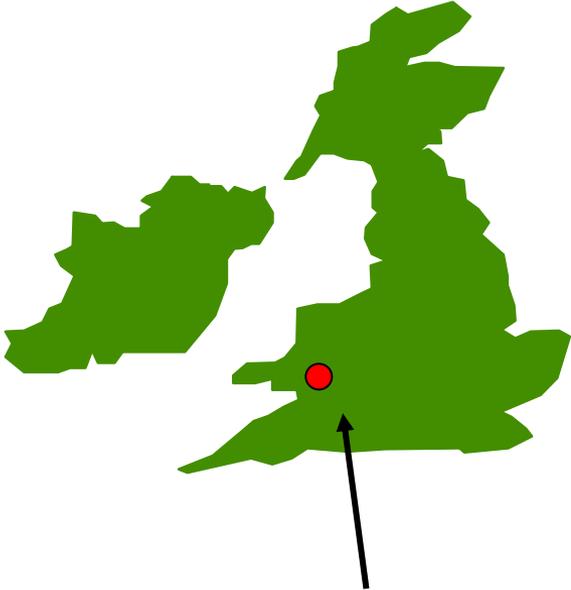
- Telecommunications
- UPS
- Utilities
- Oil & Gas Industry
- Emergency Lighting
- Renewable Energy



Manufacturing Locations



Warrensburg, Missouri, USA

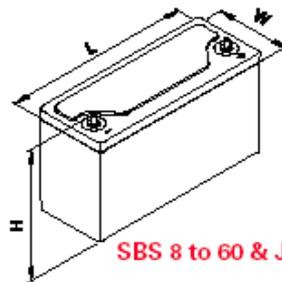


Newport, South Wales, UK

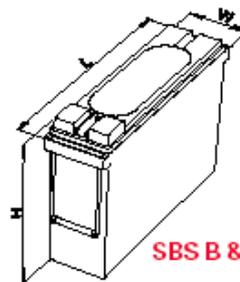


General Specifications

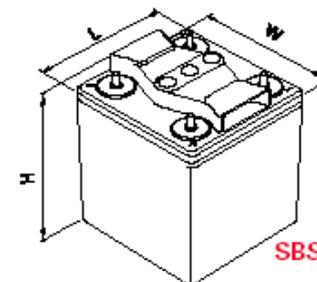
Type	Number of Cells	Nominal Voltage (V)	Nominal Capacity (Ah)		Nominal Dimensions						Typical Weight		Short Circuit Current (A) ²	Internal Resistance (mΩ) ²	Terminals
			10 hr rate to 1.80Vpc @ 20°C	8 hr rate to 1.75Vpc @ 77°F	Length		Width		Height		kg	lbs			
					mm	in	mm	in	mm	in					
SBS 8	6	12	7	7	138	5.4	86	3.4	101	4.0	2.7	5.9	455	27.1	M4 F
SBS 15	6	12	14	14	200	7.9	77	3.0	140	5.5	5.7	12.5	891	13.5	M6 M
SBS 30	6	12	26	26	250	9.8	97	3.8	156	6.1	9.5	20.9	1556	7.9	M6 M
SBS HB30 ⁽¹⁾	6	12	26	26	250	9.8	97	3.8	156	6.1	9.6	21.1	1556	7.9	harness
SBS 40	6	12	38	38	250	9.8	97	3.8	206	8.1	12.7	28.0	2184	5.6	M6 M
SBS 60	6	12	51	51	220	8.7	121	4.8	261	10.3	18.5	40.7	2618	4.4	M6 M
SBS 110	3	6	115	116	200	7.9	208	8.2	239	9.4	21.2	46.6	3804	1.7	M8 M
SBS 130	3	6	132	133	200	7.9	208	8.2	239	9.4	22.7	49.9	4111	1.4	M8 M
SBS 300	1	2	310	307	200	7.9	208	8.2	239	9.4	21.7	47.7	8700	0.23	M8 M
SBS 390	1	2	360	361	200	7.9	208	8.2	239	9.4	23.2	51.0	11101	0.18	M8 M
SBS J13	6	12	12	12	175	6.9	83	3.3	129	5.1	5.7	12.6	957	13.0	M6 F
SBS J16	6	12	15	15	181	7.1	76	3.0	167	6.6	6.7	14.8	1111	11.0	M6 F
SBS J30	6	12	26	26	166	6.5	175	6.9	125	4.9	11.8	26.0	1766	7.0	M6 F
SBS J40	6	12	39	39	196	7.7	165	6.5	170	6.7	17.4	38.2	2400	5.2	M6 F
SBS J70	6	12	64	64	329	12.9	166	6.5	174	6.9	27.6	60.9	3500	3.5	M6 F
SBS B8 ⁽²⁾	6	12	31	31	280	11.0	97	3.8	159	6.3	10.3	22.7	1584	7.7	M8 F
SBS B10 ⁽²⁾	6	12	38	38	280	11.0	97	3.8	184	7.2	12.8	28.2	1968	6.2	M8 F
SBS B14 ⁽²⁾	6	12	62	62	280	11.0	97	3.8	264	10.4	19.1	42.0	3210	3.8	M8 F
SBS C11 ⁽²⁾	6	12	92	91	395	15.6	105	4.1	264	10.4	28.0	61.6	3696	3.3	M8 F



SBS 8 to 60 & J types



SBS B & C types



SBS 110 to 390

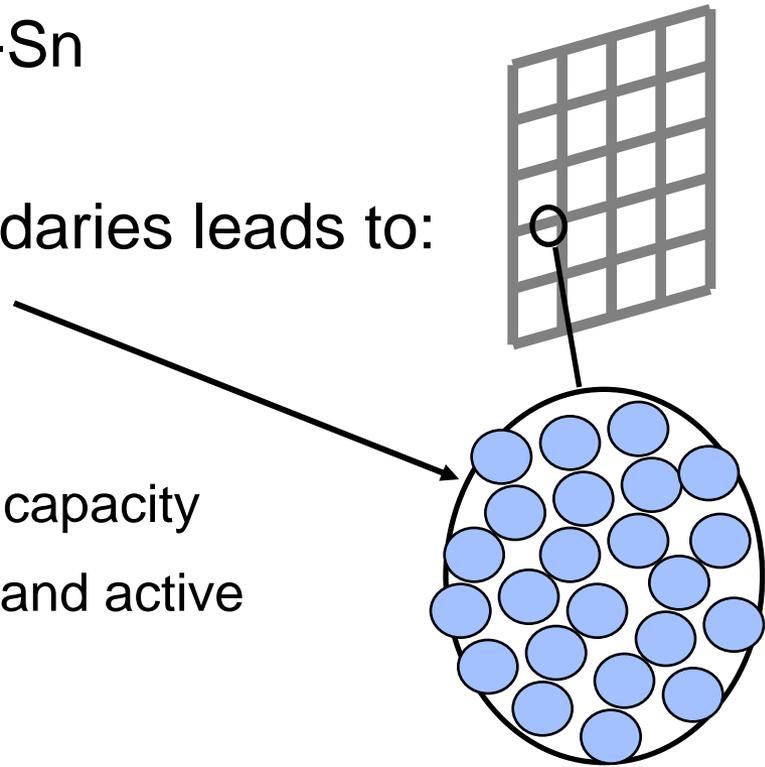
What Makes SBS Different?



> Pure Lead Technology

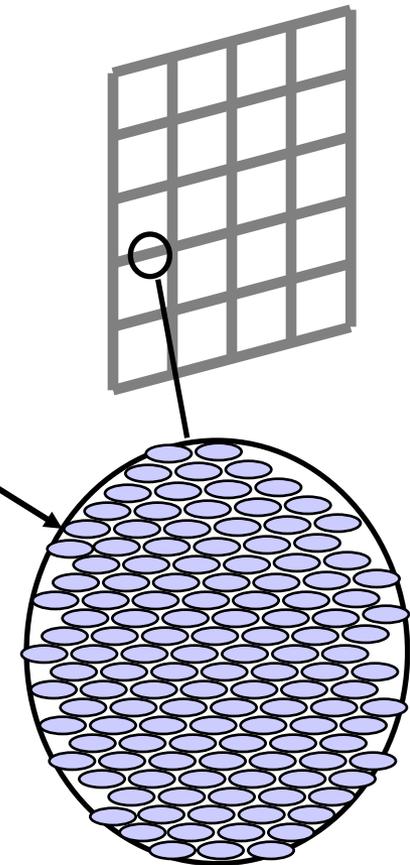
Typical VRLA Batteries

- Positive grid alloy is Pb-Ca-Sn
- Corrosion at the grain boundaries leads to:
 - Grid corrosion
 - Grid growth
 - Reduction in current carrying capacity
 - Loss of contact between grid and active material

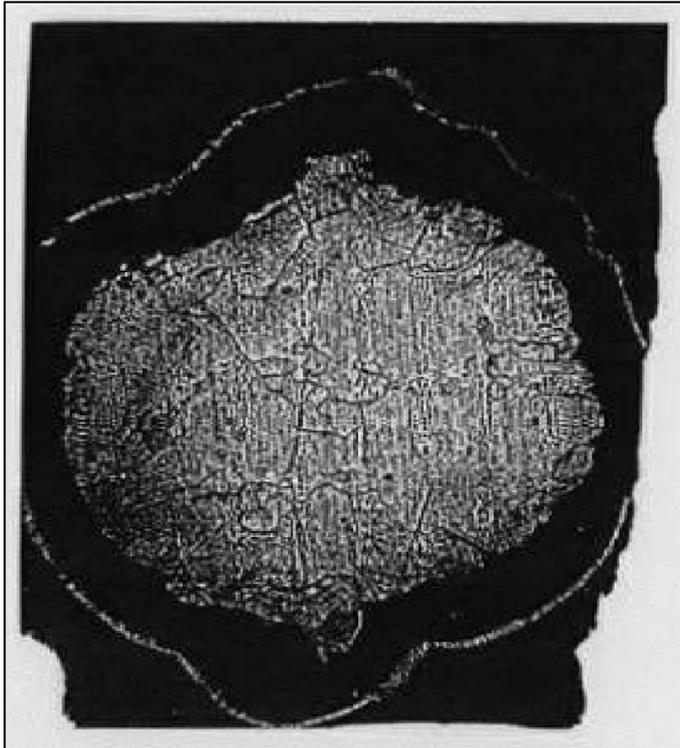


PowerSafe SBS Pure Lead Grids

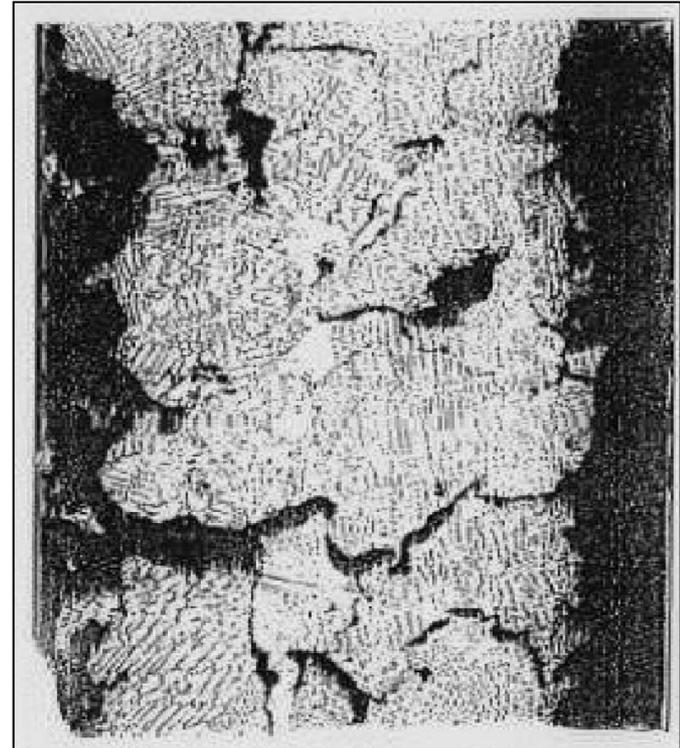
- Pure lead crystallography
- The very fine grain structure makes the grid far more resistant to corrosion
- Pure lead grids with the same design life can be much thinner than lead calcium grids



Actual X-Section of Positive Grids



Pure Lead (Pb)



Lead Tin Calcium (Pb-Sn-Ca)

What Makes SBS Different?



> Thin Plate Technology

Positive grid thickness for equivalent float life products

Thick versus Thin

Pb-Ca

SBS

- Cells are large and heavy
- Grids are prone to corrosion and growth

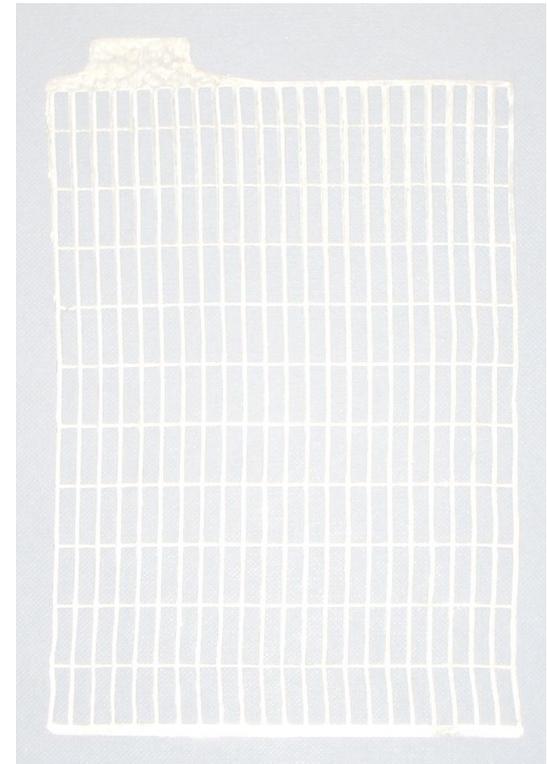
Typical grid thickness ratio:
Pb-Ca = 1
SBS = 0.6

- Cells are smaller and lighter
- Grids are resistant to corrosion and growth

Equivalent Float Life Products

Advantages of thin plate pure lead technology

- More efficient use of active material
- Increased grid conductivity
 - Efficient recharge
 - High discharge performance

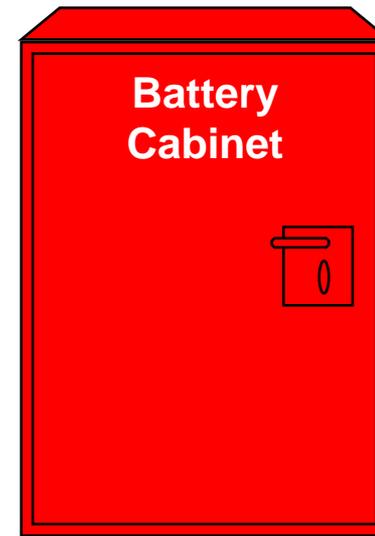


Thin Plate Technology (3/3)

- Higher energy density (smaller and lighter)



Typical Pb-Ca



PowerSafe SBS

On average PowerSafe SBS occupies between 10-30% less space than Pb-Ca products

What Makes SBS Different?



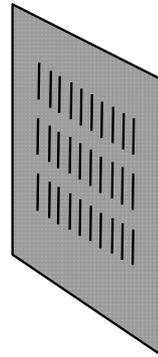
> High Purity Materials

High Purity Materials (1/2)

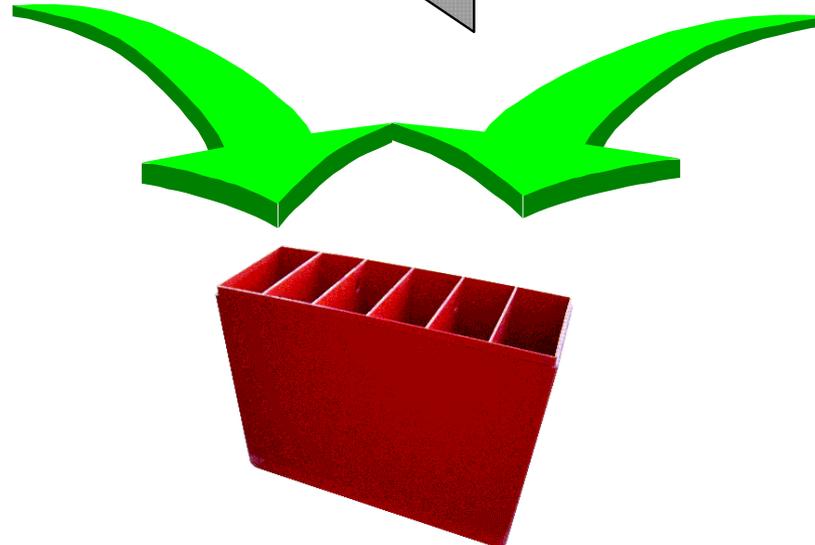
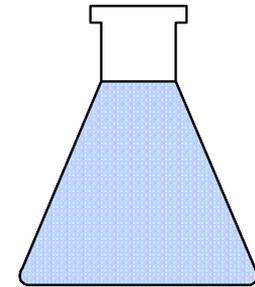
Virgin Lead
Oxide



Virgin Lead



High Grade
Acid



Advantages of the Use of High Purity Materials

- Low rate of self discharge = Long shelf life
 - Low float charge current
 - Low rate of grid corrosion
 - Low gassing rate
- } = Long float life

Optional Advanced Accessories



> Remote Venting

Remote Venting

- Ideal for sealed cabinets and where little or no room ventilation is available
- Gas can be vented outside the battery enclosure
- Vents are connected together with a flexible tube that can take any gas outside the battery compartment

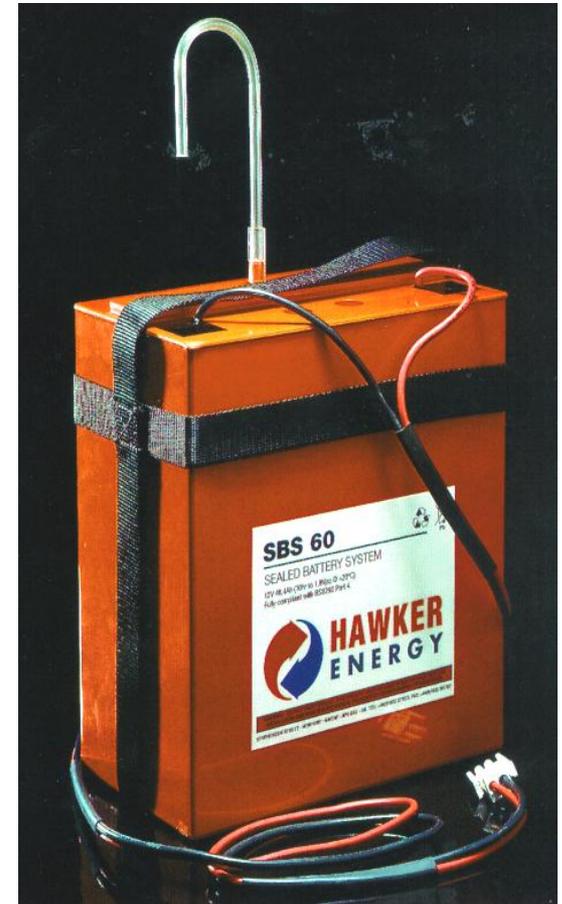


Optional Accessories



> SBS Aqua

- Designed specifically for underground telecom applications
- Ideal for sites at risk of flooding
- Available in 4 sizes
 - SBS 15, 30, 40 & 60
- Safe, hermetically sealed terminals
- Waterproof connections
- Vent adaptor design for remote gas venting
- In-line fuse protection available



Optional Accessories



> Metal Jackets

Metal Jackets

- Prevents battery container wall distortion in high temperature applications
- Allows the battery to operate in temperatures up to +80°C
- Available on selected types:
 - SBS J13, J16, J30, J40 and J70



Installation Examples (1/4)

Telecom / Cabinet Installations



PowerSafe SBS B & C types are ideal for cabinets

Installation Examples (2/4)

Telecom / Cabinet Installations / Remote Venting



Installation Examples (3/4)

UPS / Back-up power for Satellite Rocket Launch Pad
French Space Centre, Guyana



Installation Examples (4/4)

Solar / Motorway Application in France



- PowerSafe SBS batteries store energy from the solar panel
- Energy is released during periods without sunshine and during the night

Competitive Analysis

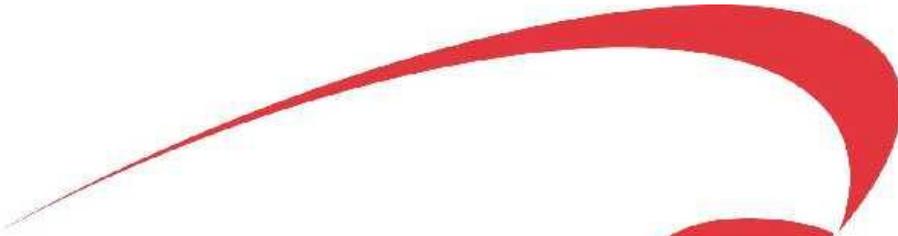


- PowerSafe SBS: in a class of its own
- Closest competition only use lead-tin-calcium in similar size box:
 - Exide Marathon
 - Northstar
 - Oerlikon

PowerSafe SBS Summary



- Unrivalled technology
- High volumetric energy (small) and high energy to mass ratio (light)
- Long design life
- Up to two year shelf life
- High grade materials
- Successfully used in both high performance and low rate, long life float applications
- Choice of front and top terminal designs



Power ***Safe***™
SBS