Test Report
Physical Test Laboratory

HOPPECKE
POWER FROM INNOVATION

Annexe B

Supplier statement of product range test results

1) General product type information						
Product manufacturer		Hoppecke Batterien				
Manufacturing site of tested product		59929 Brilon – Hoppecke				
Lab – No		V9059				
Product name		sun | power VR L (series OPzV)				
Product model range		sun | power VR L 2-250 to sun | power VR L 2-3500				
Product comprising the above model range		sun | power VR L				
Product tested		sun | power VR L 2-620				
2) Product test performance information						
Product safe operation in service		**IEC 60896-21 test clause result**				
6.01	Gas emission (at float voltage and at 2.40 Vpc)	Ge (2.25 V/Z) = 0.0655 ml/(cell*h*Ah) Ge (2.40 V/Z) = 0.790 ml/(cell*h*Ah)				
6.02	High current tolerance	Pass				
6.03	Short circuit current and D.C. internal resistance	Ri = 0.460 mΩ*, Ik = 4440 A				
6.04	Internal ignition from external spark sources	Pass				
6.05	Protection against ground short propensity	Pass				
6.06	Content and durability of required markings	Pass				
6.07	Material identification	Case: Pass			Cover: Pass	
6.08	Valve operation	Before: Pass			After:	
6.09	Flammability rating of materials	Case: UL94 - 94HB			Cover: UL94 – 94HB	
6.10	Intercell connector performance	T < 61.3 °C				
Product performance in service						
6.11	Discharge capacity	C10 115.2 %	C8 117.0 %	C3 118.2 %	C1 121.7 %	C0.25 105.8 %
6.12	Charge retention during storage	Pass, Crf= 92.7 %				
6.13	Float service with daily discharges	647		Caf = 45,1 %		Cab = 50.3 %
6.14	Recharge behaviour	24 h: 101.2 %			168 h: 98.8 %	
Product durability in service						
6.15	Service life at an operating temperature of 40 °C	t(C3=80%): in progress > 708 d				
6.16	Impact of a stress temperature of 55 °C or 60 °C					
6.17	Abusive over-discharge	Pass, Caod = 106.8 %			Pass, Caoc = 118.4 %	
6.18	Thermal runaway sensitivity	Pass, at 2.45 V/Z was reached after 168 h T_{max} = 21.8 °C, at 2.60 V/Z was reached after 168 h T_{max} = 22.7 °C				
6.19	Low temperature sensitivity	Cals1 Cals2 Cals3 104.8 % 104.3 % 104.0 % No fractures, excessive bulging or other freezing induced damages were found				
6.20	Dimensional stability at elevated internal pressure	maximum change of dimension in mm: 4.70 maximum change of dimension in %: 2.88 no damages of cells were found				
6.21	Dimensional stability against abuse of units during installation	no leakage detectable after two times two drops				
61427 – 8.1	Discharge capacity	C120 - 120.5 %				
61427 – 8.4	Cycle endurance test in photovoltaic applications	in progress – 1500 cycles – 10 units				

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Annexe A

User statement of requirements

1) Application description information	
Application summary	
Load (in A or W) and autonomy time profile(s)	
Minimum and maximum system float voltage	
Maximum or boost charge system voltage available Y/N IF yes what value	
Minimum system discharge voltage or low voltage disconnect Y/N If yes what value	
Expected minimum and maximum operating temperatures and their duration per year	
Any other information or operational requirements such as duration and frequency of power outages, of diagnostic discharges and of energy cost saving actions	

2) Product specification information						
product safe operation in services		Compliance information mandatory				
6.01	Gas emission (at float voltage and at 2.40 Vpc)	Data requested				
6.02	High current tolerance	Pass				
6.03	Short circuit current and D.C. internal resistance	Pass				
6.04	Internal ignition from external spark sources	Pass				
6.05	Protection against ground short propensity	Pass				
6.06	Content and durability of required markings	Pass				
6.07	Material identification	Pass				
6.08	Valve operation	Pass				
6.09	Flammability rating of materials	Data requested				
6.10	Intercell connector performance	Data requested				
Product performance in service		Compliance information mandatory or on as needed basis				
6.11	Discharge capacity	C10	C8	C3	C1	C0.25
6.12	Charge retention during storage	Pass				
6.13	Float service with daily discharges	Value to be requested as function of service environment				
6.14	Recharge behaviour	Pass				
Product durability in service		Compliance information mandatory or on as needed basis				
6.15	Service life at an operating temperature of 40 °C	Value to be requested as function of service environment				
6.16	Impact of a stress temperature of 55 °C or 60 °C	Value to be requested as function of service environment				
6.17	Abusive over-discharge	Value to be requested if service environment warrants				
6.18	Thermal runaway sensitivity	Pass and show data				
6.19	Low temperature sensitivity	Value to be requested as function of service environment				
6.20	Dimensional stability at elevated internal pressure	Show data				
6.21	Dimensional stability against abuse of units during installation	Pass				
61427 – 8.1 Discharge capacity		C120				
61427 – 8.4 Cycle endurance test in photovoltaic applications		Value to be requested as function of service environment				
Name of responsible operator: Address/phone/fax/e-mail: Signature/date/place Nonrecurring required identification code						