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|  | GS Yuasa Battery Manufacturing UK Ltd. Quality Assurance Department email: peter.hollingworth@yuasaeurope.com | Document Ref: EV DfC019 |
| | | Issue Date: 01 June 2017 |

Subject: **IEC 61056 Declaration of Conformity for Yuasa NP range**

Reference: EN IEC 61056 – General purpose lead-acid batteries, (Valve-regulated types)
Part 1: General requirements, functional characteristics - Methods of test.
Part 2: Dimensions, terminals and markings

We hereby confirm that Yuasa's NP Series of Valve Regulated Lead Acid batteries have been design and manufactured to meet the requirements of EN IEC 61056:2003, Parts 1 & 2.

5 Functional characteristics and specific requirements

5.1 Capacity C_a (actual capacity at the 20 h discharge rate)

When tested in accordance with 7.2 Yuasa's NP batteries will achieve the rated performance at or before the 5th (fifth) cycle.

5.2 Endurance

5.2.1 Cycle service endurance

When tested in accordance with 7.4 Yuasa's NP batteries will achieve a minimum of 200 charge/discharge cycles to a minimum capacity of $0.6 \times C_{20}$.

5.2.2 Float service endurance

When tested at 20°C in accordance with 7.5 Yuasa's NP batteries will achieve a minimum of 2 years' service to a minimum capacity of $0.6 \times C_{20}$

When tested at 40°C in accordance with 7.6 Yuasa's NP batteries will achieve a minimum of 260 days service to a minimum capacity of $0.6 \times C_{20}$

5.3 Charge retention

When tested in accordance with 7.7 Yuasa's NP batteries will achieve a minimum capacity of 75% of C_{20} after 120 days storage.

5.4 Maximum permissible current

When tested in accordance with 7.8 Yuasa's NP batteries will maintain the specified discharge currents

$I_m = 40 \times I_{20}$ for 300s and $I_h = 300 \times I_{20}$ for 5s, without distortion or other damage to the battery.

5.5 Charge acceptance after deep discharge

When tested in accordance with 7.9 Yuasa's NP batteries will recover from deep discharge under the specified conditions when recharged at the recommended voltage to achieve a capacity $\geq 0.75 \times C_{20}$.




ISO 9001:2008
Certificate No: FM 10626



ISO 14001:2004
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BS OHSAS 18001:2007
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- 5.6 High rate discharge characteristic
When tested in accordance with 7.3 Yuasa's NP batteries will support a discharge current of $20 \times I_{20}$ for not less than 27 minutes.
- 5.7 Gas emission intensity
When tested in accordance with 7.10.1 Yuasa's NP batteries will achieve a specific gas emission G_e of less than 0.05 ml / cell / h / Ah under constant voltage float charging conditions.
When tested in accordance with 7.10.2 Yuasa's NP batteries will achieve a gas recombination efficiency of more than 90% when tested under constant current charging conditions.
- 5.8 Operation of regulating valve and over pressure resistance
When tested in accordance with 7.11.1 the operating pressure of Yuasa's NP batteries will be 0.98kPa to 196.1 kPa
When tested in accordance with 7.11.2 Yuasa's NP batteries will be free from deformation, cracks or liquid leakage which exceed the dimensions published in the relevant Data Sheet
- 5.9 Vibration resistance characteristic
When tested in accordance with 7.12 Yuasa's NP batteries will show a terminal voltage not less than nominal voltage ($n \times 2V$). The battery will be free from cracks and leakage of electrolyte. The deformations will not exceed dimensions published in the relevant Data Sheet
- 5.10 Shock resistant characteristics
When tested in accordance with 7.13 Yuasa's NP batteries will show a terminal voltage of not less than nominal voltage ($n \times 2V$). The battery will be free from cracks and leakage of electrolyte. The deformations will not exceed dimensions published in the relevant Data Sheet

Issued for and on behalf of **GS Yuasa Battery Manufacturing UK Ltd.**

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