

GS Yuasa E-Learning Support Documentation

Comparing OE Specification with Non-OE Specification Products

Overview:

This support documentation has been designed to work in conjunction with the GS Yuasa e-learning course “Comparing OE Specification with Non-OE Specification Products” and covers of the following subjects:

- End user perceptions & the truth
- Labelling legislation & performance markings
- Testing standards
- GS Yuasa competitor benchmarking
- Benchmarking results summary

End user perceptions & the truth

End user perceptions of a battery

Amongst end users, misconceptions that all batteries are the same regardless of price or manufacturer are common. Many believe there is no benefit to paying a higher price for a battery. They may also think that labelling accurately indicates specification, battery weight has no effect on performance and private brands are as good as OE manufacturers products. In truth, none of these statements are correct.

It is not unusual for some battery brands to over specify label ratings, reduce lead content and change acid strength to reduce costs, maintain short term performance and increase the appeal of their products.

Labelling legislation & performance markings

Labelling legislation

EU battery labelling legislation is designed to combat the misrepresentation of battery performance by dishonest importers or manufacturers. It dictates that battery capacity labels must accurately reflect actual performance.

This means that ALL batteries must achieve at least 100% of the stated label rating for cold cranking amps and 95% ampere hour capacity performance.



Performance markings

Recently introduced legislation also stipulates labels must display the following performance specification markings:

- Water loss is the battery's ability to retain water. The better a battery performs, the less water it will lose in service. Rated W1 to W5 traditional lead-acid would be W1 and a premium next generation battery W5
- Charge Retention is the battery's ability to retain charge when not in use. Rated C1 or C2 where C1 is a traditional lead-acid and C2 a modern calcium battery
- Vibration level is the battery's physical ability to resist the potentially damaging effects of vibration. Rated V1 to V4 where V1 is for a traditional car and light van and V4 extreme heavy-duty plant and commercial vehicles
- Endurance rating applies to conventional types only and is the battery's ability to withstand repeated charge and discharge cycles to 50% depth of discharge without failure. Rated E1 to E4 where E1 is for conventional car and light van and E4 extreme heavy-duty plant and commercial vehicles
- Micro cycle rating applies to EFB and AGM types only and is the battery's ability to provide power to restart the engine after frequent stop phases, recover state of charge afterwards and cope with the aging effects caused by rapid discharge and recharge cycles. Rated M1 to M3 where M1 is for basic start stop requirements and M3 high end vehicles with extensive emission reduction technology

Testing standards

Testing legislation

Battery capacity checks are conducted using BS EN 50342 testing standards and are carried out under laboratory conditions using specialised testing equipment.

Cold cranking amperage testing

Cold cranking amperage is a measurement of the maximum current a fully charged battery can deliver at -18°C. It is used to determine a battery's ability to supply high cranking current to start the vehicle's engine and maintain sufficient voltage to power the ignition requirements under severe cold starting conditions.

To test this, the battery is placed in a forced air circulation cooling chamber for 24 hours to achieve a temperature of -18°C in the battery's core. A specified discharge current indicated by the battery's specification label is then applied to the battery for the various stages of the test.

Ampere hour capacity testing

Ampere hour refers to the battery's storage capacity. At 25°C, the battery must achieve greater than 20 hours of discharge time at a given load, down to a cut-off voltage of 10.5V.

For example, a 60Ah battery will deliver a current of 3A for 20 hours.

To test this, the battery is placed in a water bath and is maintained at a temperature of 25°C for a minimum soak time of four hours. A specified discharge current indicated by the battery manufacturers specification label is then applied. The test result is then calculated from the time taken to reach 10.50 Volts.

Both cold cranking amperage and ampere hour capacity tests can be carried out a maximum of three times to establish the battery can achieve the required standard.

