Stiftung
GRS Batterien

# Annual Review

in accordance with Section 15(1)
German Battery Act (BattG)

# 2021

Stiftung GRS Batterien



# Contents



# Preliminary remarks

Battery manufacturers that have joined the GRS take-back schemes placed more than 31,000 t portable and industrial batteries that are used in in private households on the market and fulfilled their legal take back obligations by means of GRS. The lion's share was accounted for by the respective manufacturer's own take-back scheme for portable batteries offered by Stiftung GRS Batterien.

By establishing new industry-specific take-back schemes for portable batteries, GRS Service GmbH intends to create an ever more efficient system for taking back batteries. Consequently, the foundation and the limited company can offer battery manufacturers and those who place batteries on the market take-back solutions that are specifically geared to customers' future needs. The schemes are sufficiently flexible to allow them to be adapted as required, whilst ensuring safe collection.

Furthermore, we can look back on a successful business year: we were able to significantly reduce the waste disposal costs for our customers, and look optimistically towards the future in view of favourable economic development.

We would also like to take this opportunity to thank you – our customers and partners – for your loyalty and good working relationship.

Sincerely

**Georgios Chryssos**
Management Board
Stiftung Gemeinsames Rücknahmesystem Batterien
Joint Take-back Scheme for Batteries Foundation
Hamburg, April 2022

# Endorsement of the annual review 2021

**Stiftung Gemeinsames Rücknahmesystem Batterien**
Heidenkampsweg 44, 20097 Hamburg

measured the quantities placed on and collected from the market and presented these figures to ZER-QMS for auditing.

The annual review 2021 (version dated 14/04/2021) was audited using documentation and other random samples provided in compliance with § 15 (1) of the German Batteries Act (06/25/2009 in its latest amendment dated 03/11/2020).*

On the basis of the audit result, this version of the annual review 2021 is hereby endorsed.

Nettersheim, Cologne, 27. April 2021

ZER-QMS GmbH *
Dr. Norbert Hüsgen
Environmental Auditor
Auf dem Hielig 10
53947 Nettersheim

ZER-QMS GmbH *
Dr. Holger Wisotzki
Publicly appointed and sworn expert
Volksgartstraße 48
50677 Köln

**Stiftung Gemeinsames Rücknahmesystem Batterien**
Heidenkampsweg 44, 20097 Hamburg

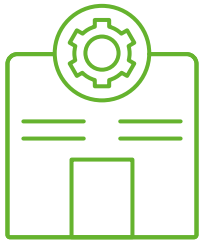
werden folgende Ergebnisse auf Basis der Überprüfung der Erfolgskontrolle 2021 bestätigt**:

| Batteriegesetz | Anforderung | Ergebnis |
|---|---|---|
| § 15 Para. 1 No. 1 | Mass of batteries distributed by members in 2021 | 19,403.4 tonnes |
| § 15 Para. 1 No. 2 | Mass of waste portable batteries taken back in 2021 | 10,153.2 tonnes |
| § 15 Para. 1 No. 3 | Mass of waste portable batteries fed into material recycling in 2021 | 9,795.2 tonnes |
| § 15 Para. 1 No. 4 | Collection rate achieved by GRS Service GmbH in 2021 | 50,9% |
| § 15 Para. 1 No. 5 | Recycling quota achieved by GRS Service GmbH Batterien in 2021 | 92,7% |
| § 15 Para. 1 No. 6 | Qualitative and quantitative recycling and disposal results in 2021 | traceable |

* Accredited by: DAU – Deutsche Akkreditierungs- und Zulassungsgesellschaft für Umweltgutachter mbH, licence numbers: ZER-QMS : DE-V-0183

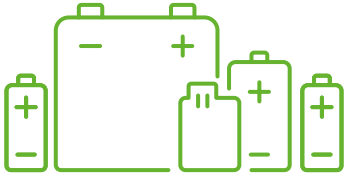
** For details, please refer to report No. 2021 GRS Service dated 27/04/2022.
Above information based on Tables 1 and 2 published by German Environment Agency.

# Our work in figures



Manufacturers

> 4,400

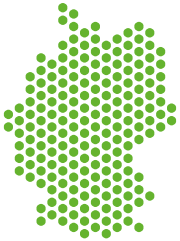


Mass brought into circulation

19,403 t

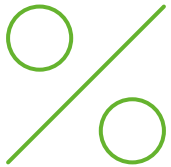
Mass collected

10,153 t



Active collection points

13,406



Collection rate

50.9%

Recycling quota

92.7%

# Our foundation

With the establishment of the Stiftung Gemeinsames Rücknahmesystem Batterien in 1998, leading battery manufacturers and the German Electrical and Electronic Manufacturers' Association (ZVEI) laid the foundation for safe collection and recycling of batteries nationwide.

With a constant focus on safety and quality, GRS Batterien has since made a significant contribution to the development of battery collection and recycling procedures and has set standards throughout Europe.

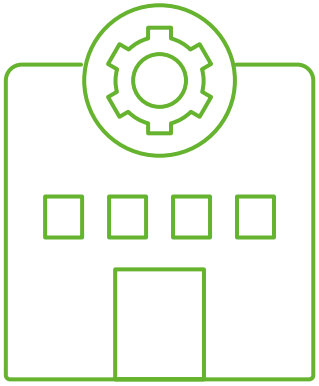
By late 2019, Stiftung GRS Batterien, designated by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety as the "Joint Take-back Scheme for Batteries" (in accordance with Section 6 BattG) has ensured the basic disposal of batteries throughout Germany.

Since 6th January 2020, the Foundation has been acting as a collection scheme provider on behalf of battery manufacturers (pursuant to Section 7 BattG). As such, we additionally fulfil the Foundation's purpose as a non-profit company and fully meet the product responsibility of our customers. On their behalf, we take over legally prescribed product responsibilities, from registration to take-back and recycling of waste batteries.

# Our customers

We take over the activities set out in line with the German Battery Act (BattG) for more than 4,400 manufacturers and distributors of portable batteries as found in household, garden, telecommunication and similar devices.

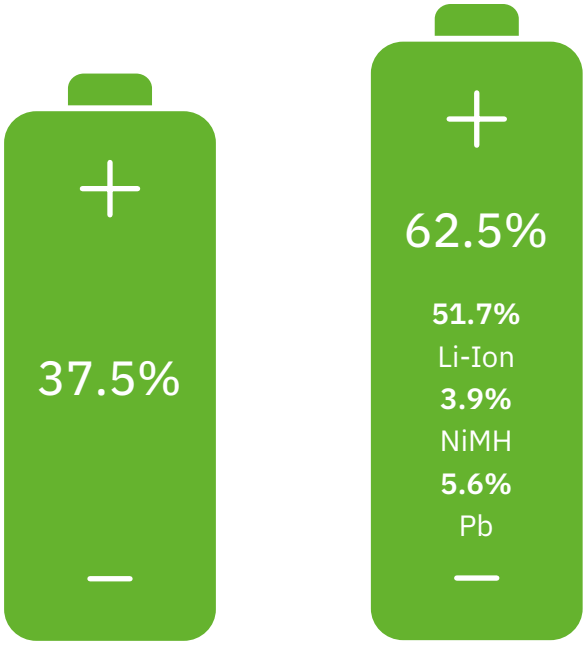
They all rely on our decades of experience and our industry-leading safety standard, which includes solutions for the transport of defective and transport-hazardous lithium batteries. Our activities include registration and reporting duties with public authorities as well as taking back portable batteries nationwide. After sorting, the waste batteries are recycled in proper recycling processes, and valuable secondary raw materials are reclaimed.



**4,400 +**

**Manufacturers**

**Quantity and percentage of battery categories placed on the market**




**Primary batteries**
7,275 t

**Secondary batteries**
12,128 t

**19,403 t**

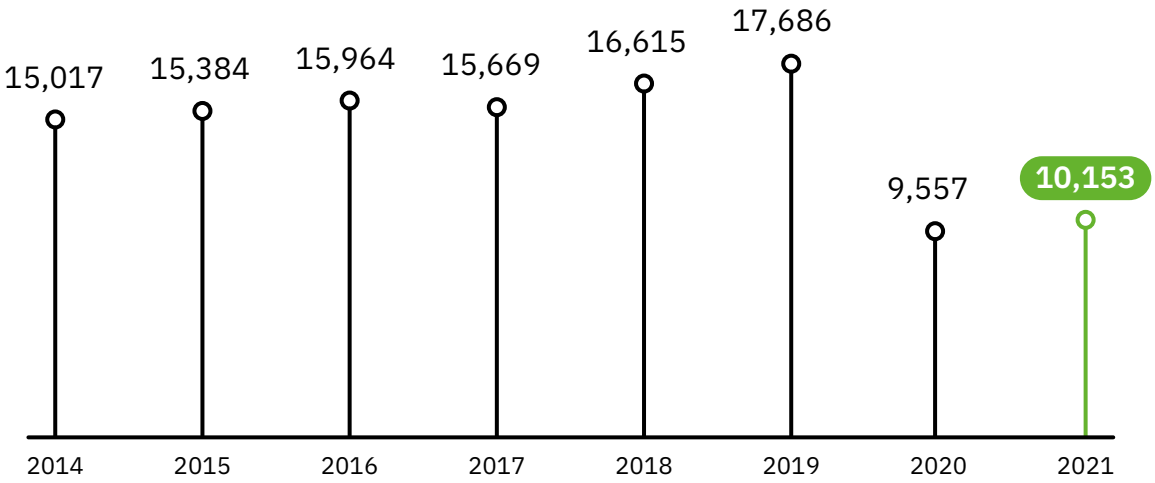
**Mass placed on the market**

# Our collection results

The collection targets set out in the 'BattG' were raised from 35% in 2012 to 45% in 2016. The collection goal of 50% to be met for the first time in the 2021 reporting year can be seen as an intermediate step towards the future European-wide planned collection rate of 65%.

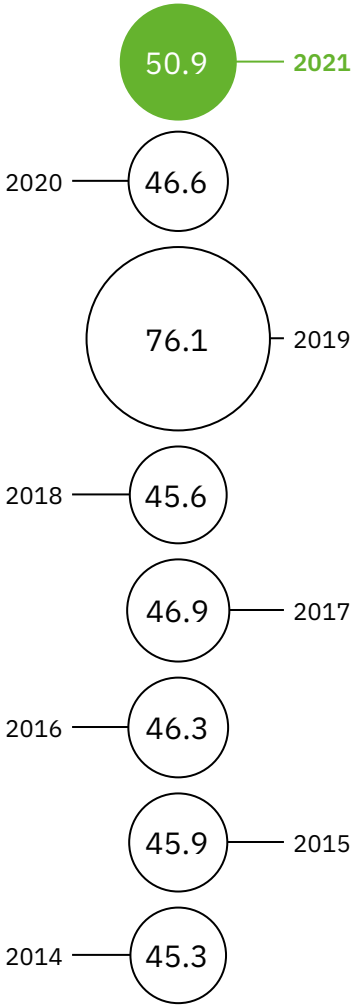
After 9,557 t were collected in the previous year, we were able to increase the take-back mass to 10,153 t in 2021. GRS Batterien has surpassed the statutory collection rate in the past without exception and was able to hit a record result of 76.1% in 2019. In 2021, we once again exceeded legal requirements and achieved a collection rate of 50.9%.

**Collection quantities 2014–2021 (in tonnes)**




**Amount collected* 2014–2021 as a percentage**

Statutory collection rate in 2021: 50%




* *Calculation method for the years 2014-2018 according to UBA-FAQ. Calculation method for 2019 according to UBA guidelines (BAnz AT B8 dated 22.12.2017).

# Our collection network

Batteries are collected via our nationwide network from thousands of trade-related, municipal and commercial end user collection points. In addition, voluntary collection points are involved in the take-back scheme of portable waste batteries. On behalf of our customers, the GRS users, we supply the collection points with collection and transport containers and also ensure the safe collection of transport-hazardous batteries. To this end, we provide detailed information and packaging instructions.

**Percentage of batteries taken back according to origin**

50.3% Trade

10.7% Commercial

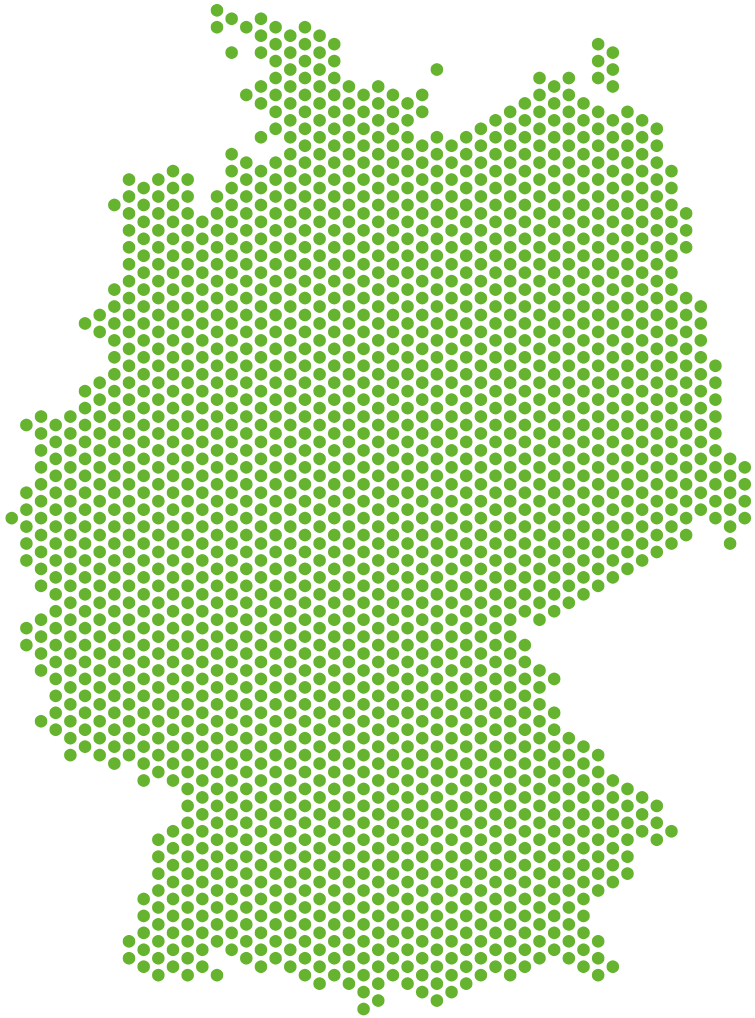
39.0% Municipalities

**Tonnes**
**Total**

10,153

13,406

**Active collection points**



# Our communication

Besides ongoing optimisation of our own communication, all approved portable battery take-back schemes have implemented, upon the initiative of Stiftung GRS Batterien 18 BattG as part of a concerted action. This is now taking shape. The platform that emerged from the G2 project https://batterierucknahmesysteme.de is a significant tool for consumer communication in this respect. Stakeholders involved — including public waste management authorities, consumer advice centres, educational institutions, and distributors — can download appropriate communication material/content via the download portal, adapt it according to their requirements and use it freely.

The safety of all those involved with transporting waste batteries is a matter very close to our heart. For this reason, as well as to meet the high demand at our collection points for quality training on the topic of “proper return of lithium batteries”, we offer our GRS training course in line with 1.3 ADR for all those involved with the carriage of dangerous goods. Persons involved include the vendor’s clients, vendors, packagers, loading agents, carriers, vehicle drivers, unloading staff as well as recipients.

Regardless of the above, we feel that it is necessary to provide consumers with more information on how to correctly handle lithium batteries due to their hazardous sources of energy.

Stiftung
GRS Batterien

Annual Review 2021

# Annex

# Mass and quantity of batteries brought into circulation

| Quantity for 2021 | | '000 pieces | % |
|---|---|---|---|
| **Primary batteries** | | | |
| Round cells | AlMn/NiZn | 262,707 | 33.5 |
| | Li | 15,982 | 2.0 |
| | Zn-Luft | 17 | < 0.1 |
| | ZnC | 45,795 | 5.8 |
| Button cells | AgO | 22,676 | 2.9 |
| | AlMn | 76,943 | 9.8 |
| | Li | 123,192 | 15.7 |
| | Zn-Luft | 109,415 | 13.9 |
| **Subtotal I** | | **656,726** | **83.7** |
| **Secondary batteries** | | | |
| Round cells | AlMn | 7,464 | 1.0 |
| | Li-Ion | 71,061 | 9.1 |
| | NiCd | 487 | 0.1 |
| | NiMH | 32,867 | 4.2 |
| | Pb | 528 | 0.1 |
| Button cells | Li-Ion | 12,965 | 1.7 |
| | NiCd | 4 | < 0.1 |
| | NiMH | 2,474 | 0.3 |
| **Subtotal II** | | **127,851** | **16.3** |
| **Total** | | **784,576** | **100.0** |

| Mass in 2021 | | Tonnes | % |
|---|---|---|---|
| **Primary batteries** | | | |
| Round cells | AlMn/NiZn | 5,346 | 27.6 |
| | Li | 363 | 1.9 |
| | Zn-Luft | 3 | < 0.1 |
| | ZnC | 859 | 4.4 |
| Button cells | AgO | 54 | 0.3 |
| | AlMn | 136 | 0.7 |
| | Li | 432 | 2.2 |
| | Zn-Luft | 82 | 0.4 |
| **Subtotal I** | | **7,275** | **37.5** |
| **Secondary batteries** | | | |
| Round cells | AlMn | 143 | 0.7 |
| | Li-Ion | 10,008 | 51.6 |
| | NiCd | 98 | 0.5 |
| | NiMH | 759 | 3.9 |
| | Pb | 1,091 | 5.6 |
| Button cells | Li-Ion | 20 | 0.1 |
| | NiCd | 0 | 0.0 |
| | NiMH | 8 | < 0.1 |
| **Subtotal II** | | **12,128** | **62.5** |
| **Total** | | **19,403** | **100.0** |

**BattG** Act governing placement on the market, collection and environmentally compatible disposal of conventional and rechargeable batteries
**Primary batteries** non-rechargeable batteries **Secondary batteries** rechargeable batteries **AgO** Silver oxide **AlMn** Alkaline manganese **Cd** Cadmium **Li** Lithium **Li-Ion** Lithium-Ion
**NiCd** Nickel-cadmium **NiMH** Nickel-metal hydride **NiZn** Nickel-zinc **Pb** Lead **Zn-Luft** Zinc-air **ZnC** Zinc-carbon

# Mass of batteries taken back according to category and scheme

| Category/typ | | Mass taken back (own scheme) | Mass purchased from other take-back schemes | Mass sold to other take-back schemes | **Result** (Basis for calculating the collection rate) |
|---|---|---|---|---|---|
| **Primary batteries** | | | Tonnes | | |
| Round cells | ZnC | 275.2 | | 10.7 | 264.5 |
| | AlMn/NiZn[1] | 8,047.7 | | 323.3 | 7,724.4 |
| | Zn-Luft | | | 0.0 | |
| | Li | 138.6 | | 5.4 | 133.3 |
| Button cells[2] | AgO<br>AlMn<br>Zn-Luft<br>Li | 132.2 | | 5.1 | 127.1 |
| **Subtotal I** | | **8,593.8** | | **344.5** | **8,249.3** |
| **Secondary batteries** | | | | | |
| Round cells | AlMn | | | | |
| | Li-Ion | 897.2 | | 34.9 | 862.4 |
| | NiMH | 285.1 | | 11.1 | 274.0 |
| | NiCd | 518.2 | | 20.1 | 498.0 |
| | Pb | 269.6 | | | 269.6 |
| Button cells | Li-Ion<br>NiMH<br>NiCd | | | | |
| Others | | | | | |
| **Subtotal II** | | **1,970.1** | | **66.1** | **1,904.0** |
| **Total** | | **10,563.9** | | **410.6** | **10,153.2** |

The take-back mass of 10,153.2 t amounts to a collection rate of 50.9%.

[1] Composition based on the sorting results.
[2] Where sorting was not possible, these results include both primary and secondary batteries.

**BattG** Act governing placement on the market, collection and environmentally compatible disposal of conventional and rechargeable batteries
**Primary batteries** non-rechargeable batteries **Secondary batteries** rechargeable batteries
**AgO** Silver oxide **AlMn** Alkaline manganese **Cd** Cadmium **Li** Lithium **Li-Ion** Lithium-Ion **NiCd** Nickel-cadmium **NiMH** Nickel-metal hydride **NiZn** Nickel-zinc **Pb** Lead **Zn-Luft** Zinc-air **ZnC** Zinc-carbon

# Mass of recycled batteries: qualitative and quantitative analysis of recycled and disposal results

| Category/typ | | Mass of recycled waste batteries | Mass of disposed waste batteries | Mass of waste batteries sent to recycling depots outside of Germany |
|---|---|---|---|---|
| **Primary batteries** | | | Tonnes | |
| Round cells | ZnC/AlMn/NiZn[1]<br>Zn-Luft | 7,848.5 | | 1,218.2 |
| | Li | 144.5 | | |
| Button cells[1] | AgO<br>AlMn<br>Zn-Luft<br>Li | 118.1 | | |
| **Subtotal I** | | **8,111.1** | | **1,218.2** |
| **Secondary batteries** | | | | |
| Round cells | AlMn | | | |
| | Li-Ion | 850.2 | | 171.5 |
| | NiMH | 59.3 | | 59.3 |
| | NiCd | 507.5 | | 249.8 |
| | Pb | 238.4 | | |
| Button cells[1] | Li-Ion<br>NiMH<br>NiCd | | | |
| **Subtotal II** | | **1,655.5** | | **480.6** |
| unidentifiable | | 28.60 | | |
| **Total** | | **9,795.2** | | **1,698.8** |

[1] Where sorting was not possible, these results include both primary and secondary batteries.

| Typ | Input mass (t) | Output mass (t) | Recycling efficiency (%) |
|---|---|---|---|
| Pb | 238.4 | 189.7 | 79.56 |
| NiCd | 507.5 | 419.4 | 82.64 |
| „Other“ | 9,049.2 | 6.387.2 | 70.58 |
| **Total** | **9,795.2** | **6.996.3** | |

Taking into account the annual storage figures carried forward, the ratio recycled pursuant to § 15 (1) No. 5 BattG amounts to 92.7%.

**BattG** Act governing placement on the market, collection and environmentally compatible disposal of conventional and rechargeable batteries
**Primary batteries** non-rechargeable batteries **Secondary batteries** rechargeable batteries
**AgO** Silver oxide **AlMn** Alkaline manganese **Cd** Cadmium **Li** Lithium **Li-Ion** Lithium-Ion **NiCd** Nickel-cadmium **NiMH** Nickel-metal hydride **NiZn** Nickel-zinc **Pb** Lead **Zn-Luft** Zinc-air **ZnC** Zinc-carbon

Stiftung
GRS Batterien

www.grs-batterien.de

Stiftung GRS Batterien
Heidenkampsweg 44
20097 Hamburg
Phone: +49 40 23 77 88
info@grs-batterien.de