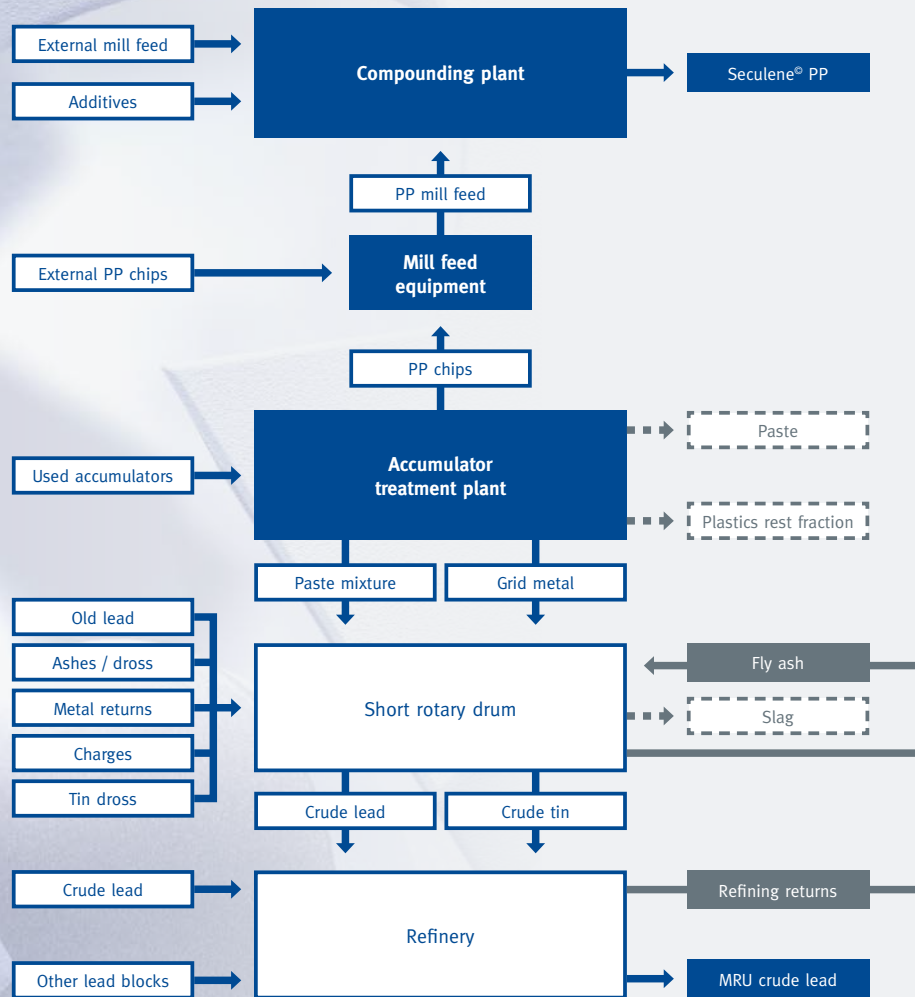


SECONDARY LEAD SMELTER WITH COMPOUNDING PLANT



PROFILE



TECHNOLOGY FOR TOMORROWS' MARKETS

Besides being one of Germany's most advanced secondary lead smelter, the BSB Recycling GmbH (BSB), Braubach, also leads the market in the production of high-grade polypropylene compounds (PP compounds) made from secondary materials. The smelter, established in the 17th century, was converted to a secondary lead smelter in 1977 and then completely modernised between 1984 and 1993. The Engitec technology being used ever since for the pre-treatment of accumulator scrap, has been acknowledged by both the EU in its BREF documents and the American Environment protection agency, EPA, as representing the best technology available.

In 1990, the PP compounding plant was taken into operation.

At BSB 90 employees, process used lead accumulators, wastes containing lead and tin as well as secondary raw materials like scrap lead and lead containing residues to lead and lead alloys. Polypropylene, separated during the pre-treatment process and upgraded to high-quality PP compounds bearing the brand name Seculene®, is much in demand by the international automotive industry for manufacturing plastic claddings for external use in their new car series.

With an annual production of 40,000 tonnes lead and lead-tin alloys as well as 42,000 tonnes of the PP Seculene®, BSB Recycling GmbH contributes significantly to a closed-circuit material recycling.

TECHNOLOGY

PRE-TREATMENT

About 70,000 tonnes used accumulators are delivered annually to the covered, acid leak proof storehouse of BSB Recycling GmbH. The pre-treatment consists in separating them into unadulterated fractions consisting of lead grids, polypropylene housings, plastic separators (made of polypropylene and other plastics) as well as sulphuric acid.

Before crushing, the sulphuric acid of the accumulator scrap is drained off and collected in special tanks. A hammer crusher then breaks the old accumulators into pieces of about 10 cm in size. Lead paste is washed out and separated from the coarse battery pieces in sieve drums and delivered to the Stolberg sister company BERZELIUS Stolberg for further treatment. A heavy-media separation separates the remaining battery components into metallic and plastic fractions consisting of polypropylene and other plastics.



The polypropylene undergoes an intensive, multiple-stage cleaning process before being ground with other PP raw material from secondary sources and mixed with additives and finally extruded to polypropylene compounds with the brand name Seculene®.

TECHNOLOGY



SMELTING

Lead grids and poles, old lead and residues containing lead and tin, e.g. ashes, dross or sludge are melted at ca. 1,200 °C in three encapsulated short rotating drum furnaces. Lead bullion or crude tin and slags arise.

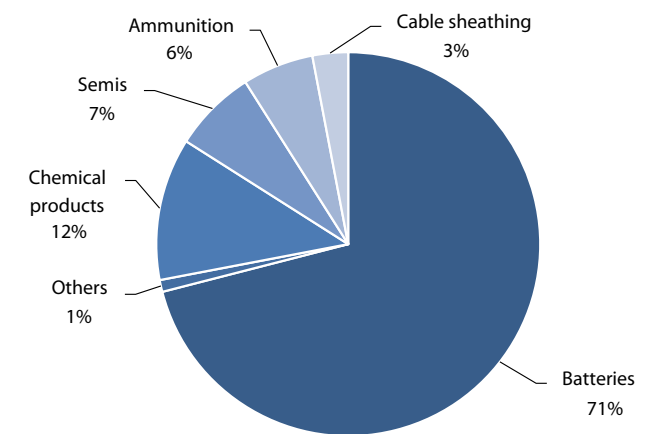
The molten mixture of lead, tin and slag at around 800° C, is poured in a number of consecutive tapping steps into moulds. The raw metal is cast to large blocks with a lead content of ca. 96 per cent, depending on the charging material used. This is then subjected to a refining process. Crude tin contains about 50 per cent lead.



REFINING

Lead bullion or crude tin is refined in 9 kettles with a capacity of up to 120 tonnes each where metallic impurities are removed from the raw lead or tin. Controlled amounts of arsenic, antimony, tin, copper, selenium, calcium, aluminium or silver are added to deliver alloys according to customer's specifications. The refined lead thus won, is cast to bars weighing anywhere between 30 to 50 kg and the lead-tin alloys to bars of 25 kg.

Usage of lead in Europe



PRODUCTS & FIELDS OF APPLICATION

PRODUCTS AS SPECIFIED

Lead produced at BSB Recycling GmbH with a lead content of 99.97 % according to DIN EN 12659 and alloys according to customer's specifications, is listed at the stock exchange under the brand name "BSB". As required, 3 tonnes rolling slabs or large blocks can be delivered. Each block is stamped with a lot number and lead brand as well as a specific customer product description.

The custom-built polypropylene compounds of type Seculene®, made using secondary raw materials as starting material, are in no way inferior to equivalent propylene products manufactured from primary raw materials, thus offering an interesting material alternative for numerous applications. These are delivered in "BigBags" and "Oktabins" of 1,100 kg each, or are 25 tonnes silo fillings.

The average annual output is:

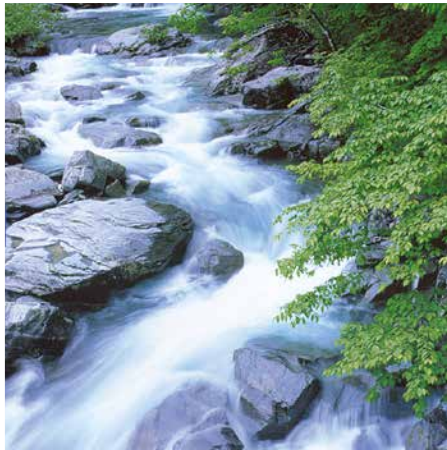
- 30,000 tonnes lead (blocks, rolling slabs)
- 10,000 tonnes lead bullion
- 1,000 tonnes tin alloys
- 42,000 tonnes Seculene® PP



BSB lead and lead alloys are used for starter batteries in the automotive industry as well as for accumulators for other industrial applications and for power generation (for example in solar plants). Further uses of this versatile Braubach material include: sheathing material for the cable industry, sealants in the building industry, in the chemical industry, in rolling mills and in semis manufacturing of sheets, foils or lead building blocks (for radiation shields).

Leading sub-contractors for the automotive industry have been using Seculene® on a large scale for fabricating plastic coverings for external use in well-known car brands.

TECHNOLOGY & ENVIRONMENT



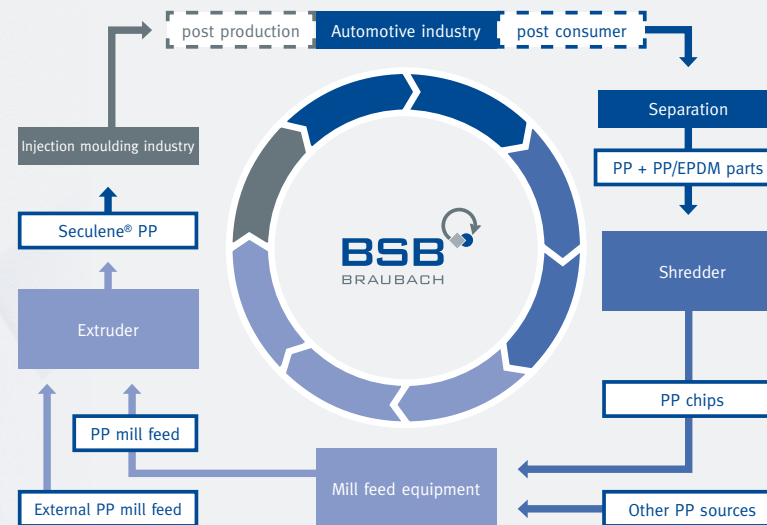
RESPONSIBILITY, LASTING AND EFFECTIVE

The state-of-the-art recycling process of BSB guarantees efficient and environment-friendly closed-circuit material recycling. The complete encapsulation of the installations together with the use of efficient filters in the dust removal system and flue gas cleaning ensures that dust and lead emissions are constantly kept below the official threshold values of the "TA Luft" (technical guidelines for clean air). The lead smelter invests an average of 3 million Euros annually for environment protection measures.

A target-oriented material management system coupled with the consequent avoidance of wastes as well as the re-utilisation of other products, like sludge and dusts produced during the processes, ensures complete and uninterrupted recycling. Furthermore, the extensive recycling of process water and comprehensive treatment of effluents serve as added proof of the deployment of contemporary resource utilisation techniques.

Trained employees supervise and control the production around the clock. The certification as a company with integrated management systems for quality, energy efficiency as well as occupational and environmental safety, underlines the central significance of continuing optimization.

Recovery of raw material



CUSTOMER BENEFIT

INNOVATION STRENGTH AND FLEXIBILITY

Modern installation technologies, expertise based on long experience in the operation of various re-utilisation processes as well as comprehensive consultations, catapult BSB Recycling GmbH to the rank of a much sought after recycling specialist for materials containing lead and tin. The selective refinement of partial emissions of the recycling process and the production of accurately specified lead and tin alloys and polypropylene qualities, advance BSB to a future-oriented company for managing complex material cycles.

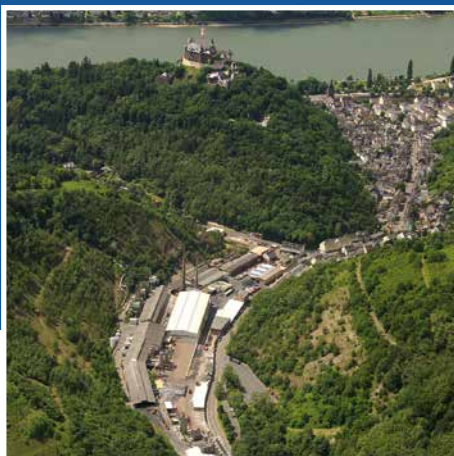
Innovative products and flexible services that the Braubach company offers are the best security for both site and jobs, now and in future. Constant training and consequent further education qualify employees to face future challenges with confidence. As partner for the whole value chain, BSB Recycling GmbH offers best possible product quality, on-schedule deliveries, customer orientation and sustainable business development. An integral goal-oriented management strategy based on key operating figures guarantees a partnership based on mutual trust and planning security.



CERTIFICATION

- DIN EN ISO 14001
- ISO EN ISO 50001
- ISO 18001
- Specialists for disposal





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