Incinerator bottom ash

Secondary aggregates
in brand quality

granova.de

GRANOVA®

On solid grounds

GRANOVA is a mineral aggregate produced from the bottom ash of municipal solid waste incineration. Municipal waste that cannot be recycled is thermally utilised in waste incineration plants. In the course of this process, energy is recovered and the waste is reduced to a quarter of the original amount. We use the remaining incinerator bottom ash (IBA) as a resource to produce secondary aggregates for use in a variety of applications in the construction industry.

Our group of companies is a world leader in the production of secondary aggregates from incinerator bottom ash

Numerous fields of application

Whether in road construction, classic earthworks or landfill construction: secondary aggregates such as GRANOVA can be used in a many ways. The relevant construction regulations and environmental legislation are decisive for use in these applications. Consequently, it is essential that local requirements for safe use are fulfilled. This enables both primary and secondary materials to be optimally used in construction projects – with corresponding benefits for the environment.

Production at a glance

In order to reuse the incinerator bottom ash from Waste-to-Energy plants, it first has to be processed in dedicated recycling plants. The process essentially consists of classifying the mineral fraction and separating the ferrous and non-ferrous metals as well as organic foreign components. After an appropriate storage period, during which important mineral transformation processes take place, incinerator bottom ash meets the requirements for use as a secondary aggregate.

granova.de

On our website you can learn more about incinerator bottom ash – from the origin of the material to production and possibilities for recovery.

Using the latest recycling technologies

In our plants, the bottom ash is processed using a modular technology approach. This is where our decades of expertise make the difference. We apply our knowledge from the continuous monitoring of treatment results and processing efficiency to develop and implement new recycling technologies adapted specifically to the material. Our unique selling points include the introduction of TRIPLE M 3D screening technology and HMT hydromechanical processing. We also use MERIT® technology, which increases metal recovery in the fine-grain range, resulting in a further increase in the quality of the recovered resources.

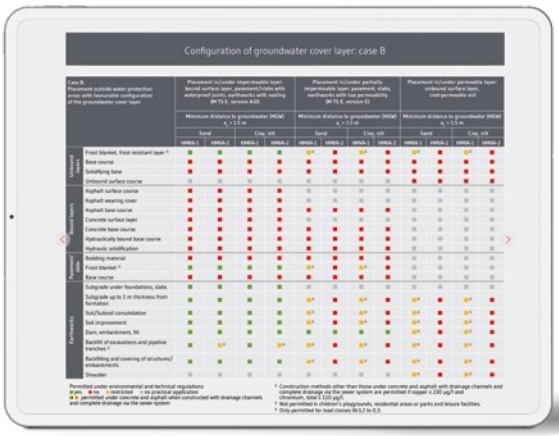
Certified quality

Secondary aggregates such as GRANOVA are subject to a quality control system. Physical and chemical parameters are regularly tested as part of mandatory internal and external monitoring. The frequency, type and scope of the tests are officially regulated, test certificates serve as proof that the material properties required for the respective application are met.

Regulatory framework at a glance

Like all aggregates, secondary construction materials must also meet the technical requirements for use in construction. In addition, a comprehensive set of environmental regulations must be observed. The permissible areas of application are influenced by factors such as the location of the construction site in relation to the groundwater, water protection area status or type of construction.

In the application of secondary aggregates, both environmental and structural requirements must be considered



applications.granova.de

The traffic light system that we developed serves to illustrate the possible uses of IBA. The data is available online.

Convincing references

Our references demonstrate the range of possible applications for GRANOVA aggregates. Each measure has a unique nature – because each project has its own challenges. All measures have one thing in common: the use of incinerator bottom ash improves both economic efficiency and sustainability.

Road construction

Landfill construction

Embankments

Concrete

Best practice examples
On our website, we showcase the potential of IBA in each segment, from the construction of a motorway and the erection of a noise barrier to the use of bottom ash as a substitute construction material in the expansion of the Kapiteltal landfill site. This is amended by information on how our Dutch subsidiary HEROS Sluiskil B. V. makes use of GRANOVA aggregates in the production of concrete and asphalt.

Find out more about these and other projects on **references.granova.de**

Sustainable advantages for climate protection

Climate credit of **0.2 t** CO_2 equivalent per tonne of municipal solid waste incinerator bottom ash

As with all secondary construction materials, the reuse of municipal waste incineration bottom ash also contributes to protecting landscape and reducing the burden on landfills. In addition, metal recovery during the processing of waste incineration ash has proven to be especially valuable with regard to climate protection.

Recycled metals = improved climate balance
During the processing of bottom ash, valuable metals are separated from the ash. These recycled metals have a significantly improved climate balance compared to metals produced with primary materials. Looking at the recovery rate of metals from ash, an actual climate benefit can be calculated. In Germany, for example, the recovery of iron from ash averages about 7.7 % by mass, and that of non-ferrous metals about 1.3% by mass. In our experience, the non-ferrous metals amount to 0.7 mass-% aluminium and 0.3 mass-% copper. A further 0.3 mass-% of mixed non-ferrous metals are omitted from the calculation of the climate benefit using a conservative approach.

Calculation of the climate benefit
Multiplying the recovery rate of the metals from one tonne of bottom ash by the respective CO_2 savings of the individual metal type determines the amount of climate credit. It amounts to approximately 0.2 tonnes of CO_2 equivalent per tonne of processed municipal solid waste incinerator bottom ash.

MOST IMPORTANT RECYCLED METALS FROM BOTTOM ASH	IRON	COPPER	ALUMINIUM
CO_2 savings from recycled metals in metal production	1.75 t CO_2-eq./t	4.76 t CO_2-eq./t	12.58 t CO_2-eq./t
Average metal recovery from 1 tonne of bottom ash	0.077 t	0.003 t	0.007 t
Climate benefit of recycled metals from 1 tonne of bottom ash	0.135 t	0.014 t	0.088 t

Sources: see > **sustainability.remex.de**

GRANOVA®

The REMEX Group combines special construction material solutions and service concepts for the waste management industry, construction sector and industrial production under the name REMEX Solutions. The portfolio includes secondary aggregates GRANOVA and REMEXIT as well as the services PP-LANDFILL for cooperation in landfill projects and TS-RECOVERY for the management of road demolition waste containing tar.

REMEX GmbH
Am Fallhammer 1 // 40221 Düsseldorf
Germany // T +49 211 17160-0
granova.de // remex-solutions.de

@remex.gruppe

REMEX-Gruppe