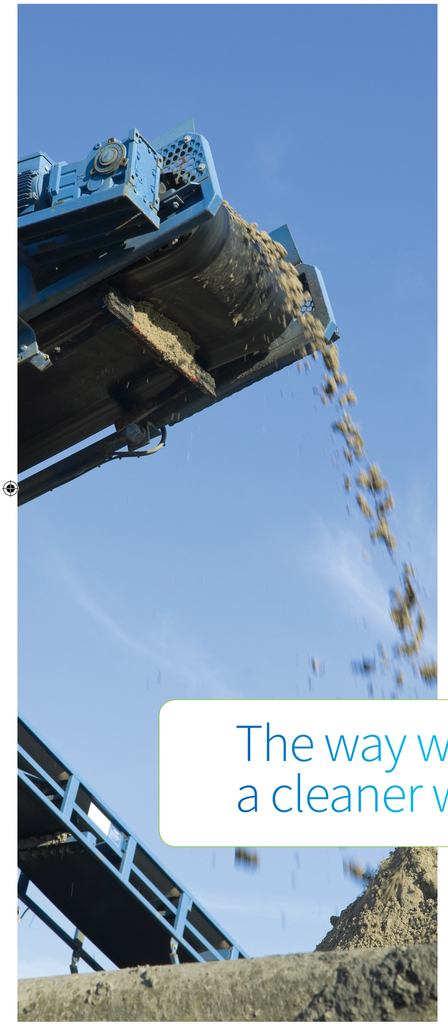

About Mineralz

Mineralz is active in the remediation of contaminated soil and recycling mineral residual streams into secondary raw materials. Over the last thirty years, with 10 locations in the Netherlands and Belgium, we have grown into a leading company in the remediation and immobilisation of contaminated soil and mineral residual streams, in which we strive for optimum re-use. We therefore make new raw materials out of mineral waste products which we market under our brand name FORZ®.

We immobilise any waste for which no sustainable treatment exists yet, so that it can then be disposed of in our landfills in an environmentally-responsible manner. We therefore have a sustainable solution for every waste issue.

Over the past few years we have expanded our activities. So, in 2016 we opened the FORZ®Factory, the first factory to convert bottom ash from waste-to-energy plants into sustainable, clean and safe raw materials.

Knowledge-driven and innovative

We are a company that uses its knowledge of remediation and immobilisation techniques in an innovative manner to produce secondary raw materials. A developer/supplier of future-proof secondary raw materials that have a practical use, and which are created through our own innovation in conjunction with chain partners such as universities, knowledge institutes and customers. So, we know what is important from a technical, legal and political perspective. We link this knowledge to market demand.

The way we make
a cleaner world

- √ **Innovative soil remediation**
- √ **Responsible treatment of hazardous waste**
- √ **FORZ®: high quality raw materials from waste**
- √ **Immobilisation of leachable waste**

Mineralz Head Office
Van Hilststraat 7,
5145 RK Waalwijk
info@mineralz.com

Moerdijk Office
Middenweg 15
4782 PM, Moerdijk
Tel: +31 (0)168 - 327220

Maasvlakte Office
Loswalweg 50
3199 LG Maasvlakte-Rotterdam
Phone: +31 (0)181 - 363 099

Zevenaar Office
Doesburgseweg 16 d
6902 PN Zevenaar
Tel: +31 (0)316 - 342040

Veendam Office
Adriaan Tripweg 11
9641 KN Veendam
Tel: +31 (0)598 – 690022

Belgium Office Mineralz ES Treatment NV
Rue Landuyt 140
B 1440 Braine-le-Château
Tel: +32 23 67 23 00

For more information, on the full product specifications and potential applications contact Mineralz or go to: **www.mineralz.com**

Mineralz
Part of Renewi

Mineralz
Part of Renewi

Waste no more

Circular innovatorZ

1988-2000 Arcadis Heidemij Realisatie Grondreiniging
Parallel: - together VBM

26-10-1988
VBM opened by Ed Nijpels

1991
Moerdijk opening

1994
Zevenaar opening

1997
Veendam opening

2000-2002
AVR Milieutechniek

2002-2012 A&G Bedrijven

2012-2017
Van Gansewinkel Minerals

2017-...
Mineralz

88 **1988-1990**
Mono landfill site, twice filled with sanitation material from the Hollandse IJssel.

89

90

91 **1991** MRP I from 1985, developed for the first remediation, Gaslaan, goes into the factory in Moerdijk

92 **1992**
Construction of MRP II

93

94 **1992-1994** Production disposes of covering material from drinking-water sludge and auto shredder in landfill

95 **1995-1998** Development of immobilisation technology for treatment:
- Acid tar
- Flue-gas cleaning residue
- Contaminated soil

96

97 **1997** Achievement of membrane bioreactor treatment for leachate from landfills

98 **1998** Development of Cum-Bac® biological soil remediation technique

99 **1999** Immo opens | Development of modified foundation layer under immobilised waste material; able to reduce the leaching process through diffusion.

00 **2000**
Start to immobilise WtE plants' fly-ash;
policy adjustment with ECN and VROM, limit on immobilised hazardous waste.

01

02 **2002** MRP II sold to Shimizu Japan

03 **2003** New Moerdijk plant commissioned

04 **2004** With ENCI and BAG realisation of BRL9322; cement-bonded foundation on a contaminated soil base

05 **2005** First Project foundation with bottom ash on the Slufter
Zevenaar acquisition by Van Gansewinkel from AVR

06

07 **2007** MRP III opening Zweekhorst
The reshaping of landfill site slopes using technology, quality and stability of landfills is improved and guaranteed to increase storage capacity and efficiency

08

09 **2009** Development of receptacles for waste products with an extremely high salt content within reviewed framework of the landfill decree

10 **2010-2018** Development of a recipe for treating calcine from Thermphos, with treatment in 2018

11 **2010** Patent for asbestos screener
2011 Start reprocessing bottom ash at Zevenaar

12 **2012** Start of Green Deal; sustainable useful application for bottom ash from WtE plants
Launch of Immo 4

13

14 **2014** Start developing solar capping for landfills; in 2017 with TKI subsidy advice from AKS
Development of nocrete recipe; immobilisation of hazardous waste without cement or binding agent

15 **2015** Development of alternative reprocessing concept for the treatment of mercury-containing or radioactive sludges

16 **2016** FORZ®Factory opening

17

18 **2018** Reprocessing ash from Biomass to Energy (BtE) Plants into unmoulded building materials
Pilot test for asbestos remediation using fungi
Mineralz employee completes 5-year doctoral research at Technical University Eindhoven

19

20

21

22

Mineralz
Part of Renewi

Cleaning

Mineralz has played a leading role in the soil remediation market for over 30 years. From different locations in the Netherlands, we offer total solutions for remediating all sorts of contaminated soil and mineral waste.

Techniques

In accordance with the BRL7500 we can remediate the contaminated soil using extraction or biological treatment methods. Extractive soil remediation, also known as soil washing is most suited to remediating diverse (combinations of) contamination in primarily (sandy) soil and sludge. Afterwards, the remediated soil can be used as (filler) sand in the civil engineering sector. Biological soil remediation is most suited to the removal of particularly volatile contaminants. The remediated soil can be re-used for a range of purposes.

Asbestos

We remove asbestos from soil and rubble using a patented screening plant.

Soilbank

We are certified in accordance with the BRL9335 which is why our treatment facilities can also function as soilbanks.

The combination of our cleaning techniques and the soilbank function makes us an attractive partner for the soil market.

Landfill

In a society in which sustainability is key, no company wants to dump waste. But, for a number of (hazardous) waste products there are no sustainable treatment methods yet. Landfilling cannot be avoided.

Immobilisation

We offer a solution for highly leachable hazardous waste, the leaching of heavy metals and salts, using immobilisation. This technique makes it environmentally responsible to landfill (hazardous) waste. We developed our immobilisation technique in-house.

Reprocessing bottom ash

Through increasing and improved waste separation Dutch municipalities are constantly finding better ways to reuse waste. Residual waste is treated in a waste-to-energy plant, which produces heat and energy from this waste. The residue left over is bottom ash. We reprocess these bottom ashes in two separation lines.

Dry separation line

In this phase all of the heavy ferrous and non-ferrous metals are removed and we fractionate the remaining mineral.

Wet separation line

This phase further removes a range of contaminants so that the material is suitable for a range of applications.

FORZ®

FORZ® is the brand name under which we produce raw materials that are future-proof and guaranteed sustainable. FORZ® is our product line, which buyers can use to make their contribution to the circular economy and improve their carbon footprint. FORZ® satisfies all of the quality standards and legal directives. Furthermore, these sustainable raw materials represent a substantial cost-saving as replacements for increasingly scarce primary raw materials.

FORZ® fits in with the Green Deal "Sustainable useful application of bottom ash from Waste-To-Energy plants". With this Green Deal the government is encouraging the use of bottom ash as a construction material. Increasing numbers of clients are more or less demanding the use of secondary construction materials.

Potential uses

FORZ® Construction aggregate is an alternative for primary sand and gravel. We supply a construction aggregate to the concrete products industry with KOMO certification in line with the BRL2507.

FORZ®Glaze is used for the production of enamel in the ceramics industry and can be used in both fine and rough ceramic products. The recipe for the pigments to be added can be adapted to achieve exactly the right colour and glaze.

FORZ®Foundation is produced in accordance with the BRL9322, it is used for foundations in civil engineering projects and is particularly suitable for use as a foundation under heavily loaded floors. The recipe is adapted according to its application. FORZ®Foundation is a fairly versatile construction material and therefore makes an excellent substitute for primary raw materials.

FORZ®Base is also produced in accordance with the BRL9322 and is used as a construction-backfill material for example for abutments on viaducts. The recipe is adapted according to its application. FORZ®Base is a fairly versatile construction material and therefore makes an excellent substitute for primary raw materials.

FORZ®Mixed granulate is an alternative for traditional mixed granulate. The structural product characteristics are comparable to those of traditional mixed granulate, the material thickens easily, can be prepared immediately and provides excellent drainage. FORZ®Mixed granulate is fairly versatile as an unbonded foundation and backfill material that meets the requirements of the Dutch Soil Quality Decree [Besluit Bodemkwaliteit] and is available in the gradation 0/12mm.