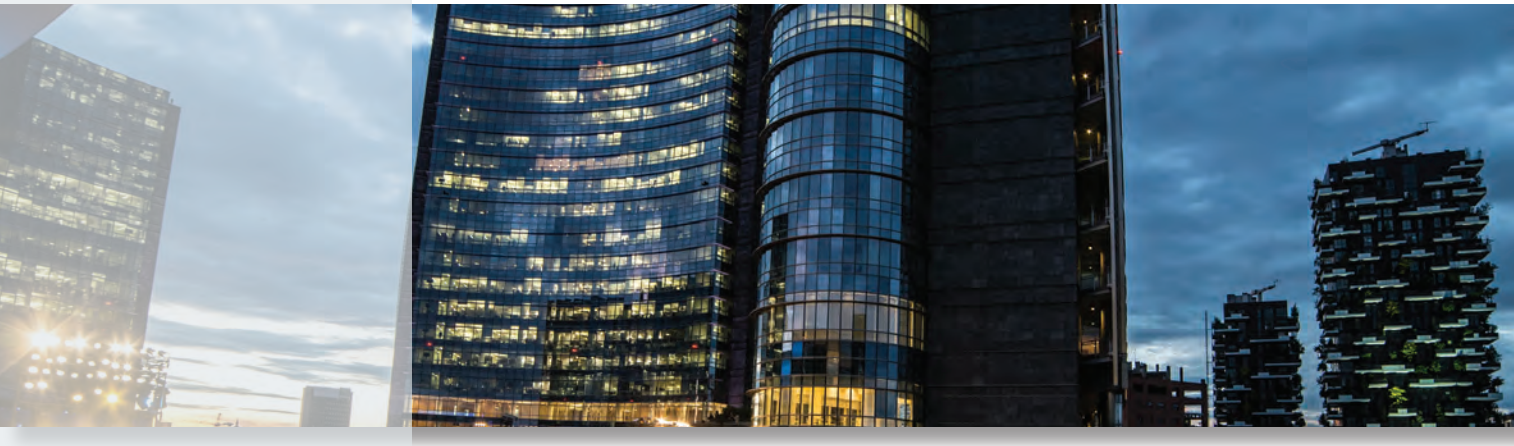

OFFICINA DELL' AMBIENTE

THE GREEN BUILDING AGGREGATES

MATRIX FAMILY

EPD®

CERTIFIED ENVIRONMENTAL PRODUCT DECLARATION

S-P-00427 www.environdec.com

OUR GREEN BUILDING PRODUCTS

CERTIFICATIONS OF PRODUCTION PLANTS AND PRODUCTS

ODA CERTIFICATIONS: THE PLANT

Since 2005, Officina dell'Ambiente's plant has been certified to UNI EN ISO 14001 (certification conducted by prestigious international certification body DET NORSKE VERITAS) for the "treatment and recovery of non hazardous special waste through weighing, unloading, storage and manual and mechanical separation" (certificate dated 01/02/2005).
In 2006, the Lomello site obtained EMAS registration (IT-000555) under EU Regulation 761/2001, now at its third successful three yearly renewal.
As required under the EMAS Regulation, **ODA has prepared the site's Environmental Declaration,** which is also regularly reviewed by DET NORSKE VERITAS.
The new production site of ODA based in Conselice (RA) is adjusting its certification standards to the ones of Lomello.

ODA CERTIFICATIONS: THE PRODUCTS

Since 2008, ODA's Production Control System has been certified first to the requirements of Directive 89/106/EEC and then to the requirements of EU Regulation 305/2011 by recognised building sector certification body ICMQ. In addition, all aggregates marketed by ODA carry the CE marking, indicating compliance with a series of technical standards for the Building industry.

THE EPD® CERTIFICATION

In March 2013, Officina dell'Ambiente obtained from Bureau Veritas, **the validation of its EPD® (Environmental Product Declaration) for its products Sand Matrix and AGMatrix.**
This was the first and only case in Europe of an EPD applied to building aggregates and is now a reference for Green Building. The in-depth study of the product's Life Cycle and the rigorous assessment carried out through the LCA methodology allowed to determine the actual performance of the Matrix products in terms of their environmental aspects, that is of their interaction with the environment.

AGMATRIX

IDENTIFICATION OF THE PRODUCT

Name	AGMatrix
Producer	Officina dell'Ambiente Spa - Lomello Plant (PV)
Type of product	AGMatrix is a secondary raw material used as aggregate in the production of concrete and cement mixtures
Origin	Recovery operations of bottom ashes derived from incineration processes of municipal solid waste
Features	Grey colour, granular material
Granulometry	From 2 to 10 mm
Composition	The material is similar to a natural aggregate, with a predominant siliceous content and moderate lime content. Both quality and quantity of the macro-components are substantially constant

Productive process

AGMatrix is a secondary raw material derived from Matrix Standard , after various treatments such as crushing, comminution , screening, iron and metals removal and a subsequent wet refining which lead to a granular aspect with a particle size between 2 and 10 mm.

Environmental Benefits

AGMatrix is a raw material that limits the work of excavation for the supply of natural materials and avoid the disposal of industrial waste in landfills.

AVERAGE CHEMICAL COMPOSITION	
LOI	< 3 %
SiO_2	40-50 %
Al_2O_3	10-13 %
Fe_2O_3	5-10 %
CaO	14-18 %
MgO	2-3 %
SO_3	< 0,2 %
Cl-	0,03-0,04 %
Alcali	4-5 %

Mineralogical composition and average diffraction (Referred to dry material and expressed as oxides)	
Anorthite	$Ca(Al_2Si_2O_8)$
Ghelenite	$Ca_2Al_2SiO_7$
Quartz	SiO_2
Lime and Calcite	CaO e $CaCO_3$
Ferrous and ferric oxides	FeO e Fe_2O_3

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AG MATRIX

SAND MATRIX

IDENTIFICATION OF THE PRODUCT

Name	Sand Matrix
Producer	Officina dell'Ambiente Spa - Lomello Plant (PV)
Type of product	Sand Matrix is a secondary raw material used in the production of cement clinker, concrete products, cement mixtures, clay masonry units, mortars and bituminous conglomerates
Origin	Recovery operations of bottom ashes derived from incineration processes of municipal solid waste
Features	Grey colour, granular material
Granulometry	Usually marketed in size 0 to 2 mm, 0-4 mm, and 2-4 mm
Composition	The material is similar to natural sand, with a predominant clay base and moderate lime content. Both quality and quantity of the macro-components are substantially constant

Productive process

Sand Matrix is a secondary raw material derived from Matrix Standard after various treatments such as crushing, comminution, screening and iron and metals removal which lead to a sandy aspect with variable sizes 0-2 mm, 0-4 mm, 2-4 mm.

Environmental Benefits

Sand Matrix is a raw material that limits the work of excavation for the supply of natural materials and avoid the disposal of industrial waste in landfills.

AVERAGE CHEMICAL COMPOSITION	
LOI	< 10 %
SiO_2	30-35 %
Al_2O_3	10-13 %
Fe_2O_3	9-13 %
CaO	15-20 %
MgO	2-3 %
SO_3	1,5-2 %
Cl-	0,5-0,6 %
Alcali	3-4 %

Mineralogical composition and average diffraction (Referred to dry material and expressed as oxides)	
Anorthite	$Ca(Al_2Si_2O_8)$
Ghelenite	$Ca_2Al_2SiO_7$
Quartz	SiO_2
Lime and Calcite	CaO e $CaCO_3$
Ferrous and ferric oxides	FeO e $Fe2O_3$
Metallic Aluminium	Al

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SAND MATRIX

MATRIX STANDARD

IDENTIFICATION OF THE PRODUCT

Name	Matrix Standard
Producer	Officina dell'Ambiente Spa - Lomello Plant
Type of product	Matrix Standard is a secondary raw material used in the production of cement clinker
Origin	Recovery operations of bottom ashes derived from incineration processes of municipal solid waste
Features	Grey colour, granular material
Granulometry	From 0 to 12 mm
Composition	The material is similar to a natural aggregate, with a predominant siliceous content and moderate lime content. Both quality and quantity of the macro-components are substantially constant

Productive process

Matrix Standard is a material obtained from a specific treatment of selected inorganic wastes, exclusively derived from incinerator bottom ashes from municipal solid waste. The waste undergoes various treatments such as crushing, comminution, screening and iron and metals removal before reaching the form of granules with a particle size between 0 and 12 mm. At the end of the process, Matrix is put in a storage area for a period of about ninety days where a process of maturation - called litho-stabilization-takes place, improving the technical and environmental characteristic of the material.

Environmental Benefits

Matrix Standard is a raw material that limits the work of excavation for the supply of natural materials and avoid the disposal of industrial waste in landfills.

AVERAGE CHEMICAL COMPOSITION	
LOI	4-6%
SiO_2	35-45 %
Al_2O_3	9-13 %
Fe_2O_3	9-13 %
CaO	15-25 %
MgO	2-3 %
SO_3	0,5-1,5 %
Cl-	0,3-0,6 %
Alcali	4-5 %

Mineralogical composition and average diffraction (Referred to dry material and expressed as oxides)	
Anorthite	$Ca(Al_2Si_2O_8)$
Ghelenite	$Ca_2Al_2SiO_7$
Quartz	SiO_2
Lime and Calcite	CaO e $CaCO_3$
Ferrous and ferric oxides	FeO e Fe_2O_3

OUR RAW MATERIAL: EXCLUSIVELY MSW INCINERATOR BOTTOM ASH

The Matrix Family products, a series of artificial aggregates dedicated to the Green Building Industry, are the first example in Italy of an industrial approach to the recovery and enhancement of **MSW incinerator bottom ash, which constitutes their only raw material.**

The bottom ashes come exclusively from Municipal Solid Waste incinerators implementing controlled processes and environmental management practices.

The Matrix Family products, through an innovative recovery process, are classified as End of Waste, ceases to be classed as waste and can once again be sold on the market as products; they are used in replacement of natural raw materials in the production of several building products.

SELF-LIMITING CODE ON INCOMING INCINERATOR BOTTOM ASH

ODA's production cycle involves a series of SELF LIMITATIONS, with the aim of further increasing the already high - technical standards of the Matrix products:

NO other types of waste are accepted or treated under any circumstances, despite the fact that ODA's authorisation includes other categories of waste; no mixing of any type takes place.

NO bottom ash is accepted under any circumstances from waste-to-energy plants that treat Industrial Special Waste, even when chemical and physical characteristics are in theory compatible;

NO waste is accepted under any circumstances from intermediate storage centres, only bottom ash coming directly from individual MSW incinerators is treated, ensuring the traceability and specificity of all incoming materials.

THE REASONS FOR A CHOICE

The MSW incinerator bottom ashes as the only raw material

TECHNICAL: the chemical composition of the treated bottom ashes is adequate to the construction sector, and a single waste-type grants stability and repetitiveness, requirements that must be met if the industrial and long-term use of the Matrix Family products is to be pursued together with the CE marking.

ENSURE TRACEABILITY: we guarantee the total traceability of the waste treated, from its origin to its final re-use. We ensure the accurate and totally transparent management of all environmental aspects linked to the production cycle.

INDUSTRIAL: a big availability on long-term basis and guarantee of certified credits (both environmental and for the industry sector).

END OF WASTE: Full appliance of the EOW, according to European regulations on sustainability and environmental protection.

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