

Environmental Product Declaration



In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

Micronox R01 y R02 Pigments

from

PROMINDSA S.A.



EPD of multiple products, based on the weighted average results of Micronox R01 and R02.

Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	Average EPD covering Micronox R01 and Micronox R02
EPD registration number:	EPD-IES-0034464:001
Version date:	2026-10-05
Validity date:	2031-10-05

An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com

micronox
PIGMENTS



GENERAL INFORMATION

Programme Information	
Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	support@environdec.com

Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): PCR 2019:19 Construction products, version 2.0.1, publication date: 2025.06.05, valid until: 2030.04.07
General Programme Instructions (GPI) Version: GPI 5.0.1, published in June 2024.
PCR review was conducted by: <i>The International EPD System Technical Committee. A complete list of members is available at www.environdec.com. The review panel can be contacted through support@environdec.com. (Rob Rouwette (chair), Noa Meron (co-chair))</i>

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:
☒ Individual EPD verification without a pre-verified LCA/EPD tool Third-party verification: CERTINALIA, SLU, Anardi Area Aldea, 5, 20730 Azpeitia, Gipuzkoa (Spain) Accredited by: ENAC (Spanish National Accreditation Body), accreditation no. 125/C-PR283
*EPD process certification involves an accredited certification body certifying and periodically auditing the EPD process and conducting external and independent verification of EPDs that are regularly published. More information can be found in the General Programme Instructions on www.environdec.com .
Procedure for follow-up of data during EPD validity involves third party verifier:
☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage

is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.
For further information about comparability, see EN 15804 and ISO 14025.

INFORMATION ABOUT EPD OWNER

EPD owner:

PROMINDSA S.A. (Productos Minerales para la Industria, S.A.)

Address:

Plataforma Logística de Zaragoza (PLAZA), Calle Messina, 5, 50197, Zaragoza, Spain

Contact:

Dune Prat, duneprat@promindsa.com, +34 976 151 074

Website:

<https://promindsa.com/>

Address and contact information of the LCA practitioner commissioned by the EPD owner:

FUNDACIÓN CIRCE (Research Centre for Energy Resources and Consumption)
Parque Empresarial Dinamiza, Avda. Ranillas 3D, 1st Floor, 50018, Zaragoza, Spain
circe@fcirce.es , +34 976 976 859, www.fcirce.es

Organisation description:

PROMINDSA is an industrial company specialised in the extraction, development, processing and supply of iron oxides, integrating the entire value chain from mineral extraction through processing, quality control and distribution.

Its activities include the production of inorganic products for industry through crushing, micronisation, classification and packaging processes, ensuring consistency of their technical properties. PROMINDSA extracts, develops, processes and supplies its products to more than 70 countries worldwide, serving diverse industrial sectors such as paints, biogas, construction, glass, asphalt, mortars and concrete, and foundries. The company operates mainly from its plant in Tierga (Zaragoza), where it concentrates its production and technical control, offering mineral solutions tailored to multiple industrial sectors.

Product- or management-system-related certifications:

ISO 9001, ISO 14001 and ISO 45001 certificates and CE marking.

PRODUCT INFORMATION

Product name:

Micronox R01 and R02 Pigments.

Product identification:

Micronox R01 and R02 are inorganic pigments based on iron oxides, widely used in sectors such as paints, construction, glass, fertilisers, frits, enamels and animal feed. Additional product information can be found on the PROMINDSA website: <https://promindsa.com/micronox-aplicaciones/>

Product visual representation:



UN CPC code:

34220.07 – Iron oxides and hydroxides.

Product description:

Micronox R01 and Micronox R02 are inorganic pigments mainly based on iron oxides (Fe_2O_3), obtained from mineral resources extracted in controlled mining operations and processed at PROMINDSA facilities. The manufacturing process comprises underground mineral extraction, primary crushing, micronisation (grinding and particle-size classification), packaging, quality control and storage. Both products share the same production process and differ only in the particle size obtained. The reference service life depends on the final application and may range from 50 to 100 years.

Name and location of the production site:

Both the mineral extraction and the production of Micronox R01 and Micronox R02 pigments are carried out at the PROMINDSA plant in Tierga (Zaragoza), Spain.

CONTENT DECLARATION

This content declaration is representative of Micronox R01 and Micronox R02 pigments, which share the same composition, raw materials and production process, differing only in particle size.

- The mass (weight) of one product unit as purchased or per declared unit:
1 tonne of Micronox R01/R02 pigment.
- Product content in the form of a list of materials and substances, and their mass:

Product content	Mass, kg	Post-consumer recycled material, % by mass of product	Biogenic material, % by mass of product	Biogenic material, kg C/product or declared unit
Iron oxide	1000	0	0	0
TOTAL	1000	0	0	0

- The mass and content of the distribution and/or consumer packaging:

Packaging materials	Mass, kg	Mass-% (relative to product)	Biogenic material, kg C/product or declared unit
Big bag (PP)	0.45	0.04%	0
Plastic film (PE)	1.34	0.13%	0
Pallet cover board	0.71	0.07%	0.32
Pallet	24.31	2.43%	12.16
Paper sacks	4.50	0.45%	1.876
TOTAL	31.30	3.13%	14.35

1 kg of biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO₂.

Hazardous substances from the SVHC Candidate List	EC No.	CAS No.	Mass-% per product or declared unit
N/A	-	-	0

During the product life cycle, no hazardous substances included in the “Candidate List of Substances of Very High Concern (SVHC) for authorisation” are used at concentrations above 0.1% by weight of the product.

LCA INFORMATION

Declared unit:

1 tonne of Micronox R01/R02 pigment.

Time representativeness:

2025

Geographical scope:

The products are manufactured in Spain.

LCA databases and software used:

Ecoinvent v3.10 and SimaPro v9.6.0.1.

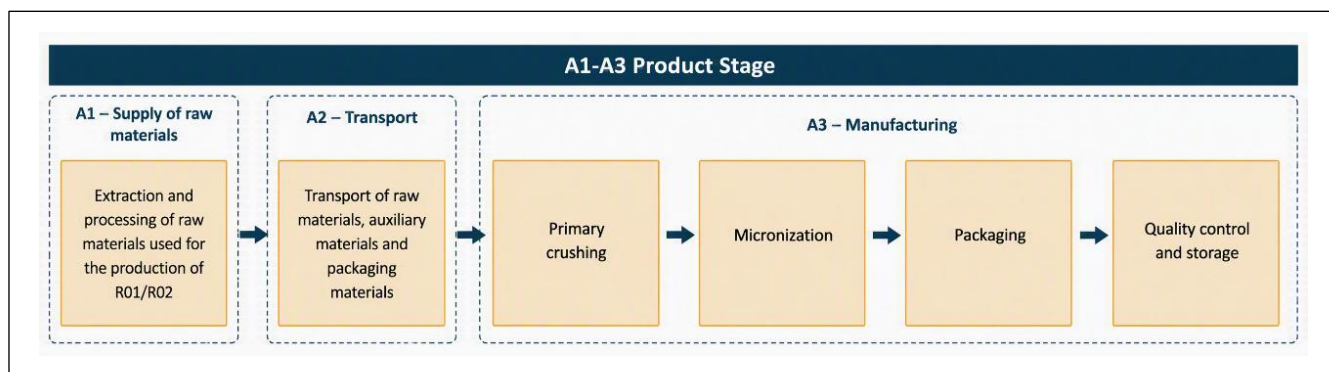
Description of the system boundaries:

Cradle-to-gate (A1-A3).

The remaining modules are excluded because the following conditions are met:

- The product or material is physically integrated with other products during installation (such as paints, coatings, glass, fertilisers, etc.), so that it cannot be physically separated from them at the end of its service life.
- The product or material is no longer identifiable at the end of its service life as a result of a physical or chemical transformation process.
- The product or material does not contain biogenic carbon.
- The EPD is not intended for business-to-consumer (B2C) communications.

Process flow diagram:



Additional information:

Cut-off criteria

The life cycle inventory includes at least 99% of the material and energy inputs of each unit process. Only flows whose individual contribution is less than 1% of the total mass or energy, and whose omission does not significantly affect the LCA results, have been excluded, ensuring that the excluded inputs and outputs represent less than 1% of the total mass and energy of each life cycle module.

Flows related to the construction of the production facilities and the machinery used to manufacture the pigments have not been considered in this study, except for those associated with the generation of the electricity used at the factory. Long-term emissions have also been excluded from the calculation of environmental impacts.

With regard to waste, the treatment of generated waste has been considered until the waste reaches end-of-waste status. This criterion has been applied to the waste generated in the different declared modules.

Allocation rules

Different pigments are manufactured at the PROMINDSA production plant, including Micronox R01 and R02 pigments. In this case, the extraction of the raw material (mineral) is also carried out at the same site.

Therefore, to distribute resource and energy consumption, as well as waste generation, among the different products, allocation percentages (provided by PROMINDSA and based on its technical knowledge) were first applied to differentiate the consumption associated with the extraction and manufacturing stages. Subsequently, once these consumptions had been separated, a mass allocation criterion was applied, based on the ratio between the mass produced of each pigment and total production.

Processes included in the LCA:

A1 – Raw material supply

This module includes the production of raw materials used in the manufacture of Micronox R01 and R02 pigments.

A2 – Transport

This module covers the transport of raw materials, auxiliary materials and packaging from suppliers to PROMINDSA, considering road transport by 16–32 tonne truck.

A3 – Manufacturing

This module considers the processes associated with transforming the mineral into Micronox R01 and R02 pigments at PROMINDSA facilities, including energy consumption, use of auxiliary materials, packaging materials and management of waste generated during production.

The manufacturing process consists of crushing, micronisation and particle-size classification of the mineral to obtain the specifications of Micronox R01 and R02 pigments, which differ only in particle size. It is an exclusively physical process, with no chemical transformation of the material. This stage includes electricity and diesel consumption, use of auxiliary materials (water, oils, greases and other consumables), packaging materials used to prepare the final product (such as big bags, paper sacks, plastic film, pallet covers and pallets), and management of the waste generated during the process, including transport and treatment by authorised waste managers.

The electricity consumed for the manufacture of Micronox R01 and R02 pigments is supplied by ACCIONA, whose remaining electricity mix after guarantees of origin redemptions, as reported by CNMC for 2025, is 100% renewable. The emission factor used to model electricity consumption was 0.026 kg CO₂-eq./kWh.

Additionally, in module A3, the release of biogenic CO₂ previously stored in packaging materials of biogenic origin has been accounted for, thereby closing the biogenic carbon balance within the system boundaries of the assessment.

Data quality

The primary data used in the study were provided directly by PROMINDSA and correspond to 2025. Secondary data come mainly from the Ecoinvent v3.10 database. Data quality was assessed using the Data Quality Rating (DQR) methodology, based on the European Commission PEF/OEF recommendations and adapted to Annex E of EN 15804+A2. The resulting overall DQR was 1.48, corresponding to very good data quality.

Modules declared, geographical scope, share of primary data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Distribution/ installation stage		Use stage							End-of-life stage				Beyond product life cycle
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling- potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Declared modules	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Geographical area	EU27/ GLO	EU27	EU27/ GLO	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Proportion of primary data	12.43%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Modules/processes/life-cycle stages declared shall be noted with “X”.

Modules/processes/life-cycle stages not declared shall be marked as “ND”.

Geographical scope shall be reported by the country code(s) (e.g., UK, FR, DE) and/or name of the region(s) (e.g., EU 27, Global).

Process	Source type	Source	Reference year	Data type	Proportion of primary data in the GWP-GHG category for A1-A3
Electricity consumption at plant (A1)	Data collection	PROMINDSA-specific data	2025	Primary	4.18%
Electricity consumption at plant (A3)	Data collection	PROMINDSA-specific data	2025	Primary	6.43%
Electricity consumption in offices (A3)	Data collection	PROMINDSA-specific data	2025	Primary	1.82%
Total proportion of primary data in GWP-GHG results for A1–A3					12.43%

“The proportion of primary data is calculated based on the GWP-GHG results. It is a simplified indicator of data quality that promotes the use of more primary data in order to increase representativeness and comparability between EPDs. This indicator does not cover all relevant aspects of data quality and is not comparable between different product categories.”

ENVIRONMENTAL PERFORMANCE

LCA results - main environmental performance results

The estimated impact results are relative and do not indicate the final value of the impact categories, nor do they refer to threshold values, safety margins or risks.

Mandatory impact category indicators according to EN 15804

Results for 1 tonne of Micronox R01/R02 pigment		
Indicator	Unit	A1-A3
GWP-total	kg CO ₂ eq.	7,20E+01
GWP-fossil	kg CO ₂ eq.	5,95E+01
GWP-biogenic*	kg CO ₂ eq.	1,12E+01
GWP-luluc	kg CO ₂ eq.	1,25E+00
ODP	kg CFC 11 eq.	1,24E-06
AP	mol H ⁺ eq.	6,94E-01
EP-freshwater	kg P eq.	1,33E-03
EP-marine	kg N eq.	2,25E-01
EP-terrestrial	mol N eq.	3,30E+00
POCP	kg NMVOC eq.	7,64E-01
ADP-minerals&metals**	kg Sb eq.	4,06E-05
ADP-fossil**	MJ	9,81E+02
WDP**	m ³	6,60E+01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption	

* Disclaimer: The biogenic carbon contained in the packaging materials has already been balanced within modules A1-A3. Therefore, no additional biogenic carbon balance is declared beyond the stated system boundaries.

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Results for 1 tonne of Micronox R01/R02 pigment		
Indicator	Unit	A1-A3
GWP-GHG ¹	kg CO ₂ eq.	6,08E+01
PM	Disease inc.	7,91E-06
IRP ²	kBq U235 eq	2,80E+00
ETP-fw ³	CTUe	4,64E+02
HTP-c ³	CTUh	1,21E-07
HTP-nc ³	CTUh	2,23E-07
SQP ³	-	3,67E+03
Acronyms	GWP-GHG = Global Warming Potential – Greenhouse Gases; PM: Disease incidence potential due to particulate matter emissions (PM); IRP: Human exposure efficiency potential relative to U235; ETP-fw: Comparative toxic unit potential for freshwater ecosystems; HTP-c: Comparative toxic unit potential for cancer effects; HTP-nc: Comparative toxic unit potential for non-cancer effects; SQP: Soil quality potential index.	

* Disclaimer 1: This indicator accounts for all greenhouse gases except uptake and emissions of biogenic carbon dioxide and biogenic carbon stored in the product. Therefore, the indicator is identical to GWP-total, except that the characterisation factor (CF) for biogenic CO₂ is set to zero.

** Disclaimer 2: This impact category primarily addresses the potential effects of low-dose ionising radiation on human health from the nuclear fuel cycle. It does not consider effects due to potential nuclear accidents, occupational exposure, or the disposal of radioactive waste in underground facilities. Potential ionising radiation from soil, radon, and some construction materials is also not measured by this indicator.

*** Disclaimer 1: The results of this environmental impact indicator should be used with caution, as the uncertainties associated with the results are high or there is limited experience with the indicator

Resource use indicators

Results for 1 tonne of Micronox R01/R02 pigment		
Indicator	Unit	A1-A3
PERE	MJ	1,74E+03
PERM	MJ	1,70E+01
PERT	MJ	1,76E+03
PENRE	MJ	9,81E+02
PENRM	MJ	1,96E+01
PENRT	MJ	1,00E+03
SM	kg	0,00E+00
RSF	MJ	0,00E+00
NRSF	MJ	0,00E+00
FW	m3	9,70E-01
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water	

Waste indicators

Results for 1 tonne of Micronox R01/R02 pigment		
Indicator	Unit	A1-A3
Hazardous waste disposed	kg	7,72E-02
Non-hazardous waste disposed	kg	3,95E+00
Radioactive waste disposed	kg	1,97E-03

Output flow indicators

Results for 1 tonne of Micronox R01/R02 pigment		
Indicator	Unit	A1-A3
Components for re-use	kg	0,00E+00
Material for recycling	kg	1,89E+00
Materials for energy recovery	kg	3,71E-01
Exported energy, electricity	MJ	9,32E-01
Exported energy, thermal	MJ	1,85E+00

ABBREVIATIONS

Abbreviation	Definition
General abbreviations	
EN	European Standard (European Norm / Standard)
EF	Environmental Footprint (EF)
GPI	General Programme Instructions (GPI)
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CPC	Central Product Classification
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
GRI	Global Reporting Initiative
SVHC	Substances of Very High Concern
NR	Not Declared
LCI	Life Cycle Inventory
LCA	Life Cycle Assessment
GHG	Greenhouse gases

REFERENCES

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- [2]. Environmental labels and declarations. Type III environmental declarations. Principles and procedures.
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VERSION HISTORY

Original Version of the EPD, 2026-10-05

VERIFICATION STATEMENT CERTIFICATE CERTIFICADO DE DECLARACIÓN DE VERIFICACIÓN

Certificate No. / Certificado nº: EPD16901

CERTINALIA, S.L.U., confirms that independent third-party verification has been conducted of the Environmental Product Declaration (EPD) on behalf of:

CERTINALIA, S.L.U., confirma que se ha realizado verificación de tercera parte independiente de la Declaración Ambiental de Producto (DAP) en nombre de:

PRODUCTOS MINERALES PARA LA INDUSTRIA, S.A. (PROMINDSA)

Calle Messina, 5
Plataforma Logística de Zaragoza (PLA-ZA)
50197 Zaragoza - SPAIN

for the following product:
para el siguiente producto:

Pigments Micronox R01 and R02
Pigmentos Micronox R01 y R02

with registration number **EPD-IES-0034464** in the International EPD® System (www.environdec.com)
con número de registro EPD-IES-0034464 en el Sistema Internacional EPD® (www.environdec.com)

it's in conformity with:
es conforme con:

- ISO 14025:2010 Environmental labels and declarations. Type III environmental declarations.
- General Programme Instructions for the International EPD® System v5.
- PCR 2019:14 Construction products (EN 15804+A2) v2.0
- UN CPC 34220.07 Iron oxides and hydroxides.

Issued date / Fecha de emisión: 02/10/2026
Update date / Fecha de actualización: 02/10/2026
Serial Nº / Nº Serie: EPD1690100-E



Carlos Nazabal Alsua
Manager

The validity of this certificate is subject to the validity of its related EPD.
La validez de este certificado está sujeta a la vigencia de su correspondiente EPD.

This certificate is subject to modifications, temporary suspensions and withdrawals by CERTINALIA.
El presente certificado está sujeto a modificaciones, suspensiones temporales y retiradas por CERTINALIA.

The validity of this certificate can be checked through consultation in www.certinalia.com.
El estado de vigencia del certificado puede confirmarse mediante consulta en www.certinalia.com.



