Discussion Material

Bauxite Mine

Strictly confidential

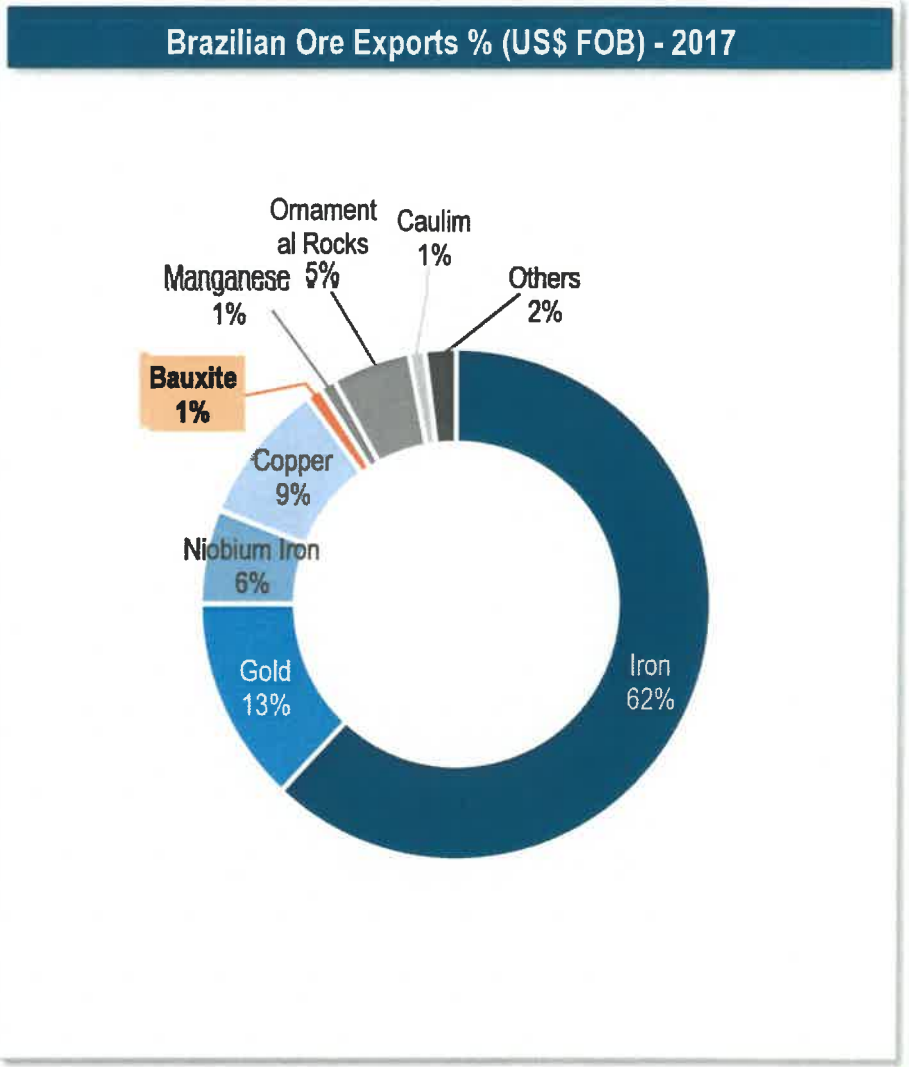
Snapshot of Brazilian Bauxite Industry

Brazil – Top 3 Global Player

Bauxite Reserves (Million Tons) - 2017		
	Country	Volume
1º	Guinea	7,400
2º	Australia	6,200
3º	**Brazil**	**2,600**
4º	Vietnam	2,100
5º	Jamaica	2,000
6º	Indonesia	1,000
7º	China	980
8º	Guyana	850
9º	India	590
10º	Suriname	580
	Total	**28,000**

Bauxite Production (Thousand Tons) - 2017		
	Country	Volume
1º	Australia	81,741
2º	China	65,000
3º	**Brazil**	**37,057**
4º	Guinea	27,605
5º	India	24,219
6º	Jamaica	8,540
7º	Malesia	7,664
8º	Russia	5,432
9º	Kazakhstan	4,802
10º	Greece	1,660
	Total	**270,492**

Breakdown of Brazilian Mineral Exports



Source: Instituto Brasileiro de Mineração (IBRAM),

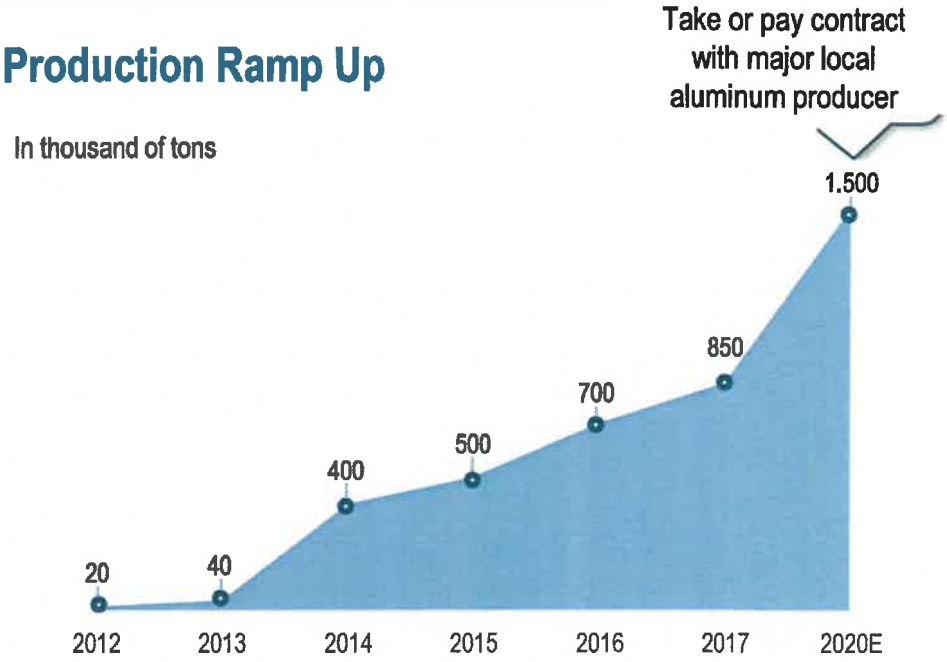
Bauxite Mine

Company Overview

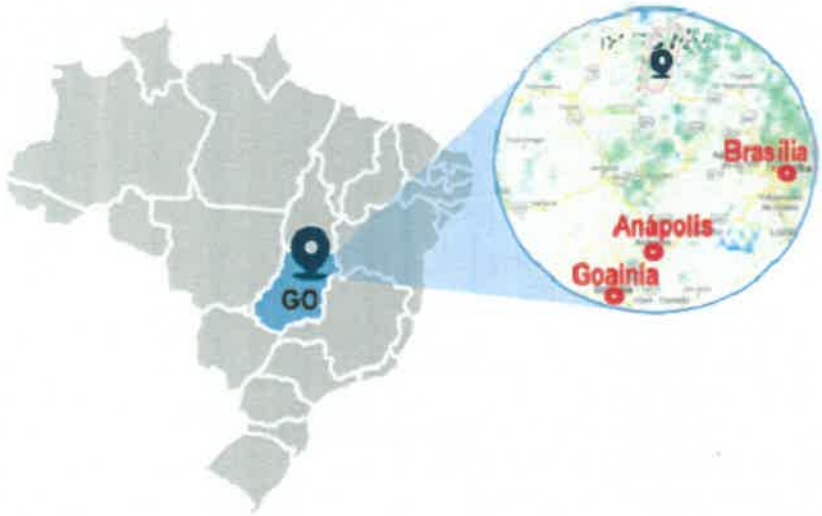
Highlights

- Started operations in December 2013, in Goias, midwest.
- Open sky bauxite mining with 100% usable bauxite;
- **Current annual production capacity:** 1.2 million ton (can be elevated to 1.8 million with low CAPEX)
- **Current annual production:** Approximately 1.1 Million Ton;
- **Complete infrastructure:** own bauxite mine, crushing, grinding and dispatching;
- **Resources:** high grade bauxite; > 53% Al2O3ap and <3% SiO2rea.
  - Proven: 100 million ton;
  - Probable: 250 million ton;
- **Lab Support:** SGS Laboratory, subsidiary of the laboratory LA Teixeira and own laboratory in construction;

Production Ramp Up



Geographic Location



Source: Company

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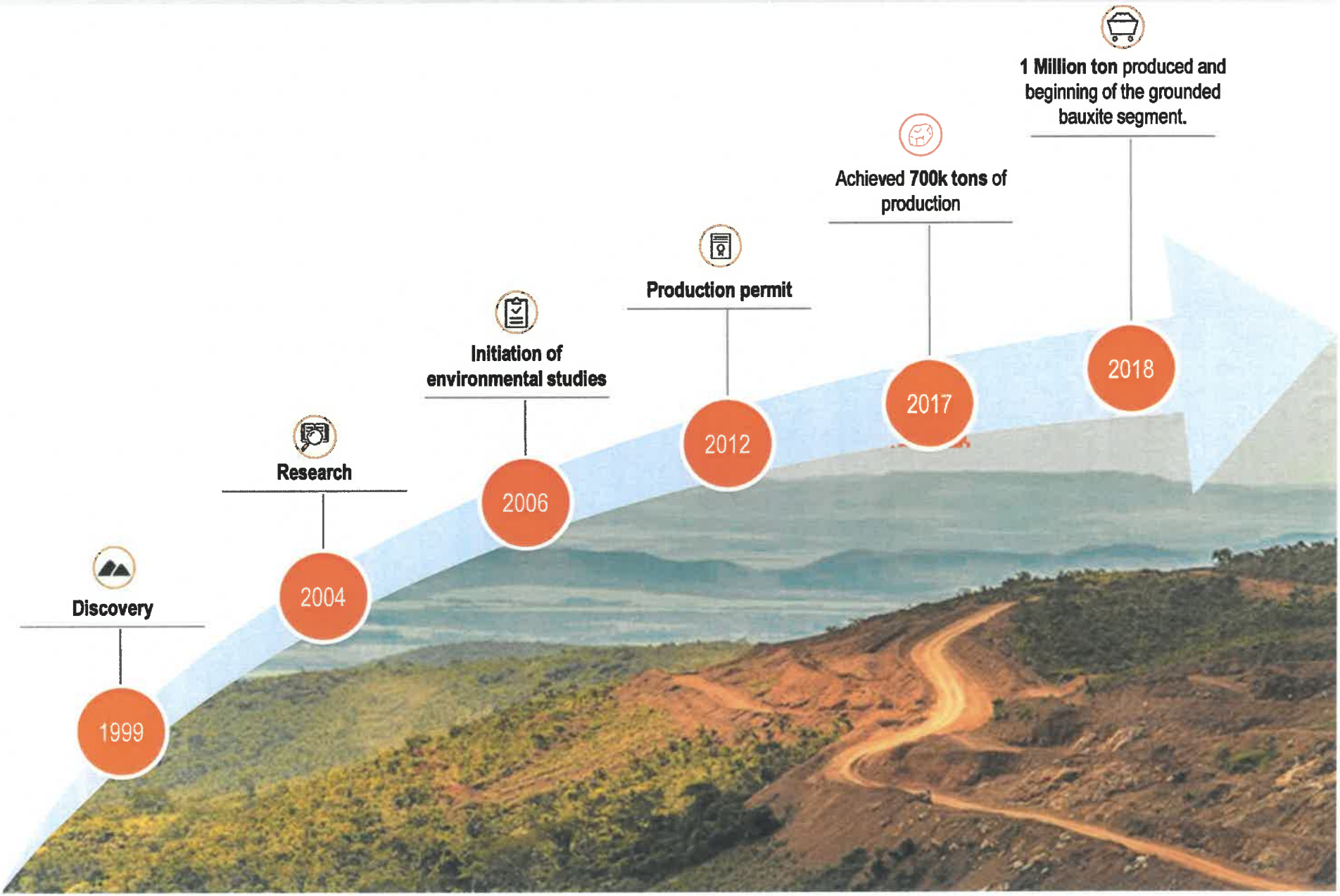
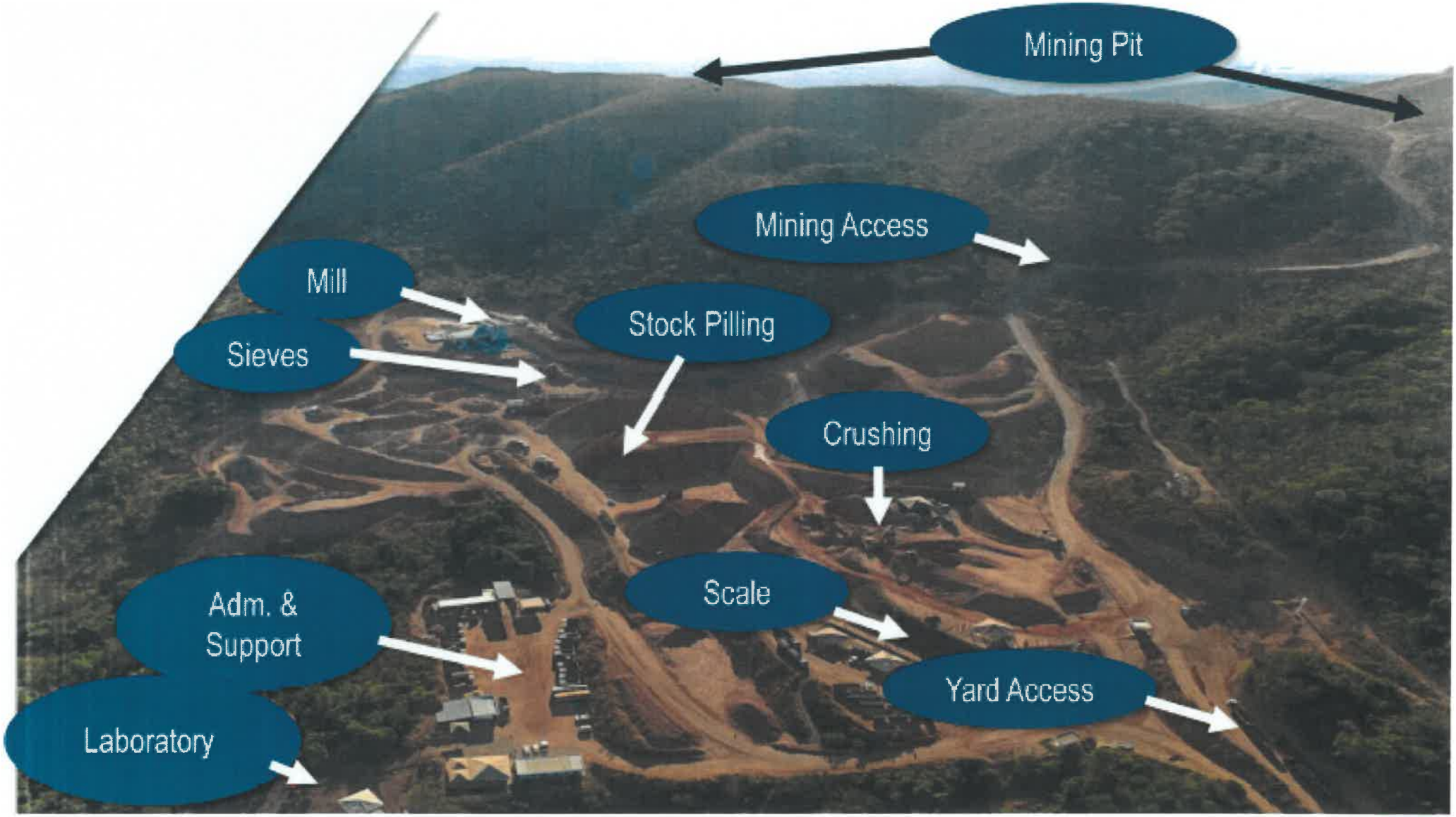
Bauxite Mine
Timeline



Source: Company

Bauxite Mine Company
Overview – Infrastructure



Source: Company

Bauxite Mine

Deposit Geology

About the Deposit

Serra da Torre seen from above

Current Operating Deposit

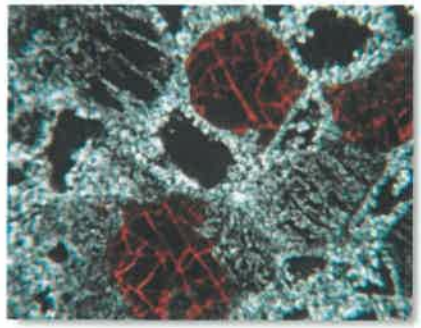
- The **mineral deposit** has a length of more than **6 km** and a width of more than **3 km**, extending to neighboring areas.
- The **thickness of the saprolite** exceeds **20m** in the upper portions, sometimes reaching **50m.**

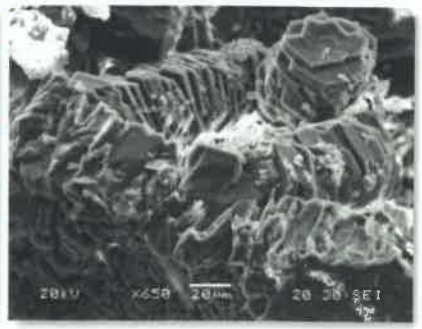
About the Ore

SEBM`s bauxite to alumina refining ratio is 1.7 to 1.0

- Predominantly porous bauxites, marked by light and dark bands, inherited from the original bundle.
- The preservation of structures and textures of the mother rock evidences in situ origin and absence of reworking.
- The passage from the fresh rock to the saprolite is always abrupt, which attests the intensity of the leaching process.

Electron Microprobe Images



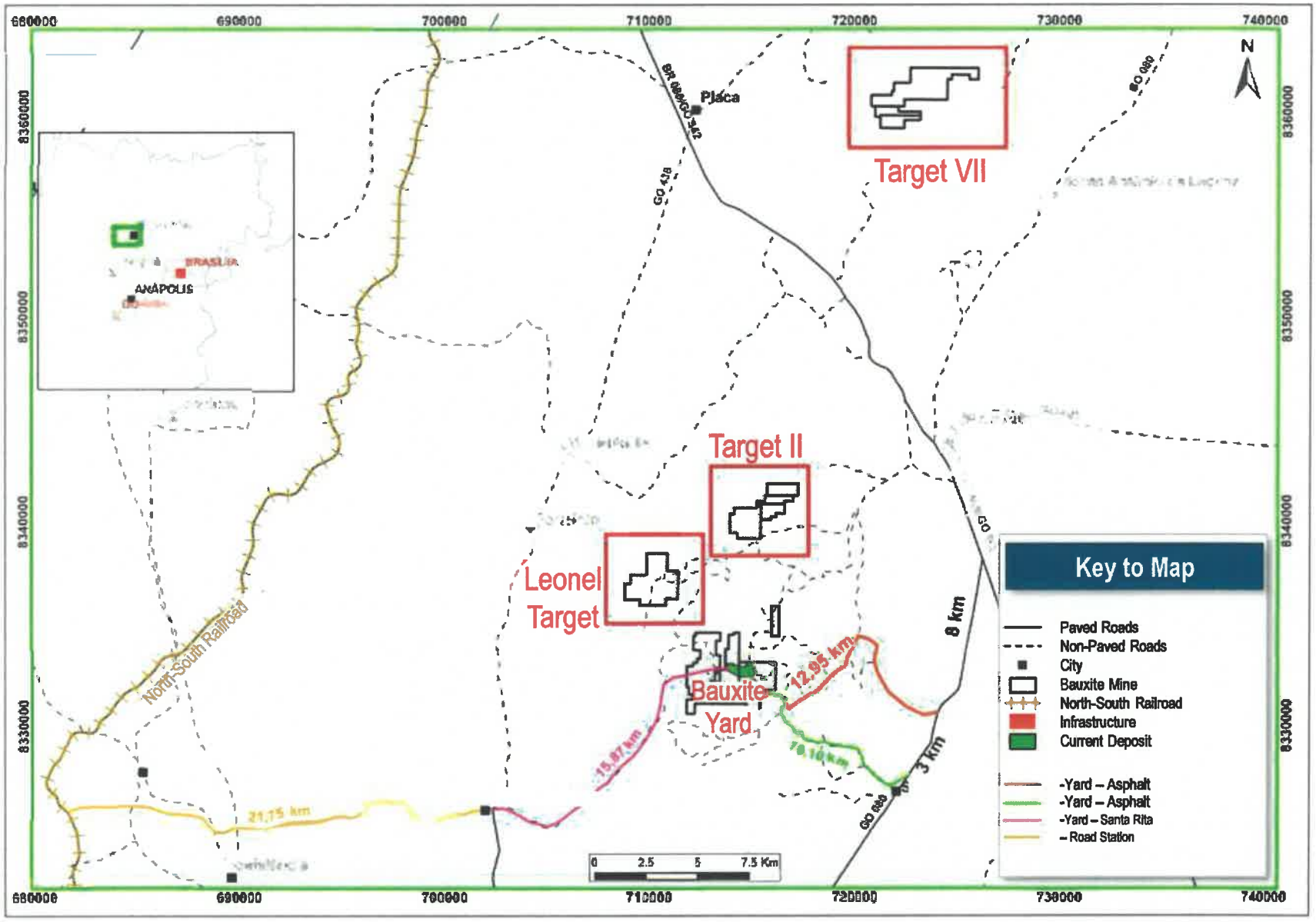


Source: Company

Bauxite Mine

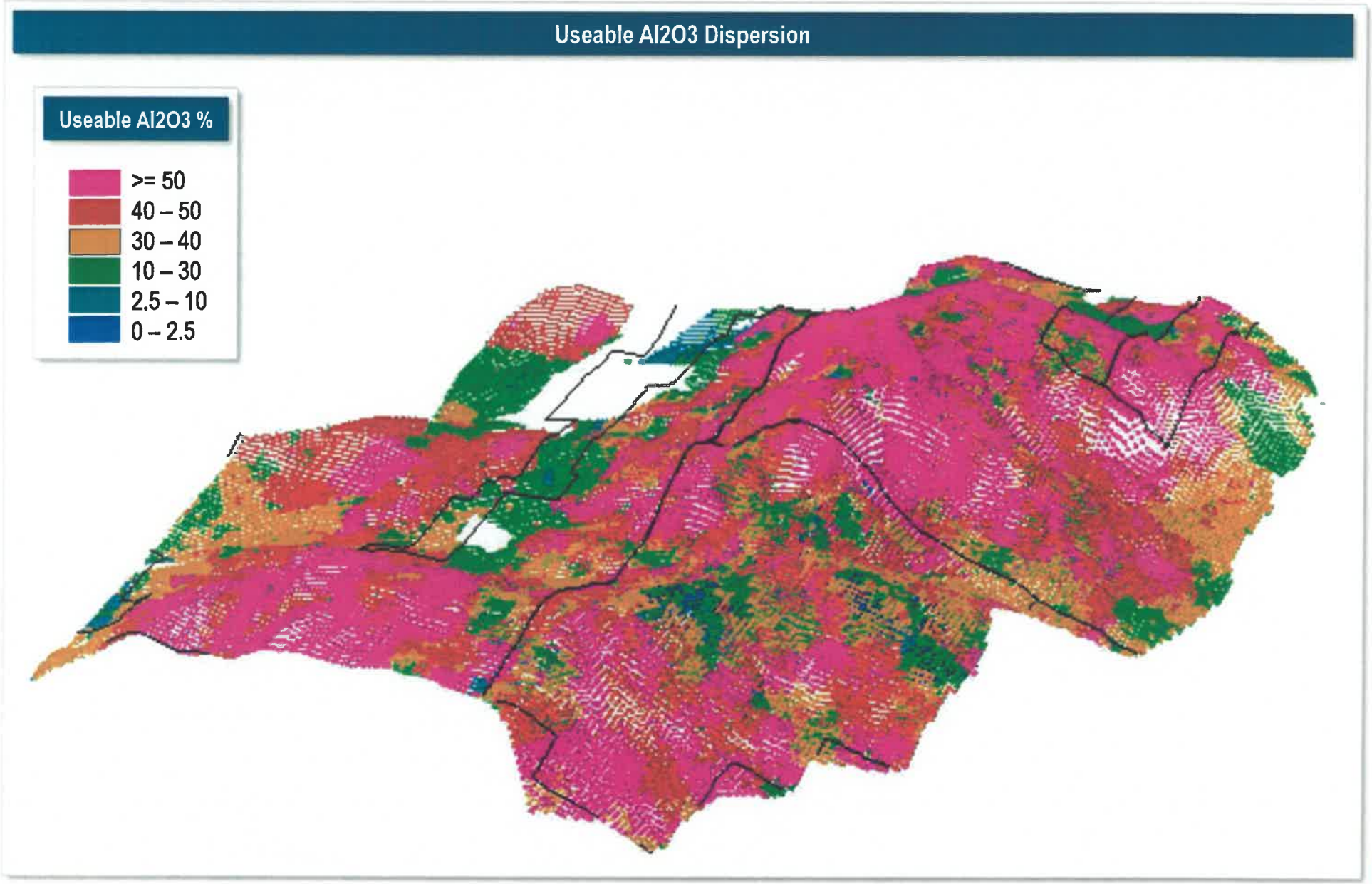
Location of Current Deposits and Additional Target Reserves

SEBM has in its inventory potential resources of 250 million+ ton in reserves of high grade bauxite.



Source: Company

Bauxite Mine Bauxite Quality Mapping



Source: Company

Attachment

Additional documents and information

- *Grade Certificate*
- *Enviromental Material Safety Report*

Attachment
Analysis Certificate

SGS GEOSOL

SGS GEOSOL LABORATÓRIOS LTDA.

CERTIFICADO DE ANÁLISES

GQ18B204

Dados do Cliente

Nome: LTDA

Attn.: I

Endereço: I

Referência do Lote de Amostras

Ref. Cliente: Pedido 06/09/2019

Produto: SILICATOS

Projeto: 5010 - BXBW

Número de Amostras: 06

Data do Recebimento: 13/09/2019

Data de Envio: 02/08/2019

Completado Em: 02/08/2019

Referência Analítica

CLA08V: Determinação de Alumina Aproveitável e Sílica Reativa - (Volumétrico - AAS)

PHY01E: LOI (Loss on ignition) - Perda ao fogo por calcinação da amostra a 405ºC e/ou 1000ºC

XRF79C: Fusão com tetraborato de lítio e quantificação por XRF

Legenda

L.D.= Limite de Detecção	BLK = Branco	REP = Replicata	DUP =Duplicata
L.N.R. = Listado e não Recebido	I.S. = Amostra Insuficiente	N.A. = Não Analisado	STD =Padrão
L.N.R. = Não reportado devido a interferentes		OVR = Não Analisado devido ao alto teor	

Marcos Filipe Gonçalves Silva

CRQ II 02202046

Responsável Técnico

Attachment

Analysis Certificate (cont.)

SGS GEOSOL LABORATÓRIOS LTDA.

CERTIFICADO DE ANÁLISES

GQ1884204

Análises	Al2O3_A	SiO2_Re	SiO2	Al2O3	Fe2O3	CaO	MgO	TiO2	P2O5
Método	CLA08V	CLA08V	XRF79C	XRF79C	XRF79C	XRF79C	XRF79C	XRF79C	XRF79C
Unidade	%	%	%	%	%	%	%	%	%
Limite Detecção	1,00	0,10	0,10	0,10	0,01	0,01	0,10	0,01	0,01
BXBA-14267	52,03	3,14	3,60	62,4	1,88	0,01	<0,1	0,11	<0,01
BXBA-14272	53,91	3,47	3,94	61,3	2,54	0,06	<0,1	0,20	0,02
BXBA-14285	52,53	3,14	3,28	61,9	2,14	0,01	<0,1	0,12	0,01
BXBA-14367	50,86	4,26	5,85	57,3	5,86	0,41	0,31	0,66	0,06
BXBA-14370	53,05	3,30	3,53	61,3	2,97	0,01	<0,1	0,25	0,02
BXBA-14393	48,12	4,17	4,76	60,9	3,85	0,02	<0,1	0,23	0,04
* STD AMIS0140			96,1	1,40	2,21	0,23	0,19	0,09	0,01
* STD IPT131			0,83	54,3	11,4	0,02	<0,1	1,73	0,14
* STD SG_117			2,02	57,2	8,20	<0,01	<0,1	1,07	0,04
* STD SG_117			2,05	57,3	8,27	0,01	<0,1	1,10	0,04

Fonte: Companhia

Attachment

Analysis Certificate (cont.)

Análises	Na2O	K2O	MnO	LOI
Método	XRF79C	XRF79C	XRF79C	PHY01E
Unidade	%	%	%	%
Limite Detecção	0,10	0,01	0,01	-45,00
BXBA-14267	<0,1	<0,01	<0,01	31,71
BXBA-14272	<0,1	<0,01	<0,01	31,20
BXBA-14285	<0,1	<0,01	<0,01	31,20
BXBA-14367	<0,1	0,01	0,01	29,29
BXBA-14378	<0,1	<0,01	<0,01	31,31
BXBA-14383	<0,1	<0,01	<0,01	30,78
* STD AMIS0140	0,24	0,34	0,17	
* STD IPT131	<0,1	0,03	0,32	
* STD SG_117	<0,1	0,03	0,02	
* STD SG_117	<0,1	0,03	0,02	
* STD SG_078				9,38
* STD SG_078				9,45
* STD SG_078				9,54
* STD SG_078				9,58
* STD SG_078				9,61

Fonte: Companhia

Attachment

FISPQ – Material Safety Data Sheet

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER	
Revision Date	November 1, 2019
Product Name	Bauxite Ore
Supplier	
Registered Address	
Telephone Number	

2. TECHNICAL SPECIFICATION		
Element	Typical	Specification
Available Alumina (AA)	50%	MIN 48%
Reactive Silica (RS)	4.5%	MAX 5%
Moisture (105°C)	10%	MAX 15%
Size Distribution: Retained 2.5" Top Size: MAX 4"	90% 0%	MIN 75%

3. OTHER ELEMENTS		
Element	Typical	Specification
SiO2 Total	5.5%	MAX 8%
Al2O3 Total	57%	MIN 53%
Fe2O3	4%	MAX 7%
CaO	0%	MAX 0.4%
MgO	0%	
TiO2	3.5%	MAX 1%
P2O5	0.05%	
Na2O	< 0.1%	
K2O	< 0.1%	
MnO	< 0.1%	
LOI	30%	MAX 35%

4. HAZARDS IDENTIFICATION	
Appearance	Grey to light brown lumps and granules.
Flammability	Not flammable.
Lab Protective Equipment	Protective gloves and eye protection.
Environmental Hazards	Not classified as hazardous to the environment.
Potential Health Effects Eyes Ingestion Inhalation Skin	May cause eye irritation – mechanical irritation. Ingestion of large amounts may cause gastrointestinal irritation. May cause irritation as a nuisance dust. Prolonged contact with skin my cause irritation.
Main Symptoms	Exposure to dust may cause irritation of eyes, nose throat and mucous membranes. Prolonged contact with skin my cause irritation. Small amounts of respirable dust may be formed from transport or conveyance. Prolonged inhalation of insoluble, respirable (less than 10 microns) dusts can lead to pulmonary damage. Use of this product as intended does not result in exposure to dust. Use standard hygienic practices to minimise exposure to dusts that may form.

5. COMPOSITION/INFORMATION ON INGREDIENTS	
CAS Number 1318-16-7	A naturally occurring mineral.

6. FIRST AID MEASURES	
Eyes	Rinse immediately with plenty of water, including under the eyelids for at least 15 minutes. Get medical attention if irritation or symptoms persist.
Ingestion	Rinse mouth. Do not induce vomiting. Get medical attention if irritation or symptoms persist.
Inhalation	Remove to fresh air. Get medical attention if irritation or symptoms persist.
Skin	Wash with soap and water. Get medical attention if irritation or symptoms persist.

Fonte: Companhia

Attachment

FISPQ – Material Safety Data Sheet (cont.)

7. FIRE FIGHTING MEASURES	
Fire	This product is not flammable.
Explosion	NA.
Fire Extinguishing Media	NA.
Special Information	NA.

8. ACCIDENTAL RELEASE MEASURES	
For Non-Emergency Personnel	Avoid dust formation. Wear suitable protective clothing. Avoid contact with skin and eyes.
For Emergency Personnel	Use personal protective equipment (PPE) recommended in section 8 of the MSDS.
Environmental Precaution	None known.

9. HANDLING AND STORAGE	
Precautions for Safe Handling	Avoid dust formation. Avoid breathing dust. Observe good industrial hygiene practices. Spilled material can reduce traction and may present a slip hazard.
Conditions for Safe Storage including any Incompatible Chemicals	Keep container tightly closed. Store in accordance with local, regional, national and international regulations.
Specific End Use(s)	Industrial use in production of ceramic industrial minerals.

10. EXPOSURE CONTROLS/PERSONAL PROTECTION	
Exposure Guidelines	CAS Number 1318-16-7. A naturally occurring mineral (a group of aluminium oxides). Consult local authorities for acceptable exposure limits.
Engineering Controls	Minimise generation of dust.
PPE Eye Protection Skin Protection Respiratory Protection	PPE should be chosen according to applicable standards. Wear safety glasses. Wear protective gloves. Wear respiratory equipment if ventilation inadequate.

11. PHYSICAL AND CHEMICAL PROPERTIES	
Appearance	Free flowing solid lumps and granules.
Auto Ignition Temperature	NA.
Decomposition Temperature	NA.
Evaporation Rate	NA.
Explosive Limits	NA.
Flammability	NA.
Flammability Limits	NA.
Flash Point	NA.
Freezing Point	NA.
Initial Boiling Point/Range	NA.
Melting Point	4,000°F; 2,204°C (estimated).
Odour	Odourless.
Odour Threshold	NA.
Partition Coefficient	NA.
pH	NA
Relative Density (SG)	2.0-2.6.
Solubility	Insoluble in water.
Vapour Density	NA.
Vapour Pressure	NA.
Viscosity	NA.
Volatile by Volume (%)	0

12. STABILITY AND REACTIVITY	
Reactivity	Stable and non-reactive under normal conditions of use, storage and transport.
Chemical Stability	Stable under normal conditions of use, storage and transport.
Hazardous Polymerisation	NA.
Conditions to be Avoided	NA.
Incompatible Materials	Strong oxidisers.
Hazardous Decomposition	NA.

Fonte: Companhia

Attachment

FISPQ – Material Safety Data Sheet (cont.)

13. TOXICOLOGICAL INFORMATION	
Likely Routes of Exposure Eyes Ingestion Inhalation Skin	 May cause eye irritation – mechanical irritation. Ingestion of large amounts may cause gastrointestinal irritation. May cause irritation as a nuisance dust. Prolonged contact with skin my cause irritation.
LC50	NA.
LD50	NA.
NTP	Not listed in the National Toxicological Report on Carcinogens.
IARC	Not found to be a potential carcinogen in the International Agency for Research on Cancer Monographs
OSHA	Not found to be a carcinogen by OSHA.
14. ECOLOGICAL INFORMATION	
Ecotoxicity	Not expected to be toxic to the environment.
Persistence and Degradability	Not bio-degradable with low solubility in water and not expected to decompose in the environment.
Bioaccumulative Potential	Not bio-degradable with low solubility in water and not expected to accumulate in the environment.

15. DISPOSAL INFORMATION	
Waste	Dispose in accordance with applicable regulations.

16. TRANSPORT INFORMATION	
Road and Rail Transport	Not applicable, not regulated as hazardous for transport
Marine Transport	Not applicable, not regulated as hazardous for transport
Air Transport	Not applicable, not regulated as hazardous for transport

17. REGULATORY INFORMATION	
TSCA	Not hazardous.
CERCLA	Not listed
SARA Title III	Not listed.
311/312 Hazard Categories	Not hazardous.
313 Reportable Ingredients	NA.

Fonte: Companhia