



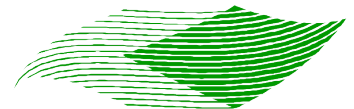
**BRAZILIAN MARKET FOR ADVANCED CERAMICS**

# AGÊNCIA BRASILEIRA DE DESENVOLVIMENTO REGIONAL

The Brazilian Market for Advanced Ceramics

Ruben Cesar Reinoso

Superintendente



AGÊNCIA DE DESENVOLVIMENTO  
REGIONAL DA AMUREL  
ADRAM



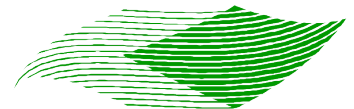
## **BRAZILIAN MARKET FOR ADVANCED CERAMICS**

# **GLOBAL MARKET FOR ADVANCED CERAMICS**

**Advanced Ceramics in the US Market (1997 -2004)**

**Advanced Ceramic Products in the US Market.**

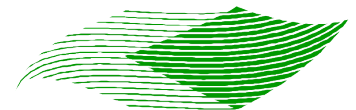
**Investment Opportunities for the US Market**



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# BRAZILIAN MARKET FOR ADVANCED CERAMICS

- Production Value for the Brazilian Market (by sector)
- Industrial Applications of Advanced Ceramics for the Brazilian Market
- : Characterization of the Brazilian Market for Advanced Ceramics
- The Top Ten Brazilian Enterprises in the Advanced Ceramics Market
- Demand and Supply Elasticity for the Advanced Ceramics



# BRAZILIAN MARKET FOR ADVANCED CERAMICS

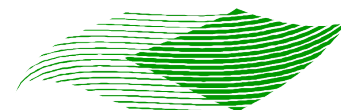
## Advanced Ceramics in the US Market (1997 - 2004)

| Type                                         | 1997  | 1999  | 2002   | 2004   | (%)   |
|----------------------------------------------|-------|-------|--------|--------|-------|
| Ceramics for electronics materials           | 4 520 | 5 300 | 6 830  | 8 060  | + 78  |
| Ceramics for chemical and environmental Proc | 1 331 | 1 500 | 1 750  | 1 935  | + 45  |
| Ceramic Coating                              | 564   | 810   | 905    | 1 130  | + 100 |
| Structural advanced Ceramics                 | 395   | 460   | 585    | 695    | + 75  |
| Total                                        | 6 810 | 8 070 | 10 010 | 11 820 | + 78  |

# BRAZILIAN MARKET FOR ADVANCED CERAMICS

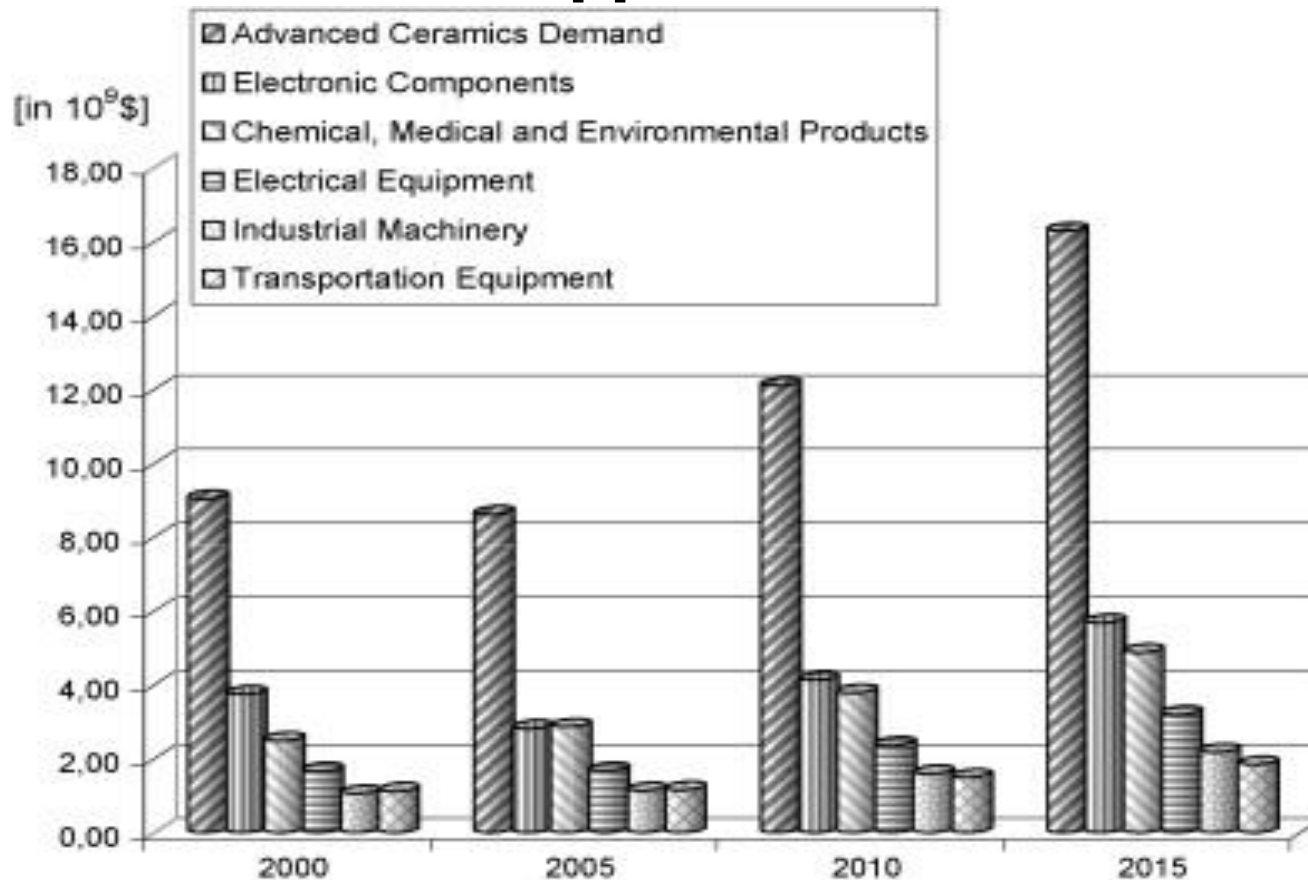
## Advanced Ceramic Products in the US Market.

| Share | Products.                            |
|-------|--------------------------------------|
| 36 %  | Capacitors, subtracts and            |
| 23 %  | Other electric/electronics ceramics. |
| 13 %  | Others                               |
| 12 %  | Electric Porcelain                   |
| 8 %   | Engineering Ceramics                 |
| 8 %   | Optical fiber                        |



# BRAZILIAN MARKET FOR ADVANCED CERAMICS

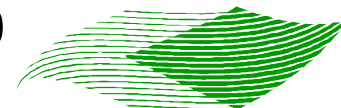
## Investment Opportunities for the US Market..



# BRAZILIAN MARKET FOR ADVANCED CERAMICS

## Production Value for the Brazilian Market (by sector)

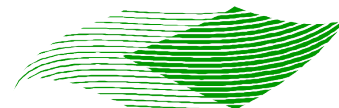
| Sectors                                       | Production<br>(in x1.000<br>US\$) |
|-----------------------------------------------|-----------------------------------|
| Structural Ceramics                           | 2.500.000                         |
| Ceramics (white ware)                         | 1.700.000                         |
| Natural Materials                             | 750.000                           |
| Refractors                                    | 380.000                           |
| Advances ceramics for special<br>applications | 300.000                           |
| Sanitary ware                                 | 200.000                           |



# BRAZILIAN MARKET FOR ADVANCED CERAMICS

## Production Value for the Brazilian Market (by sector)

| Sectors               | Production<br>(in x1.000<br>US\$) |
|-----------------------|-----------------------------------|
| Pottery               | 148.000                           |
| Glasses and Dyes      | 140.000                           |
| Synthetic Materials   | 70.000                            |
| Electrical Ceramic    | 60.000                            |
| Equipment for ceramic | 25.000                            |
| Abrasives             | 20.000                            |





# BRAZILIAN MARKET FOR ADVANCED CERAMICS

## Industrial Applications of Advanced Ceramics for the Brazilian Market

*MINING*



*Ceramic Floor (whiteware).*

*SIDERURGY*



*Sugar & Ethanol*

*PAPER AND CELLULOSE*



*Ciment*

*MECHANIC*

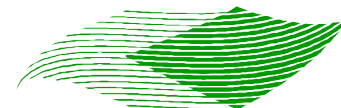


*Electrical goods*

*AGRICULTURAL EQUIPMENT*



*Electrical materials .*



# BRAZILIAN MARKET FOR ADVANCED CERAMICS

## Characterization of the Brazilian Market for Advanced Ceramics.

● Top Ten Enterprises in Brazilian Advanced Ceramic Market:

⊙ 4 Multinational Corporation

⊙⊙ 5 National Enterprises

●● Highly Concentrated Market: only two enterprises in the Paper & Cellulose Industry Supply

⊙ Saint Gobain 70 %

⊙⊙ IBS PPG 30 %

# BRAZILIAN MARKET FOR ADVANCED CERAMICS

## Characterization of the Brazilian Market for Advanced Ceramics.

...

High Specialized Market

○

**IBS-PPG:**

**Paper & Cellulose  
Industry**

○○

**KGF:**

**Agribusiness' Equipment**

○○○

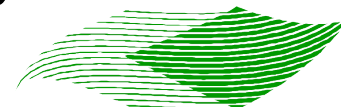
**MACEA Cerâmica  
Tecnica:**

**Textile Industry Pieces**

○○○○

**NGK / NKT**

**Automobile Industry &  
Industrial Ceramics**



AGÊNCIA DE DESENVOLVIMENTO  
DA INDÚSTRIA DE MATERIAIS AVANÇADOS  
ADAM

# BRAZILIAN MARKET FOR ADVANCED CERAMICS

## Top ten Brazilian Enterprises

| NAME                                    | YEAR |      | PRODUCTS.                                                                                   |
|-----------------------------------------|------|------|---------------------------------------------------------------------------------------------|
| IBS PPG                                 | 1967 | 2007 | Ceramics covers of outstanding quality for Dewatering Systems                               |
| COORS-TEK DO BRASIL<br>MAT. AVANÇ. LTDA | 1910 | 1970 | Heavy-Duty Components for Metal Manufacturing, Mining, and Minerals Processing Applications |
| CERÂMICAS CHIAROTTI                     | ---- | 1970 | Thermal sensor for the iron and steel industry                                              |
| BICOS KGF                               | ---- | ---- | ceramic tips for spraying and fogging in agribusiness industry                              |

# BRAZILIAN MARKET FOR ADVANCED CERAMICS

## Top ten Brazilian Enterprises

| NAME                                    | YEAR |      | PRODUCTS.                                                                                                                                                                    |
|-----------------------------------------|------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NGK/NKT                                 | 1959 | 1996 | Automobile sector( spark plugs, ignition cables, oxygen sensors, knock sensors), technical ceramics (cutting tools, refractory rollers, sphere mills, ant abrasive ceramics) |
| MACEA CERÂMICA TECNICA                  | ---- | 1983 | Products and pieces for the Textile Industry                                                                                                                                 |
| SAINT-GOBAIN CERÂMICAS & PLÁSTICOS LTDA | 1937 | 1990 | Monolithic and High Alumina Ceramic Products, shaped and mixes refractors, Steatite, Cordierite and Silicon Carbide                                                          |

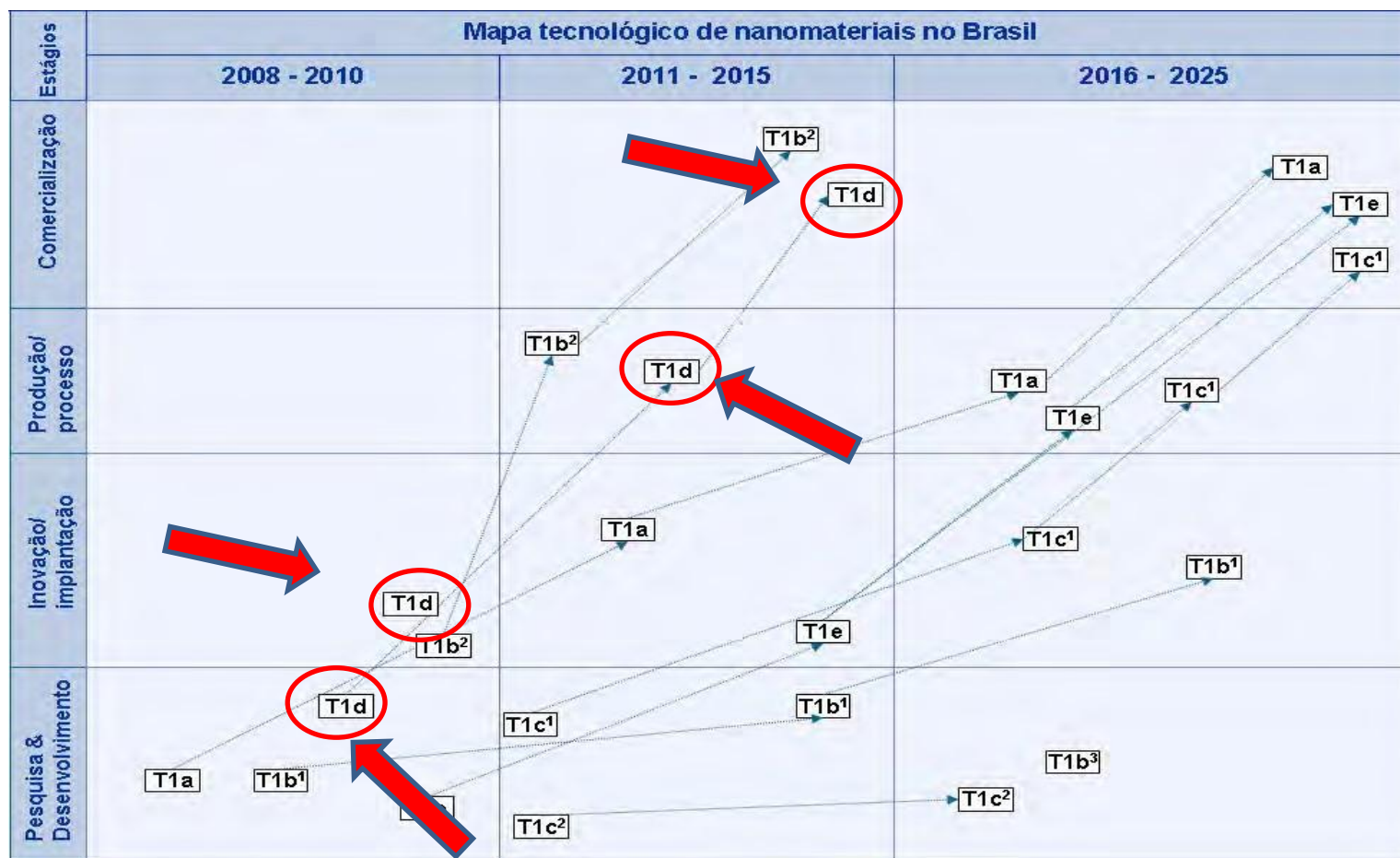
# BRAZILIAN MARKET FOR ADVANCED CERAMICS

## Top ten Brazilian Enterprises

| NAME                                        | YEAR          | PRODUCTS.                                                                                                                                                                                                                        |
|---------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| INCER - INDÚSTRIA NACIONAL DE CERÂMICA LTDA | --- 1957<br>- | Refractory by demand of Cordierite, mulcorite, steatite, silicon carbide and electrical materials; Ceramic Coating in High Alumina (92%) de Al <sub>2</sub> O <sub>3</sub> ; Re-crystallized silicon carbide - RSiC; SiSiC; NSiC |
| ENGECER LTDA.                               | ---- 1987     | Póst ceramics abrasives for glass poliment and hard surfaces,                                                                                                                                                                    |

# BRAZILIAN MARKET FOR ADVANCED CERAMICS

## TECHNOLOGICAL MAP FOR NANO MATERIALS IN BRAZIL



# BRAZILIAN MARKET FOR ADVANCED CERAMICS

## STRATEGIC MAP FOR NANO MATERIALS IN BRAZIL

