



YOUR WATER ENGINEERING PARTNER



MAXICO • CHINA • MALAYSIA • KOREA • SINGAPORE • VIETNAM



INTRODUCTION



The *Clarimex* Group is formed by *Clarimex* S.A. de C. V. (in Mexico) and **Brascarbo Agroindustrial Ltda.** (in Brazil) making us the largest activated carbon producer in Latin America and the Caribbean Area; as regards sales we are the leader in pulverized carbon in the region, and we also export to the United States, Europe and Africa.

We produce a wide range of activated carbon based on different raw materials activated with phosphoric acid or with steam. Our philosophy, based on continuous improvement, has allowed us to upgrade our products permanently in order to fulfill our ambitious goals; first, we decided to become the largest producer of activated carbon in Mexico; then we wanted to become the leaders in the Latin American market and establish a name in the world market.

At present, our goal is to become the leaders in Latin America not only as producers of activated carbon, but also in purification products and processes, and to offer Integral Solutions to your purification problems. We know that this will not be easy, yet the desire of being your best option drives us to achieve our goal.

Clarimex: This is the name of the Activated Carbon producer in Mexico that offers the widest range of products. It started operating in 1960, and as from then it has been growing constantly.

CLARIMEX GROUP

A History of Effort and Improvement .

1960

Clarificantes Mexicanos at present S.A. de C. v. began operating, at its Santa Clara Plant in the State of Mexico, producing phosphoric acid activated vegetable carbon.

1970

The production of lignite based mineral carbon was started in order to meet the needs of our customers.

1989

The plant at Atitalaquia, Hidalgo, Mexico started operations, thus greatly increasing its production capacity.

1990

Production of bituminous-based carbon was started.

1995

Activated coconut shell based carbon was added to our family of products.

1997

Clarimex Group an important strategic partnership with NORIT, the largest Activated Carbon Producer in the world that has plants in the United States, Scotland and The Netherlands was set up.

1998

Clarimex Group a young Brazilian company **Brascarbo** that produces wood and activated carbon was purchased, thus forming the Group *Clarimex* Group.

1999

Committed to protecting the environment *Clarimex* Group, the Plant in Atitalaquia, Hidalgo in Mexico got the Clean Industry Certificate.

2000

The ISO 9002 certification for the plant in Atitalaquia, *Clarimex* Group Mexico was obtained in order to offer our customers quality products that meet the highest quality and reliability standards.

OUR PLANTS



OUR PLANTS IN MEXICO **México - Clarimex SA de CV**

In 1989, *Clarimex* S.A. de C.V. opened its plant at Atitalaquia, Hidalgo, Mexico, thus substituting its old Plant in Santa Clara, State of Mexico that had been operating since 1960.

Technological new processes were included in this plant that allowed us to increase the production capacity and the quality of our products. Years later, such processes allowed us to get the Clean Industry Certificate from SEMARNAP in recognition to our efforts to avoid pollution and to preserve the environment. Our Quality System is also certified with the ISO-9002 Standard (Certificate No. FM56119)

Wood activated carbons are produced in this plant through the phosphoric acid process and lignite and bituminous coal are produced through the steam process.

In addition, we have reactivation furnaces that are used for reactivating your exhausted carbon.

We have the necessary infrastructure and resources to guarantee our continuous growth in years to come.

Clarimex also has two other plants:

The first in Santa Clara, State of Mexico where the wood shavings are classified and selected. Such are used as raw material to produce activated carbon and to produce Wood Flour in different granular sizes.

The second in Guadalajara, Jalisco where we produce coconut shell activated carbon.

Our technical department constantly evaluates different raw materials, optimizing and improving our processes to fully satisfy our customer's needs.



Brascarbo
Agroindustrial Ltda.

OUR PLANTS IN BRAZIL **Brazil- Brascarbo Agroindustrial Ltda.**

Our plant located in Guarapuava, Paran, Brazil began operations in December 1997 producing wood activated carbon.

The plant is located in the midst of a large timber zone that guarantees the supply of high quality raw material.

Starting the plant was only the beginning of our mission, for as from that moment there has been a constant increase in the production capacity, thus taking us, in only two years, to becoming the leaders in the Brazilian Market.

At first, **Brascarbo** only produced powdered carbons mainly for Municipal Water Treatment. The growth of our facilities and the improvement of our processes have allowed us to, at present, produce a wide variety of products that cover the whole range of powdered activated carbon.

Although at the beginning the plant only produced powdered carbons, the plant now produces coconut shell granular carbons.

It should be mentioned that **Brascarbo** our infrastructure and facilities will allow the continuous growth of our plant in years to come.

ACTIVATION PROCESS



Why is the activation process important?

The specific characteristics of the different types of activated carbon mainly depend on:

- a) Raw materials
- b) The activation process used

It should be mentioned that the same raw material activated through different processes will produce carbons that have different properties.

What is the activation process?



The activation process basically consists in reordering the carbon atoms into benzene rings to get a reticular crystalline structure similar to that of graphite. That is to say, activation consists in "multiplying" the amount of pores of a certain carbon to produce an extremely porous structure with a large available surface area to carry out the adsorption process of impurities that originate an unpleasant smell, color or taste.

Which are the main activation processes?

There are basically two processes through which activation can be achieved:

- a) Physical Process
- b) Chemical Process

Clarimax produces activated carbon for a wide range of applications by means of the two processes using different raw materials.



Physical Process

The physical activation consists in oxidizing the raw material at high temperatures before the presence of an oxidizing agent, usually, water steam. Because this is an endothermic reaction generally, a constant 800 C temperature must be generated. The temperature varies depending on the raw material.



Chemical Process

The chemical activation is based on dehydrating the raw material using chemical substances at an average temperature (400 to 600 C). This temperature depends on the chemical substance that is used to activate the carbon. The chemical agents that are generally used are phosphoric acid, zinc chloride and sulfuric acid.

PRODUCTS & MAIN APPLICATIONS

Clarimex Group produces more than 50 different degrees of activated carbon from 4 different raw materials, both powdered and granular, in its plants in MEXICO and BRAZIL.

Clarimex Group produces the following trade marks:



Brascarbo
Agroindustrial Ltda.



Our line of products includes:

POWDERED CARBONS

- Phosphoric Acid based activated Vegetable Carbon
- Steam activated Vegetable Carbon
- Lignite and Bituminous steam activated Mineral Carbon

GRANULAR CARBONS

- Phosphoric Acid activated Vegetable Carbon
- Steam activated Coconut Shell Carbon
- Lignite steam activated Mineral Carbon
- Bituminous steam activated Mineral Carbon

SPECIAL CARBONS

- Impregnated Carbons
- Bone Carbons

OTHER SERVICES

- Reactivating Exhausted Carbon
- Dosage Systems
- Adsorbers, Design and Production

In addition to our line of activated carbons we also produce:

- Ionic Interchange Resins
- Filtering Elements: Anthracite, gravels and sand
- Filtering cartridges and plates

Due to their exceptional adsorbing qualities our activated carbons are used in different industrial processes; some of the most important applications are listed below:

- Making Municipal
- Water Drinkable
- Dechlorinating Water
- Wastewater Treatment
- Sugar Discoloration
- Glucose Discoloration
- Fruit Juice Discoloration
- Wine and Must Discoloration and Deodorization
- Oil Discoloration
- Pharmaceutical Products Discoloration
- DEA Purification (Girbotol Process)
- MEROX Process
- Air Purification
- Industrial Gas Purification
- Solvent Purification
- Solvent Recovery from Gaseous Currents

Regardless of your application, and due to the fact that we have the necessary infrastructure to perform evaluations in our laboratories or in the plant in order to select the best carbon from our wide range of products to fulfill your purification needs, our technical personnel can recommend the most adequate product of your process.



POWDERED CARBONS PRODUCT TABLE

BRAND	TYPE	CERTIFICATE	FORM	RAW MATERIAL	ACTIVATION PROCESS	APPLICATIONS
CLARIMEX	046	NSF CUMPLE NORMA AWWA	POWDER	WOOD	PHOSPHORIC ACID	Making water drinkable, oil discoloration, copper refining
CLARIMEX	046-T	NSF CUMPLE NORMA AWWA	POWDER	WOOD	PHOSPHORIC ACID	Making water drinkable, municipal water treatment
CLARIMEX	046-V	NSF CUMPLE NORMA AWWA	POWDER	WOOD	STEAM	Making water drinkable, recuperating caramel, purifying solvents
CLARIMEX	061	NSF	POWDER	WOOD	PHOSPHORIC ACID	Sugar syrup discoloration
CLARIMEX	061 A	NSF	POWDER	WOOD	PHOSPHORIC ACID	Plasticizer and chemical product discoloration
CLARIMEX	061 A FR	NSF	POWDER	WOOD	PHOSPHORIC ACID	Plasticizer and chemical product discoloration, high filtration.
CLARIMEX	061 C	NSF	POWDER	WOOD	PHOSPHORIC ACID	Fruit juice purification, concentrated must and wine, oil and alcoholic drink discoloration
CLARIMEX	061 CAE	NSF	POWDER	WOOD	PHOSPHORIC ACID	Fruit juice purification, concentrated must and wine, oil and alcoholic drink discoloration
CLARIMEX	061 CAE PLUS	NSF	POWDER	WOOD	PHOSPHORIC ACID	Concentrated must and wine purification, pharmaceutical product purification and alcoholic drink discoloration.
CLARIMEX	061 CFR	NSF	POWDER	WOOD	PHOSPHORIC ACID	Processes that require a high discoloration at a high filtration speed. This product is equivalent to 061 C but with a better filtration capacity.
CLARIMEX	061 FR	NSF	POWDER	WOOD	PHOSPHORIC ACID	Sugar syrup discoloration at a high filtration speed
CLARIMEX	061 G	NSF	POWDER	WOOD	PHOSPHORIC ACID	Glucose and maltodextrine discoloration, pharmaceutical products
CLARIMEX	061 GA	NSF	POWDER	WOOD	PHOSPHORIC ACID	Discoloration processes with a high adsorption speed, antibiotic purification such as penicillin
CLARIMEX	061 GAE	NSF	POWDER	WOOD	PHOSPHORIC ACID	Fruit juice, must, and wine purification
CLARIMEX	061 GAM	NSF	POWDER	WOOD	PHOSPHORIC ACID	Glucose and maltodextrine discoloration
CLARIMEX	CC	NSF	POWDER	WOOD	PHOSPHORIC ACID	Simple syrup discoloration and smell removal
CLARIMEX	C-5	NSF	POWDER	WOOD	PHOSPHORIC ACID	Liquid sugar and vegetable oil discoloration, solvent purification
CLARIMEX	N-5	NSF	POWDER	WOOD	PHOSPHORIC ACID	Wastewater treatment and electroplating
CLARIMEX	BM		POWDER	BITUMINOUS COAL	STEAM	Processes that require smell removal, or pharmaceutical product treatment, and glycerin discoloration
CLARIMEX	DB		POWDER	LIGNITE	STEAM	Smell removal, decaffeination process
BRASCARBO	CARBOACTIV A	NSF	POWDER	WOOD	STEAM	Sugar syrup and liquid sugar discoloration at a high filtration speed
BRASCARBO	CARBOACTIV AN	NSF	POWDER	WOOD	STEAM	Sugar syrup discoloration and vegetable oil deodorization
BRASCARBO	CARBOACTIV A plus	NSF	POWDER	WOOD	STEAM	Sugar and alcoholic drink discoloration
BRASCARBO	CARBOACTIV A PN15	NSF	POWDER	WOOD	STEAM	Glucose and maltodextrine discoloration
BRASCARBO	CARBOACTIV F	NSF	POWDER	WOOD	STEAM	Mining application. Zinc refining and organic material removal in the production of nickel and cobalt
BRASCARBO	CARBOACTIV G	NSF	POWDER	WOOD	STEAM	Glycerine and mineral acid removal, vegetal oil purification and deodorization
BRASCARBO	CARBOACTIV GN	NSF	POWDER	WOOD	STEAM	Solvent purification and electroplating

BRASCARBO	CARBOACTIV G plus	NSF				
BRASCARBO	CARBOACTIV GPN15	NSF	POWDER	WOOD	STEAM	Glucose and maltodextrine discoloration
BRASCARBO	CARBOACTIV K	NSF	POWDER	WOOD	STEAM	Municipal water treatment and copper refining
BRASCARBO	CARBOACTIV K plus	NSF	POWDER	WOOD	STEAM	Municipal water treatment and edible oil discoloration
BRASCARBO	CARBOACTIV V	NSF	POWDER	WOOD	STEAM	Fruit juice, must and wine purification, alcoholic drink purification
BRASCARBO	CARBOACTIV V plus	NSF	POWDER	WOOD	STEAM	Pharmaceutical product purification
SUCHAR	N	NSF	POWDER	WOOD	PHOSPHORIC ACID	Activated carbon of a superior quality for the sugar syrup purification
SUCHAR	NFR	NSF	POWDER	WOOD	PHOSPHORIC ACID	Sugar syrup discoloration at a high filtration speed
SUCHAR	W	NSF	POWDER	WOOD	PHOSPHORIC ACID	Making water drinkable and edible oil discoloration

GRANULAR CARBONS PRODUCT TABLE

BRAND	TYPE	CERTIFICATE	FORM	RAW MATERIAL	ACTIVATION PROCESS	APPLICATIONS
CLARIMEX	VG 4 X 10 6 X 20 14 X 35	NSF	GRANULAR	WOOD	PHOSPHORIC ACID	Water dechlorination, pesticide and herbicide adsorption and some applications in the gaseous phase as air filters and solvent adsorption in air currents.
CLARIMEX	CAGR 8 X 30	NSF CUMPLE NORMA AWWA	GRANULAR	LIGNITE	VAPOUR	Making water drinkable, water dechlorination, pesticide and herbicide, chemical products and trihalometanes adsorption
CLARIMEX	CAGRB 8 X 30 12 X 40	CUMPLE NORMA AWWA	GRANULAR	BITUMINOUS COAL	VAPOUR	Glycerine, sugar syrup, glucose, citric acid discoloration and purification processes in the gaseous phase.
CLARIMEX	CAGRBI 10 X 30		GRANULAR	BITUMINOUS COAL	VAPOUR	Sugar syrup discoloration with magnesite integrated as a pH stabilizer.
AQUACTIV	AQUACTIV 8 X 30 12 X 40	CUMPLE NORMA AWWA	GRANULAR	BITUMINOUS COAL	VAPOUR	Water dechlorination, and adsorption of dissolved organic matter.
ACTIV	BIR 8 X 30 12 X 40		GRANULAR	BITUMINOUS COAL	VAPOUR	Waste water treatment, purification processes for industrial products.
CLARIMEX	CS 100		GRANULAR	COCONUT SHELL	VAPOUR	Melting temperature control and a substitute for anthracite.
CLARIMEX	CS 500 8 X 30 *See Note		GRANULAR	COCONUT SHELL	VAPOUR	Water dechlorination.
CLARIMEX	CS 700 4 X 10 8 X 30 *See Note		GRANULAR	COCONUT SHELL	VAPOUR	Water dechlorination, hydrocarbon, pesticides and herbicide adsorption.
CLARIMEX	CS 800 8 X 30 *See Note		GRANULAR	COCONUT SHELL	VAPOUR	Water dechlorination, hydrocarbon, waste water treatment, air filtering.
CLARIMEX	CS 900 *See Note		GRANULAR	COCONUT SHELL	VAPOUR	Water dechlorination, gas hydrogen, helium, acetylene, carbon monoxide, among others purification.
CLARIMEX	IMPREGNATED CARBONS		GRANULAR	LIGNITE AND BITUMINOUS COAL	VAPOUR	Carbons impregnated with different catalysts that increase adsorption efficiency in different processes such as sulfhydic acid in sewage nets.

NOTE: Also available in other particle sizes

Activated Carbon Application Questionnaire

Brief Description of Application:

Medium: Vapour / Liquid Final Product: _____

Temperature: _____ Pressure: _____ Flow Rate: _____

pH: _____ (Liquid phase only) Hardness: _____

TOC: _____ mg/L (Total Organic Carbon)

VOC: _____ ppm/ppb (Volatile Organic Compound)

AC type: Granular / Powder Iodine no: _____

Moisture Content: _____ Ash Content: _____ Floaters _____

AC name: _____

AC Mesh Size: _____ Usage per month: _____

No. of Vessel: _____ Vessel size: _____

AC / Vessel: _____ Change Freq: _____