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UNION CARBIDE AND CARBON CORPORATION

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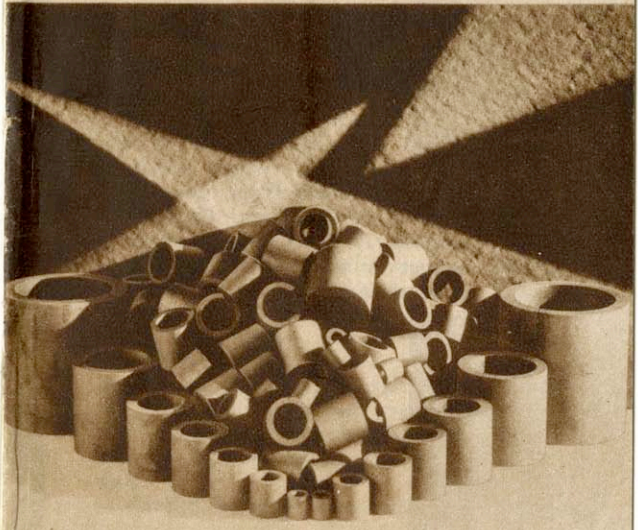
Industrial CARBON PRODUCTS



Illustrated on the front cover is a group of National Carbon Raschig Rings. This carbon product is widely used in the chemical industries.

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INDUSTRIAL CARBON PRODUCTS

Basic raw materials are a vital factor in the modern industrial world. This is often called "The Age of Steel," but there are other materials on which the advantages and conveniences of modern life are equally dependent. Rubber, glass, textiles, copper, and many other basic materials can be named as essential to our present mode of life. Among these is carbon, which plays a most important role. Without carbon, the wheels of many industries would cease to turn; the manufacture of aluminum, steel, and many important alloys would be seriously handicapped; the generation of electric power on the present huge scale would be impossible, and our greatest agency for education and entertainment, the motion picture industry, would come to an end.

Carbon is an element which is found

Lubricants are made from electric furnace graphite.

in abundance in all parts of the world since it is a constituent of all organic materials. The purest form of carbon is the diamond. Other well known forms of essentially pure carbon are graphite, lampblack, charcoal and coke. The latter forms, however, usually contain some mineral or volatile impurities. Coal contains a very high percentage of carbon as well as a variety of tarry hydrocarbons from which the numerous coal-tar products are derived.

The peculiar physical and chemical characteristics of carbon adapt it to many uses for which no other material is available. It has also been found better adapted to many applications than materials formerly used.

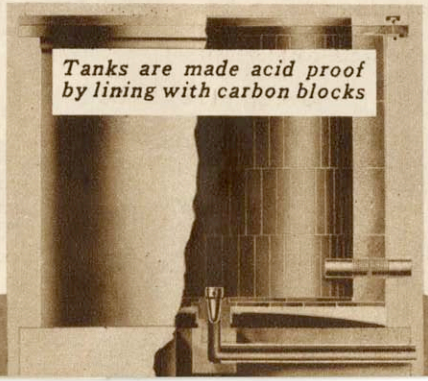
Gredag Lubricants

In striking contrast with the diamond, white transparent and one of the hardest known substances, is graphite, another form of pure carbon. Graphite is black, opaque, and so soft that it provides an excellent medium for lubrication. Gredag is the name applied to a scientific blend of *pure* Acheson electric furnace graphite and high quality grease.

Each minute particle of graphite is completely enveloped and supported by the grease lubricant remaining evenly distributed in the thinnest film of lubrication.

Gredag develops highly polished bearing services with pure electric furnace graphite equalizing the microscopic irregularities of the metal surfaces. These graphitic surfaces carry the bearing load, prevent destructive metal to metal contact and afford low starting friction, should the grease film break during prolonged periods of rest.

The remarkable affinity of Acheson graphite for grease and oil—seven to ten times that of plain metal—establishes a firmly adhering film of grease lubrication on every element of the bearing surfaces. This film resists pressure, heat, and water. It withstands slow speeds and heavy shocks. It prevents rust on water-cooled or weather-exposed bearings.



Tanks are made acid proof by lining with carbon blocks

That is why performance records justify the claim that *Gredag insures lubrication.*

Chemical Carbon Products

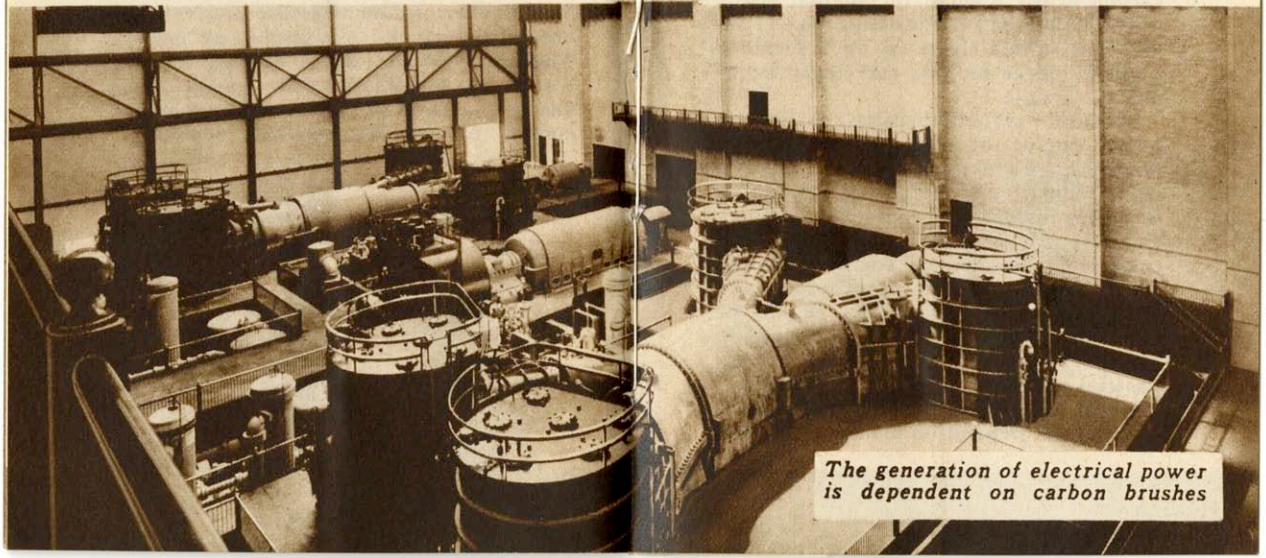
From a chemical standpoint, carbon is very inactive and for this reason it has proved an excellent material for many types of construction in the chemical and process industries. It is immune to reaction with most of the products in chemical manufacturing plants at the concentration and temperatures ordinarily used. It is unaffected by all acids, alkalies, and salt solutions except hot concentrated solutions of highly oxidizing character.

Chemical carbon products are available in the form of brick, tile, tubes, pipe, and special shapes. They provide a corrosion-proof construction material for lining towers, vats, and tanks, for the construction of cascade coolers, for electrostatic precipitation units and for all types of acid proof masonry.

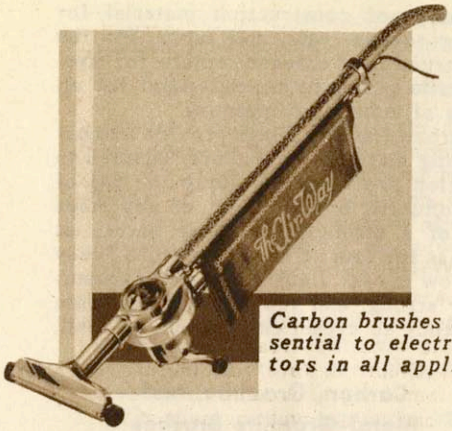
Carbon Raschig Rings provide a tower packing material particularly adapted to reaction processes involving the use of hydrofluoric, hydrochloric, or any acids not of a strongly oxidizing nature as well as for caustic alkali solutions. They are low in cost, light in weight, mechanically strong, and remarkably free from tendency to crush, chip, crack, or spall.

Carbon, Graphite, and Metal-Graphite Brushes

From the standpoint of appearance,



The generation of electrical power is dependent on carbon brushes



Carbon brushes are essential to electric motors in all appliances

few things are less interesting than the carbon brush, a small rectangular shape of black carbon, yet our comfort and convenience in this electrical age depend to a large degree on this seemingly insignificant article.

Without carbon brushes, electrical power could not be generated on the present huge scale and made available to every industry and to every home. Manufacturing industries would be seriously handicapped were they deprived of the convenient and flexible source of power which the electric motor provides, and carbon brushes are an essential part of the electric motor. It is the same in transportation—electric baggage and industrial trucks, street cars, and the giant locomotives on the electrified railways systems—all depend on carbon, graphite, or metal-graphite brushes to carry the electric current to that part of the motor which furnishes the driving power.

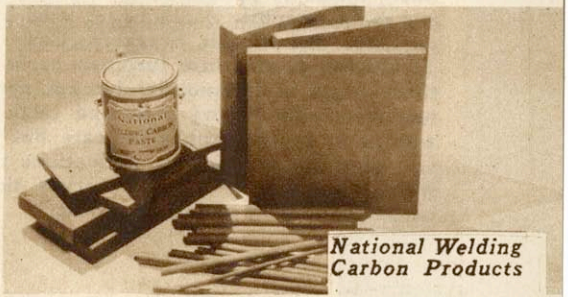
The importance of the carbon brush in the home is seldom realized, yet it is an essential part of the washing machine, the vacuum cleaner, the electric refrigerator, and every rotating electrical appliance in the home.

Welding Carbon Products

In the welding industry, both the gas and electric, National Welding Carbon Products find application. National Welding Electrodes are manufactured in three standard grades adapted to every type of carbon arc welding and cutting.

National Welding Carbon Rods, Plates, and Paste are important accessories in all types of welding operations. Carbon Rods are used as cores and fillers to save redrilling holes that otherwise might be filled with metal during the welding process.

Carbon plates are used as backing up



National Welding Carbon Products

material when welding thin plates or sections and as dams to prevent the escape of metal when building up broken parts. Placed underneath a weld, they preserve a smooth surface and reduce the need for subsequent chipping or machining.

Welding Carbon Paste is an excellent protective covering when welding or cutting near tapped or irregularly shaped holes or near machined surfaces. It is also valuable for backing up thin aluminum sections or light parts. Welding Carbon Paste used as a cushion for aligning broken sections saves much time over the usual shimming process.

Special Applications of Carbon

The peculiar physical characteristics of carbon have led to its adoption on many special applications. Granular carbon and highly polished carbon discs form the heart of the telephone transmitter. Graphite Powders are essential to the electrotyping industry. Carbon discs and granular carbon are used in many forms of resistance units. Carbon and metal-graphite contacts are used on switches and circuit breakers. Carbon packing rings on steam turbines, carbon thrust rings in automobile clutches, carbon electrodes in dry cells and carbon anodes in vacuum tubes indicate but a few of the many varied applications in which this unique element serves the needs of industry and of the home.

NATIONAL CARBON TECHNICAL LITERATURE on Industrial Carbon Products

Available without cost by writing to Union Carbide and Carbon Corporation, 30 East 42nd St., New York, N. Y.

NC-100—Eveready Carbon Arc Industrial Units
NC-101—Ultra-Violet Radiation in Industry
NC-104—National Welding Carbon Products
NC-110—Bulletin on Operation of Carbon Brushes
NC-111—Gredag Lubrication
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