



# CARBON BLACKS



Committed to  
*total* customer  
*satisfaction*



# *about our company*

Continental Carbon Company (the "Company") manufactures furnace grade carbon black used in tires and other rubber and plastic goods. All company products are registered under the "Continex" trademark, a trusted name in the carbon black market since the early 1960's.

Headquartered in Houston, Texas, U.S.A., the Company operates three production plants located in Phenix City, Alabama; Ponca City, Oklahoma; and Sunray, Texas; all of which are certified to the ISO 9000 Series Quality Standard. Additionally, the Company maintains comprehensive research and development laboratory facilities in Houston, Texas. Marketing and sales offices are located in Houston, Texas; Atlanta, Georgia; Charlotte, North Carolina; and Akron, Ohio. A bulk distribution center in Barberton, Ohio supports many customers in the midwestern region.

The Company has supplied technology through licensing for over thirty years to a number of non-US carbon black manufacturing firms. Through this arrangement, the Company provides assistance to various licensees in design, engineering, construction, and production start-ups. When requested, the Company offers technical support related to ongoing plant operations as well.

The carbon black business is highly competitive in the United States. Continental Carbon Company is a major force in the market and intends to remain so, but this requires a commitment to grow. Accordingly, in 1997, the Company commenced a two-year project to expand the Phenix City, Alabama production facility, doubling its capacity to 90,000 metric tons. Combined with various debottlenecking activities in other plants, the total production capacity for the company reached 310,000 metric tons by the end of 1998.

Although the demand for carbon black in North America has been increasing between 1.5% to 2.0% in recent years, the Company, due to its favorable plant locations and excellent customer relations, has and will continue to generate above-market rates of manufacturing and sales growth.

In research and development, efforts are directed toward process improvement and new product development. Major projects include:

- Develop and market new LH (low hysteresis) products.
- Develop "clean black" products for different carbon black applications.
- Improve tread reactor design to reduce manufacturing costs.

Integral to the overall expansion plan, the Company has been assessing the potential of investing in Europe and other locations. In 2000, the Company completed the acquisition of manufacturing facilities near New Delhi, India and established Continental Carbon India, Ltd. (CCIL). As other opportunities come to fruition, the Company, together with China Synthetic Rubber Corporation (parent company in Taiwan), will continue to expand its role as a global carbon black supplier.



***Phenix City, Alabama***

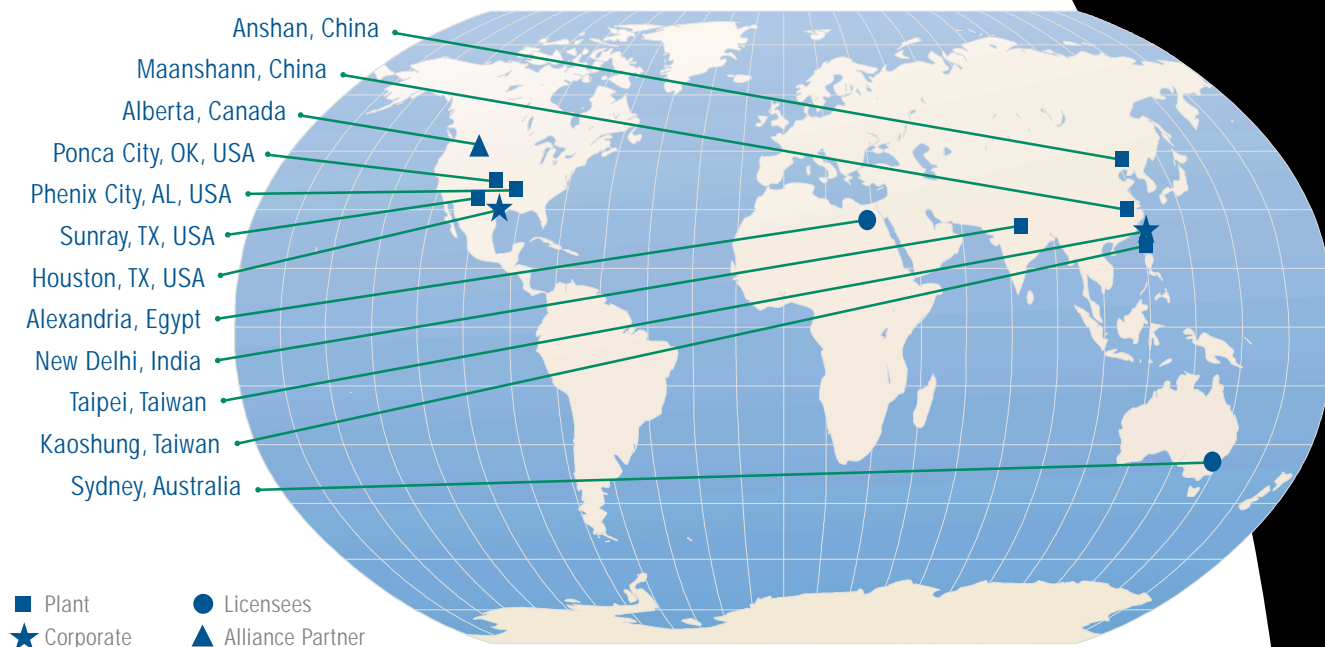


***Ponca City, Oklahoma***



***Sunray, Texas***

## GLOBAL PRESENCE



## BARBERTON WAREHOUSE

The Barberton, Ohio warehouse facility has been servicing the Ohio Valley/North Central US and Canadian carbon black markets for over twenty years. It has functioned effectively as an extension of each of the Company's three plant shipping locations. With a sizable product inventory, the Barberton warehouse has also been servicing accounts with less than truck load (LTL), regular, or emergency requirements.

With 27,000 square feet of storage space, the Barberton warehouse is fully equipped to handle the full spectrum of customer requirements. The large inventory of different grade mixes in a variety of packages, flexible work hours, customer oriented personnel, and close proximity to customer facilities have all added to the many advantages this facility has to offer. In many instances, the convenience as well as

cost savings to the customers have been the focal points for long lasting relationships.

In addition to warehousing, Barberton also has a rail spur with a storage tank facility. Carbon black is unloaded from hopper cars into bulk storage tanks. The material is subsequently transferred into hopper trucks or tote bins. This bulk handling capability has the advantage of convenience and reduced transit time for bulk material for many customers in this region. In many instances, this represents freight savings as well.



## GRADE AND PACKAGE OFFERINGS

Grade	Bulk	FIBC	Kraft Bag	Poly Bag
N326		X	X	
N330	X			X
N339	X	X		X
N351				X
N550	X	X	X	
N650	X		X	
N660	X	X	X	X
N683		X	X	
N774	X		X	
N762	X	X	X	
N990		X	X	X

Note: Grade and packaging are subject to change

# research & development



*Continental Carbon Dispersion System, co-developed with Meyers Instruments, determines the level of undispersed carbon black in a cured sample. The best performance of any black is only realized when the aggregates are in direct contact with the polymers.*

Continental Carbon Company and other carbon black producers have developed a mix of about 40 grades of carbon black, but the possibilities are by no means exhausted. The demand for new consumer products challenges the skill of all carbon black producers and rubber compounders.

Compounding with carbon black often results in two basic questions: which grade of black and how much of it to use? The success of a new rubber product depends on the compounder's skill in manipulating these two factors.



*Haake Rheocord 9000 contains a torque transducer to measure the total work required for mixing. It can also form rubber and plastic extrusions (shown) using various extrusion heads and dies.*

A compounder answers these questions based on the balance of properties needed in the final product.

Occasionally, the properties needed in the carbon black are well defined, but often customers turn to carbon black producers to help them make the right choices.

Indeed, one measure of the Company's worth to its clients is the ability to offer research, product development and technical support.



*MTS Elastomer Test System measures a sample's response to applied loads. Improvements in rolling resistance and wet traction are strongly correlated to these results.*

Continental Carbon Company is an international leader in technical support. In addition to our main laboratory in Houston and an extensive tire testing program, the Company collaborates with university laboratories and other partners on special or truly unique projects to enhance customer satisfaction.

# typical product properties

## TIRE GRADES

ASTM NUMBER	D1510	D2414	D3493	D6556	D6556	D3265	D1513		D412, D3182, D3192	
	Iodine Adsorption g/kg	Oil Absorption 10-5 m3/kg	Oil Absorption Compressed 10-5 m3/kg	NSA Multipoint 103 m2/kg (m2/g)	STSA 103 m2/kg (m2/g)	Tint Strength	Pour Density kg/m3 lb/ft3		Delta Stress at 300% Elongation (vs. IRB7) MPa psi	
N120	122	114	99	126	113	129	345	21.5	-0.4	-60
N234	120	125	102	119	112	123	320	20	-0.1	-10
N326	82	72	68	78	76	111	455	28.5	-3.6	-530
N330	82	102	88	78	75	104	380	23.5	-0.6	-80
LH30	Delta 11 NSA	135	105	92	...	105	...	...	...	...
N339	90	120	99	91	88	111	345	21.5	0.9	140
N343	92	130	104	96	92	112	320	20	1.4	210
N351	68	120	95	71	70	100	345	21.5	1.1	160
N550	43	121	85	40	39	...	360	22.5	-0.6	-90
N650	36	122	84	36	35	...	370	23	-0.7	-110
N660	36	90	74	35	34	...	440	27.5	-2.3	-330

## MECHANICAL RUBBER GRADES

ASTM NUMBER	D1510	D2414	D3493	D6556	D6556	D3265	D1513		D412, D3182, D3192	
	Iodine Adsorption g/kg	Oil Absorption 10-5 m3/kg	Oil Absorption Compressed 10-5 m3/kg	NSA Multipoint 103 m2/kg (m2/g)	STSA 103 m2/kg (m2/g)	Tint Strength	Pour Density kg/m3 lb/ft3		Delta Stress at 300% Elongation (vs. IRB7) MPa psi	
N550*	43	121	85	40	39	...	360	22.5	-0.6	-90
N650	36	122	84	36	35	...	370	23	-0.7	-110
N660	36	90	74	35	34	...	440	27.5	-2.3	-330
N683	35	133	85	36	34	...	355	22	-0.4	-60
N762	27	65	59	29	28	...	515	32	-4.6	-660
N774*	29	72	63	30	29	...	490	30.5	-3.8	-550

\*Low PNA versions of N550 and N774 are also available

## MEDIUM THERMAL GRADES

PARAMETER	ASTM Test method*	Thermax® Floform N990	Thermax® Powder N991
Sieve Residue	D-1514		
325 Mesh Max., % (ppm)		.0015 (15.0)	.025 (250.0)
Magnetics on 325 Mesh (max.)		.0005 (5.0)	.0005 (5.0)
Nitrogen Surface Area, m <sup>2</sup> /g	D-6556	7-12	7-12
DBP cm <sup>3</sup> /100g	D-2414	44 max	44 max
Ash Content % max	D-1506	0.2	0.2
pH	D-1512	9-11	9-11
Toluene Extract % max		0.5	0.5
Heat Loss % max	D-1509	0.1	0.1
Fines Content (as shipped) % max	D-1508	8.0	—
Pellet Hardness grams (14 x 18 mesh)	D-5230		
average max.		30	—
high (average of 3 highest) max		50	—

\*Tests are performed generally in accordance with ASTM.

# typical applications



## TIRE GRADES

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N120	Excellent performance in a wide range of tread compounds from passenger to truck tires and retread applications.
N234	Truck and high performance tread compound. Premium precure tread compounds.
LH30	Continental Carbon Company exclusive: Ultra premium passenger tire tread compounds that require N339 type properties with lower hysteresis and rolling resistance while maintaining treadwear resistance.
N326	Industry choice for steel belt skims.
N330	Applications include treads, filler, sidewall and curing bladders.
N339	Premium passenger tire tread compound.
N343	Versatile black for passenger tire tread compounds.
N351	Economical, low rolling resistance carbon black for passenger tire tread applications.
N550	Carcass and innerliner carbon black.
N650	Carcass and innerliner carbon black.
N660	Carcass and innerliner carbon black.

## MECHANICAL RUBBER GRADES

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N326	Motor mounts and applications requiring superior cut and tear resistance.
N330	Motor mounts, dock fenders and applications requiring higher reinforcement and abrasion resistance.
N339	Solid tires, body mounts and elastomeric roofing.
N351	Motor mounts, shock absorber bushings, solid tires and conveyor belts.
N550	Medium abrasion resistance. Good dimensional stability for extruded profiles, hoses, belts and brake parts.
N550-6	Low PNA N550 developed for pharmaceutical applications.
N650	Medium reinforcing. Good dimensional stability for extruded profiles. Applications include elastomeric roofing, hose, o-rings, innertubes, tire valves and automotive weatherstrip.
N660	Medium reinforcing for innertubes, cable insulation, body mounts.
N683	Higher structure version of N650. Good dimensional stability in extruded profiles.
N762	Semi reinforcing, high loading capacity, low hysteresis. Used in hose, molded goods and solutions.
N774	Semi reinforcing, high loading capacity, low hysteresis. Used in belts, hoses, molded goods, footwear and o-rings.
N774-6	Low PNA N774 developed for pharmaceutical applications.





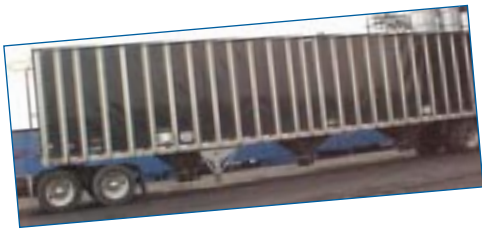
# *shipping & packaging*



About 90 percent of all carbon black made in the United States is shipped in bulk containers, generally railroad hopper cars with a capacity of 100,000 pounds or more.

Continental Carbon's inventory of approximately 500 hopper cars is one of the largest in the industry. In addition, a growing fleet of 50,000-pound capacity hopper trailers is becoming the method of choice for many customers needing fast bulk deliveries.

Continex blacks are also shipped in bulk bins and 50-pound bags, primarily to our valued smaller customers using specialty grades in coatings, inks and small-batch rubber compounds.



# *environmental, health & safety*

Manufactured carbon black is quite different from soot, chars, tars, and other forms of carbon.

Most naturally-occurring carbon has either a hard and glassy structure or crystalline structures which become large, sharp-edged particles when mechanically broken down to dust.

Coal dusts and soot from wood/agriculture fires are examples of natural carbon which originate from uncontrolled burning. Both of these present specific health hazards associated with long-term exposure to their dust. Carbon black is manufactured under precise and controlled combustion conditions, having neither the particle structure nor the health risks associated with coal dusts.

Manufactured carbon blacks do not have the inherent health risks of many similar appearing and carbonaceous dusts. The small size and rounded shape of the particles allows the particles to be removed by the body without causing cellular responses similar to harder and larger particles. The polynuclear hydrocarbons found in combustion products are present in carbon black; however, they are neither bioavailable nor do they demonstrate bioaccumulation in tissues and are not readily absorbed by the cells.

Carbon black is classified as a dust in the working environment, governed by the Occupational Safety and Health Administration (OSHA). Workers must be trained under the HazCom standard about the material, and proper personal protective equipment (PPE) used for the protection of the worker's health.

Carbon black is not classified as a dangerous and hazardous good for transport under the DOT, does not spontaneously ignite, does not produce dust explosions, and is transportable in bulk containers for ease of handling and reduction of personnel exposures.

Continental Carbon Company is proactive in implementing state of the art environmental process improvements, and is committed to being a good Corporate Citizen. The Company complies with all labor, safety, health, and environmental regulations at all of its production facilities. Continental Carbon Company is one of the founding companies of the International Carbon Black Association (ICBA). This organization sponsors research on occupational health aspects and participated in the formulation of the Maximum Achievable Control Technology (MACT) standards and other related regulatory standards.



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