

CAMERON GREAT LAKES, INC.

MOLECULAR FILTRATION SPECIALISTS

BULK MEDIA FOR COMMERCIAL AND INDUSTRIAL APPLICATIONS

VAPOR PHASE ACTIVATED CARBONS

- **CGL-CC:** Granular **coconut shell** activated carbon. Carbon tetrachloride number (CTC) 60% minimum. Recommended for **general odor control** and removal of **volatile organic compounds**.
- **CGL-GAC:** Granular bituminous **coal based** activated carbon. Can often be substituted for CGL-CC in many applications.
- **CGL-CP:** Pelletized **coal base** activated carbon. Offers symmetry of carbon. Offers the least air resistance.

SPECIALTY CARBONS

- **CGL-CI:** High activity, specially treated activated carbon media designed for vapor phase odor control. Recommended for **removal of hydrogen sulfide, sulfur dioxide** and many odors associated with sewage wastes, and pulp and paper mills. It is also ideally suited for air purification in museums, archives and storage facilities.
- **CGL-PA:** High activity treated granular carbon for use in controlling **ammonia and amine odors**. Specific applications include, fertilizer plants and livestock and veterinary facilities.
- **CGL-SU:** Granular activated carbon specially treated for the efficient removal of **mercury vapors**. Applications include mining operations, battery production and laboratories.
- **CGL-KI:** Specially treated granular coconut shell based activated carbon that meets ASTM A069 specifications for nuclear grade carbons. It is suitable for the removal of **radioactive iodides and organic iodides** from steam - air mixtures at temperatures below 200⁰ C. Applications include nuclear power plants and research facilities.

SPECIALTY MEDIA

- **CGL-ZK6:** A new patented aluminosilicate compound impregnated with **6% potassium permanganate**. It is designed to oxidize gaseous contaminants including **hydrogen sulfide, sulfur dioxide, formaldehyde, ethylene, mercaptans and alcohols**. The media offers more active ingredient and less dust than other alumina-based products. Applications include cold fruit storage, compressor intakes, exhaust systems, and general HVAC applications.

NOTES: Most media is available in common mesh sizes including 4x6, 4x8, and 4x10. The most commonly used size in the HVAC industry is 4x8. Custom sizing is available on most products. For more detailed information on the media please refer to the specific product bulletin.

Media Packaging Options

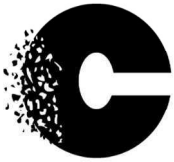
5 Gallon Pails: 20 pounds (0.67cf³)
Boxes.....: 30 pounds (1.0 f³)
Bags.....: 50 pounds (1.8cf³)

14 Gallon Drums.: 50 pounds (1.67 cf³)
55 Gallon Drums.: 200 pounds (6.67 cf³)
Bulk Super Sacks: 1000 pounds (33.34 cf³)

Weights above are based on a media density of 30 pounds per cf³. Packages will accommodate more weight with media of heavier densities. See individual specification sheets for actual media bulk density.

2335 NW 29TH AVENUE, PORTLAND, OR 97210
PHONE: (800) 777-4044 FAX: (503) 225-0137

WWW.CAMERONGREATLAKES.COM
EMAIL: SALES@CGLCARBON.COM



CAMERON GREAT LAKES, INC.

MOLECULAR FILTRATION SPECIALISTS

CGL CCS

DESCRIPTION

Coconut shell activated carbon with a well developed pore structure, providing a wide range of molecular adsorption. Media is available in various mesh sizes.

APPLICATIONS

Controls a wide range of molecular weights making it ideally suited for all general commercial and industrial air filtration applications requiring chemical filtration.

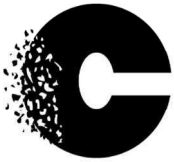
Physical Properties

Activity for CCL ₄ , (ASTM D3467-94)	60 - 65%
Bulk Density, Typical	29 — 30 LBS/ CU FT
Moisture content, As Packed	2%
Ball Pan Hardness, (ASTM D3802-79)	98, Minimum
Iodine Number, MG/G (ASTM 4607-94)	1150, Minimum
Ash Content, Maximum	3%

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CAMERON GREAT LAKES, INC.

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CGL CCS 6 x 12

DESCRIPTION

Coconut shell activated carbon with a well developed pore structure, providing a wide range of molecular adsorption.

APPLICATIONS

Controls a wide range of molecular weights making it ideally suited for all general commercial and industrial air filtration applications requiring chemical filtration.

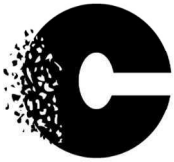
Physical Properties

Activity for CCL ₄ , (ASTM D3467-94)	60 - 65%
Bulk Density, Typical	29 LBS/ CU FT
Moisture content, As Packed	2%
Ball Pan Hardness, (ASTM D3802-79)	98, Minimum
Iodine Number, MG/G (ASTM 4607-94)	1150, Minimum
Ash Content, Maximum	3%

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CGL CP48

DESCRIPTION:

CP 48 is a bituminous coal based 4 mm pelletized activated carbon of high adsorptive capacity. It has a well developed pore structure for the adsorption of a wide range of volatile organic compounds.

APPLICATIONS:

It is ideally suited for critical applications such a process gas purification, solvent vapor recovery and catalyst support.

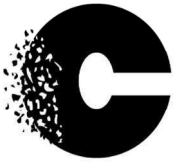
Physical Properties

ACTIVITY for CCL ₄ , (ASTM D3467-94)	60, minimum
BULK DENSITY , TYPICAL	26-28 lbs / cu ft
HARDNESS , (ASTM D3808-79)	98, min
MOISTURE , AS PACKED, (ASTM D2867-95)	2 %
ASH CONTENT , TYPICAL	10 - 12 %

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CGL CI

DESCRIPTION

CGL/CI is a specially treated activated carbon designed for use in vapor phase odor control and corrosion control. It is available on pelletized carbon, granular bituminous coal, and granular coconut shell activated carbon.

APPLICATIONS

It is ideally suited for the removal of hydrogen sulfide, sulfur dioxide, hydrogen chloride, chlorine, fluorine, bromine, methyl mercaptans and other reactive and acid gases typically found in the treatment of sewage wastes, pulp and paper mills, and chemical plants.

Physical Properties

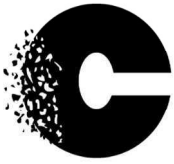
Apparent Density, (ASTM D2854-89)	0.55 G/CC Typical
Maximum Head Loss at 50 FPM	1.2" wc/FT of Bed Depth
Moisture Content (ASTM D2867-95)	10%
Hardness, (ASTM D-3802-79)	95
Hydrogen Sulfide, Minimum Breakthrough Capacity*	0.14G H ₂ S/CC Carbon, 23%
Time to .01 PPM H₂S Breakthrough	851 Hours

*Hydrogen sulfide breakthrough capacity is determined by passing a moist air stream (85% RH) containing 1% hydrogen sulfide, at a rate of 1450 cc/min, through a 1.0" diameter x 9" deep bed of uniformly packed activated carbon and monitored to 50 ppm breakthrough.

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CGL CCSCI

DESCRIPTION

CGL/CCSCI is a specially treated coconut shell activated carbon designed for use in vapor phase odor control and corrosion control.

APPLICATIONS

It is ideally suited for the removal of hydrogen sulfide, sulfur dioxide, hydrogen chloride, chlorine, fluorine, bromine, methyl mercaptans and other reactive and acid gases typically found in the treatment of sewage wastes, pulp and paper mills, and chemical plants.

Physical Properties

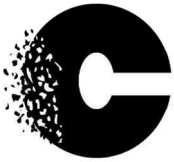
Apparent Density, (ASTM D2854-89)	0.55 G/CC Typical
Base Carbon	Virgin Coconut Shell
Maximum Head Loss at 50 FPM	1.2" wc/FT of Bed Depth
Moisture Content (ASTM D2867-95)	10%
Hardness, (ASTM D-3802-79)	95
Hydrogen Sulfide, Minimum Breakthrough Capacity*	0.14G H ₂ S/CC Carbon, 23%
Time to .01 PPM H ₂ S Breakthrough	851 Hours

*Hydrogen sulfide breakthrough capacity is determined by passing a moist air stream (85% RH) containing 1% hydrogen sulfide, at a rate of 1450 cc/min, through a 1.0" diameter x 9" deep bed of uniformly packed activated carbon and monitored to 50 ppm breakthrough.

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CGL CPCI

DESCRIPTION

CGL /CPCI is a specially treated high activity coal based pelletized activated carbon designed for use in vapor phase odor control and corrosion control.

APPLICATIONS

It is ideally suited for the removal of hydrogen sulfide, sulfur dioxide, hydrogen chloride, chlorine, fluorine, bromine, methyl mercaptans and other reactive and acid gases typically found in the treatment of sewage wastes, pulp and paper mills, and chemical plants.

Physical Properties

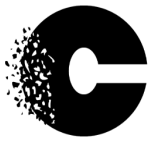
Apparent Density, (ASTM D2854-89)	0.55 g/cc Typical
Maximum Head Loss at 50 FPM	1.2" wc/ft of Bed Depth
Moisture Content (ASTM D2867-95)	10%
Hardness, (ASTM D-3802-79)	95
Hydrogen Sulfide, Minimum Breakthrough Capacity*	0.14G H ₂ S/ccCarbon, 23%
Time to .01 PPM H ₂ S Breakthrough	851 Hours

*Hydrogen sulfide breakthrough capacity is determined by passing a moist air stream (85% RH) containing 1% hydrogen sulfide, at a rate of 1450 cc/min, through a 1.0" diameter x 9" deep bed of uniformly packed activated carbon and monitored to 50 ppm breakthrough.

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CGL/PA

DESCRIPTION: CGL/PA is a high activity, specially impregnated activated carbon. It is available on both coconut shell and coal pellet.

APPLICATIONS: Removal of ammonia and amines in vapor phase applications.

PHYSICAL PROPERTIES:

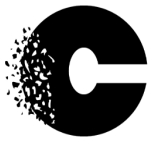
BASE MATERIAL	
ACTIVITY FOR CCL ₄ (ASTM D-3467)	60%
BULK DENSITY, TYPICAL	30 LBS/CU FT.
BALL PAN HARDNESS (ASTM D3082-79)	95 MINIMUM
FINISHED PRODUCT	
BULK DENSITY, TYPICAL	35 LBS/CU FT.
AMMONIA (NH ₃) REMOVAL	7 %*

* Equals 30% of the weight of the base of activated carbon before treatment.

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CGLCCSPA

DESCRIPTION: CGLCCSPA is a high activity, specially impregnated virgin coconut shell activated carbon.

APPLICATIONS: Removal of ammonia and amines in vapor phase applications.

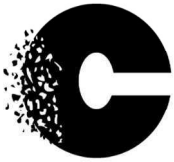
PHYSICAL PROPERTIES:

BASE MATERIAL	
ACTIVITY FOR CCL ₄ (ASTM D-3467)	60%
BULK DENSITY, TYPICAL	30 LBS/CU FT.
BALL PAN HARDNESS (ASTM D3082-79)	95 MINIMUM
FINISHED PRODUCT	
BULK DENSITY, TYPICAL	34 LBS/CU FT.
H ₃ PO ₄ % (dry weight)	13 +/- .5

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EMAIL: SALES@CGLCARBON.COM



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CGL CPPA

DESCRIPTION: CGL/CPA is a high activity, specially impregnated activated carbon pellet.

APPLICATIONS: For use in vapor phase applications for ammonia and amine removal.

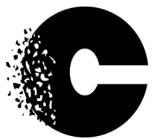
PHYSICAL PROPERTIES:

BASE MATERIAL	
ACTIVITY FOR CCL ₄ (ASTM D-3467)	60%
BULK DENSITY, TYPICAL	30 LBS/CU FT.
BALL PAN HARDNESS (ASTM D3082-79)	95 MINIMUM
FINISHED PRODUCT	
BULK DENSITY, TYPICAL	35 LBS/CU FT.
AMMONIA (NH ₃) REMOVAL	6-7 %

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CGL ZK6

**OXIDIZES
ACID GASES**

ZK6 is an air filtration media specifically designed to oxidize gaseous pollutants such as hydrogen sulfide, sulfur dioxide, formaldehyde, ethylene, and mercaptans.

CONTROLS ODOR

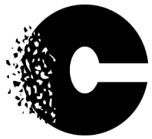
This unique media is ideally suited for corrosion control and protection of electronic process controls in industrial environments; odor abatement in sewerage treatment facilities and odor and control in public buildings. It provides superb protection of perishable commodities in the fresh food industry.

**OFFERS MORE
KMnO₄**

ZK6 is made from a unique aluminosilicate compound possessing significant molecular sieve sorption capacity and is impregnated with 6% potassium permanganate.

**LESS DUST
FOR EASY HANDLING**

BULK DENSITY, LBS/ CU FT.	60 average
PORE SIZE, ANGSTROMS	4.0
Physical Properties	
HARDNESS, MOHS SCALE	5.1
KMnO ₄ , PERCENT BY WEIGHT	6%
SPECIFIC SURFACE AREA, SQ. YDS./OZ.	1357

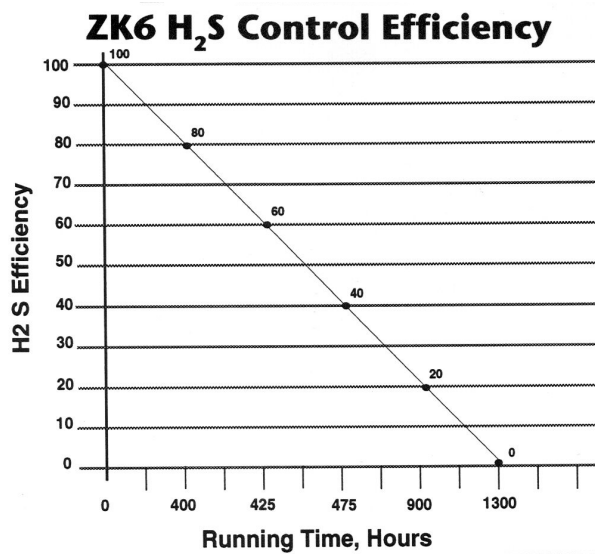


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The chart below illustrates the ZK6 efficiency when challenged with 50 ppm of hydrogen sulfide. The media lasted in excess of 1300 hours before being expended.



COST EFFECTIVE

The **ZK6** media has 6% KMnO₄ as compared to most 4% impregnate levels for standard alumina pellets. Additionally, the bulk density at 60 pounds per cubic foot gives 20% more media in the same space allotment. This means on a volumetric basis, the **ZK6** contains 1.8 times the active ingredient than the alumina pellets. Pound for pound the **ZK6** provides 50% more active ingredient. As a result, the **ZK6** provides longer system life, lower maintenance costs and lower handling costs.

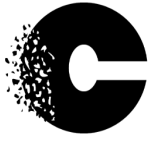
ZK6 presents no health hazard when shipped, stored and handled correctly. Please refer to our Material Safety Data Sheet for more complete information.

Please contact Cameron Great Lakes, Inc. or your local distributor for further information

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WWW.CAMERONGREATLAKES.COM
EMAIL: SALES@CGLCARBON.COM



CAMERON GREAT LAKES, INC.

MOLECULAR FILTRATION SPECIALISTS

CGL C/ZK6

**OXIDIZES
ACID GASES**

**CONTROLS
ODOR**

CGLC/ZK6 is a 50/50 blend by weight of activated carbon and our ZK6 air filtration media. It is specifically designed to oxidize gaseous pollutants such as hydrogen sulfide, sulfur dioxide, formaldehyde, ethylene, and mercaptans, and remove high molecular weight volatile organic compounds.

This blended media is ideally suited for odor and control in public buildings, hospitals and airports.

Physical Properties

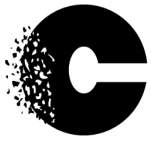
BULK DENSITY, LBS/ CU FT.	40
CTC, Activity % (Activated carbon)	60 minimum
KMnO ₄ , % by weight (ZK6)	6 %
Removal %, by weight	H₂S- 8 %, NO₂- 1%, SO₂-3.5 %, Nitric dioxide- 2.5%

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WWW.CAMERONGREATLAKES.COM
EMAIL: SALES@CGLCARBON.COM



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CGL C/ZK6 -V

**OXIDIZES
ACID GASES**

**CONTROLS
ODOR**

**Adsorbs
VOC'S**

CGLC/ZK6 is a 50/50 blend by volume of activated carbon and our ZK6 air filtration media. It is specifically designed to oxidize gaseous pollutants such as hydrogen sulfide, sulfur dioxide, formaldehyde, ethylene, and mercaptans, and remove high molecular weight volatile organic compounds.

This blended media is ideally suited for odor control in public buildings, hospitals, airports, casinos, and similar applications where there are multiple contaminants.

Maximum operating temperature is 120 F.

Physical Properties

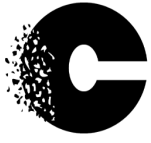
BULK DENSITY, LBS/ CU FT.	45
CTC, Activity % (Activated carbon)	60 minimum
KMnO ₄ , % by weight (ZK6)	6 %

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WWW.CAMERONGREATLAKES.COM
EMAIL: SALES@CGLCARBON.COM



CAMERON GREAT LAKES, INC.

MOLECULAR FILTRATION SPECIALISTS

CGL C/KOR48

**OXIDIZES
ACID GASES**

**CONTROLS
ODOR**

UL CLASS I

CGLC/KOR48 is a 50/50 blend by volume of activated carbon and our air filtration media KOR48. It is specifically designed to oxidize gaseous pollutants associated with cooking odors.

This blended media is ideally suited for odor control in restaurants and other facilities where cooking odors are found.

Physical Properties

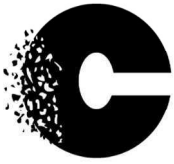
BULK DENSITY, LBS/ CU FT.	45
CTC, Activity % (Activated carbon)	60 minimum
KMnO ₄ , % by weight	6 %

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CGL CP48 - KI_x

DESCRIPTION:

CP 48-KI_x is a bituminous coal based pelletized activated carbon specifically developed for the nuclear industry. Available with KI_x, amines or co-impregnated KI_x/amines for entrapment of radioactive organo-iodine species from the air.

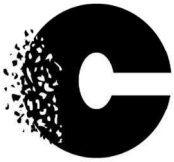
Physical Properties

ACTIVITY for CCL ₄ , (ASTM D3467-94)	60, minimum
BULK DENSITY, AVERAGE	30 lbs / cu ft
HARDNESS, (ASTM D3808-79)	98, min
MOISTURE, AS PACKED, (ASTM D2867-95)	2 %
KI CONTENT	5 %
ASH CONTENT, TYPICAL	10 - 12 %

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PHONE: (800) 777-4044 FAX: (503) 225-0137

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CAMERON GREAT LAKES, INC.

MOLECULAR FILTRATION SPECIALISTS

CGL CC48 - KI_x

DESCRIPTION:

CGL CC KI_x 48- is a coconut shell activated carbon specifically developed for the nuclear industry. Available with KI_x, amines or co-impregnated KI_x/amines for entrapment of radioactive organo-iodine species from the air.

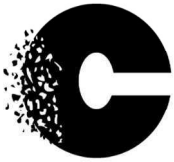
Physical Properties

ACTIVITY for CCL ₄ , (ASTM D3467-94)	60, minimum
BULK DENSITY, AVERAGE	34 lbs / cu ft
HARDNESS, (ASTM D3808-79)	98, min
MOISTURE, AS PACKED, (ASTM D2867-95)	2 %
KI CONTENT	5 %
ASH CONTENT, TYPICAL	2 %

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CAMERON GREAT LAKES, INC.

MOLECULAR FILTRATION SPECIALISTS

CGL CC - KI₃

DESCRIPTION: CGL CC KI₃ - is a coconut shell activated carbon specifically developed for the chemisorption of mercury vapor. In addition to a high degree of activation and impregnation this product also offers excellent mechanical strength and a highly developed pore structure.

Physical Properties

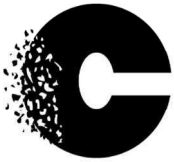
ACTIVITY for CCL ₄ , (ASTM D3467-94) (BASE MATERIAL)	60, minimum
BULK DENSITY, AVERAGE	34 lbs / cu ft
HARDNESS, (ASTM D3808-79)	98, min
MOISTURE, AS PACKED, (ASTM D2867-95)	15 % max
KI ₃ CONTENT	5 % minimum
ASH CONTENT, TYPICAL	2 %

Product is also available in various mesh sizes, 4 x 6 , 4 x 8, 4 x 10. Custom mesh sizes are available.

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CAMERON GREAT LAKES, INC.

MOLECULAR FILTRATION SPECIALISTS

CGL CP48 -SU

DESCRIPTION:

CP 48-SU is a sulfurized bituminous coal based pelletized activated carbon of high adsorptive capacity . It is specifically designed for the capture of mercury vapors.

APPLICATIONS:

It is ideally suited for critical applications such as destruction of fluorescent light bulbs, and other mercury containing devices.

Physical Properties

ACTIVITY for CCL ₄ , (ASTM D3467-94) (BASE MATERIAL)	60, minimum
BULK DENSITY , TYPICAL	35 lbs. cu ft
HARDNESS , (ASTM D3808-79)	98, minimum
MOISTURE , AS PACKED, (ASTM D2867-95)	2 %
ASH CONTENT , TYPICAL	10 - 12 %
SULFUR CONTENT , % BY WEIGHT	10 %, minimum

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CAMERON GREAT LAKES, INC.

MOLECULAR FILTRATION SPECIALISTS

NUK-TK Nuclear Grade Carbon

STANDARD SPECIFICATION

Activity for CCL ₄ ,	ASTM D-3467	60%, Minimum
Moisture Content,	ASTM D-2867	5 %, Maximum
Particle Size,	ASTM D-2862/D-5158	8X16 US mesh On 6: 0.1% max. On 8: 5% max 8x12: 40-60% 12x16: 40-60% Thru 16: 5% max. Thru 18: 1% max.

TYPICAL PROPERTIES

Hardness,	ASTM D-3802	97
Bulk Density,	ASTM D-2854	.55 g/cm ³
Ash Content,	ASTM D-2866	3%
pH Aqueous Extract,	ASTM D-3838	9.2 Minimum
% Impregnant		2.1 Potassium Iodide 3.1% TEDA
Ignition Temperature,	ASTM D-3466	330°C

RADIOIODINE REMOVAL EFFICIENCY, ASTM D-3803

50 mm bed depth

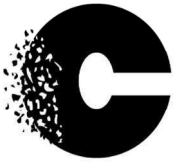
Molecular Iodine	30°C	95% RH	99.9% min.
Methyl Iodide	30°C	95% RH	97.0% min.
Methyl Iodide	80°C	95% RH	99.0% min.
Methyl Iodide	130°C	95% RH	98.0% min.
Molecular Iodine Retention	180°C		99.5% min.

Unless otherwise specified, particle size distribution will be 5% maximum on the top screen and 5% maximum through the bottom screen.

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CAMERON GREAT LAKES, INC.

MOLECULAR FILTRATION SPECIALISTS

CGL DCL

Eliminates Chlorine

DCL DeActivator™ media is a combination of specially designed **Odor** reducing agents, that are impregnated into a zeolite matrix via a patented process. These reducing agents have strong reduction capabilities in the presence of certain oxidizing compounds, including chlorine, chlorine dioxide, chloramine and peroxides.

The DeActivator™ is ideally suited for use in the indoor pool environment for the removal of chlorine odors and in any chemical and industrial process where chlorine is present.

Physical Properties

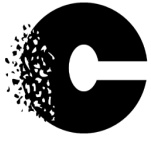
BULK DENSITY, LBS/CU FT AVG	60
PORE SIZE, ANGSTROMS	4.0
PORE VOLUME	15%
HARDNESS, MOHS SCALE	5.1

Please contact Cameron Great Lakes, Inc. or your local Distributor for further information.

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CAMERON GREAT LAKES, INC.

MOLECULAR FILTRATION SPECIALISTS

CGL TRI BLEND CZP

**OXIDIZES
ACID GASES**

**CONTROLS
VOC's**

**REMOVES
AMMONIA**

CGLCZP is a special blend activated carbon, specialty carbons and oxidizing media. It is specifically designed to oxidize gaseous pollutants such as hydrogen sulfide, sulfur dioxide, formaldehyde, ethylene, and mercaptans, it effectively remove high molecular weight volatile organic compounds, and reacts to remove ammonia from air streams.

This tri blend media is specially formulated for the semiconductor industry to prevent product contamination.

Physical Properties

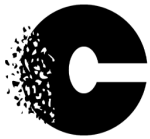
BULK DENSITY, LBS/ CU FT.	40
CTC, Activity % (Activated carbon)	60 minimum
KMnO ₄ , % by weight (ZK6)	6 %
Removal %, by weight	H2S- 8 %, NO2- 1%, SO2-3.5 %, Nitric dioxide- 2.5%

Please contact Cameron Great Lakes, Inc. or your local distributor
for further information

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CAMERON GREAT LAKES, INC.

MOLECULAR FILTRATION SPECIALISTS

CGL C/PA/ZK6

OXIDIZES
ACID GASES

CONTROLS
VOC'S

REMOVES
AMMONIA

CGLC/PA/ZK6 is a 33/33/33 blend by weight of activated carbon, phosphoric acid impregnated carbon and CGL's air filtration media ZK6. It is specifically designed to oxidize gaseous pollutants such as hydrogen sulfide, sulfur dioxide, formaldehyde, ethylene, and mercaptans, effectively remove high molecular weight volatile organic compounds, along with ammonia and amine compounds.

This blended media is ideally suited for use in the semiconductor industry for removal of airborne molecular contaminants.

Physical Properties

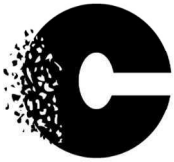
BULK DENSITY, LBS/ CU FT.	42
CTC, Activity % (Activated carbon)	60 minimum
KMnO ₄ , % by weight (ZK6)	6 %

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CAMERON GREAT LAKES, INC.

MOLECULAR FILTRATION SPECIALISTS

CGL GAC - FR

DESCRIPTION

Granular activated carbon with a well developed pore structure, providing a wide range of molecular adsorption. Media is available in various mesh sizes. This carbon has been specially impregnated with an 84E5, Class B Flame Retardant.

The Flame retardant is odorless and non-toxic.

APPLICATIONS

Controls a wide range of molecular weights making it ideally suited for all general commercial and industrial air filtration applications requiring chemical filtration. This carbon is suitable for use in CGL Honeycomb filters, which provide the end user with an easy to use product and a filter that is easy to dispose

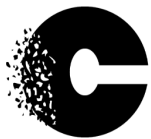
Physical Properties

Activity for CCL ₄ , (ASTM D3467-94)	60 minimum
Bulk Density, Typical	30 LBS/ CU FT
Moisture content, As Packed	3 % (typical)
Iodine Number, MG/G (ASTM 4607-94)	1050, Minimum
Mesh Sizes	All standard and custom sizes available.

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Screen Size Distribution

SSD is the range of screens over which activated carbon is sized. The screen size, or mesh size to be used is determined by a square root of two progression in screen opening, starting with the largest screen used. The US standard sieve sizes are provided (opposite side). The Mean Particle Diameter (MPD) is calculated on the basis of screen size distribution. The weight percent of activated carbon passing through one screen sieve and remaining on the next smaller screen is determined (material on the largest screen and passing through the smallest screen is ignored). The weight fraction is multiplied by the average screen opening for the larger screen and the screen on which the activated carbon was retained. The summation of these fractions is the MPD.

Iodine Number

The amount of Iodine adsorbed by activated carbon from a 0.02N₂/KI aqueous solution. Iodine Number has been roughly correlated to the surface area in pores greater than 10 A diameter. However, it is best understood as an indicator of total pore volume.

Molasses Number

A measure of the relative decolorization of a boiling molasses solution by activated carbon. The Molasses Number has been interpreted as the surface area available in pores greater than 28 A diameter. Because molasses is a multicomponent mixture, one must be careful in assigning too strict an interpretation to this parameter.

Apparent Density (AD)

A measure of the mass of carbon that occupies a particular volume. The test is performed by gradually filling a graduated cylinder to 100cc and determining the mass of activated carbon contained. This value, corrected for less efficient settling in the field is used for calculating the amount of activated carbon needed to fill given adsorber volume.

Carbon Tetrachloride Number

Total pore volume indicator. This measured by passing an airstream saturated with CCl₄ at 0°C through a carbon bed held at 25°C. The weight of the CCl₄ adsorbed is determined at prescribed intervals until there is a negligible weight change in the sample.

Hardness Number

Measurement of the mechanical strength of activated carbon. It is the change in weight, expressed as a percentage, of a specific screen size fractions after 3 minutes of vigorous agitation with smooth steel balls.

Abrasion Number

Measurement of the attrition of resistance of activated carbon. This test measures the change in MPD, expressed as a percentage, of a sample after 3 minutes of vigorous agitation with smooth steel balls.

Ash

Inorganic material, primarily aluminum and silicon, contained in activated carbon. Ash is the residual from burning pulverized carbon in air for 3 hours at 1750°F (954°C).

Moisture

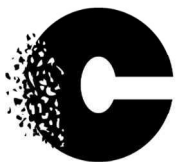
A measure of the water content of carbon . It is determined by boiling activated carbon in xylene using a Dean-Stark trap and condenser. The water is condensed and trapped in a volumetric arm in order to determine the water content. The moisture content of virgin activated carbon can also be estimated on the basis of the weight change that occurs after oven drying at 150°C for 3 hours.

ACTIVATED CARBON PARTICLE SIZE TABLE

To determine approximate mesh size of an activated Carbon sample, check the table below

STANDARD MESH OPENING PARTICLE

Tyler	U.S.	mm	inches
4	4	4.75	0.187
6	6	3.35	0.132
8	8	2.36	0.094
10	12	1.70	0.066
12	14	1.40	0.056
14	16	1.18	0.047
16	18	1.00	0.039
20	20	0.85	0.033
24	25	0.71	0.028
28	30	0.60	0.023
32	35	0.50	0.020
35	40	0.425	0.017
42	45	0.355	0.014
48	50	0.300	0.012
60	60	0.250	0.0098
65	70	0.212	0.0083
80	80	0.180	0.0070
100	100	0.150	0.0059
115	120	0.125	0.0049
150	140	0.106	0.0041
170	170	0.090	0.0035
200	200	0.075	0.0029
250	230	0.063	0.0025
270	270	0.053	0.0021
325	325	0.045	0.0017
400	400	0.038	0.0015
—	500	0.025	0.0010



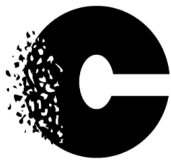
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MOLECULAR FILTRATION SPECIALISTS

CHEMICAL COMPOUND MEDIA SELECTION GUIDE

CONTAMINANT	MR, CP, CCR, CCS	ZK6	CI	PA
ACETIC ACID	X	X	X	
ACETONE	X			
ACROLEIN		X		
ALDEHYDES	X	X		
AMINES				X
AMMONIA				X
BENZENE	X			
CHLORINE	X		X	
ETHYL ALCOHOL	X			
FORMALDEHYDE		X		
GLUTERALDEHYDE		X		
HYDROGEN CYANIDE		X	X	
HYDROGEN SULFIDE		X	X	
METHYL ALCOHOL	X			
MERCAPTANS	X	X		
METHYLENE CHLORIDE	X			
METHYL ETHYL KETONE	X			
NITRIC OXIDE		X		
NITROGEN DIOXIDE		X		
OZONE	X			
SULFUR DIOXIDE		X	X	
SULFUR TRIOXIDE		X	X	
TOLUENE	X			
VOLATILE ORGANIC COMPOUNDS	X			

MEDIA MAY BE COMBINED TO GIVE A BROAD RANGE OF CONTAMINANT REMOVAL CAPACITY. CONTACT YOUR LOCAL REPRESENTATIVE OR CGL FOR FUTURE TECHNICAL ASSISTANCE.



CAMERON GREAT LAKES, INC.

MOLECULAR FILTRATION SPECIALISTS

ZK6 Chemical Contaminant Removal Chart

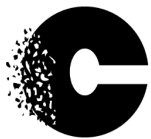
COMPOUND	Mol. Weight	COMPOUND	Mol. Weight	COMPOUND	Mol Weight
Acetaldehyde	44.05	ethanol	46.07	methylamine	31.06
acetic acid	60.05	ethyl acrylate	100.11	Methyl disulfide	94.19
acetone	58.08	ethylene	28.05	methyl ethyl ketone	72.10
acetylene	26.02	ethyl mercaptan	62.13	methyl mercaptan	48.11
acrolein	56.06			Nitrogen Dioxide	46.01
acrylonitrile	53.06	formaldehyde	30.03	phenol	94.11
arsine	77.93	formic acid	46.02	phosphine	34.00
butadiene	54.09	hydrazine	32.05	skatole	131.17
butyl mercaptan	90.18	Hydrogen chloride	36.47	silane	32.09
butyric acid	88.10	hydrogen cyanide	27.03	styrene	104.14
		hydrogen sulfide	34.08	Sulfur dioxide	64.07
carbon disulfide	76.14			Sulfur trioxide	80.07
3-chloropene		isoprene	68.11		
cresol	108.13	isopropanol	60.09	trichloroethylene	131.40
				triethylamine	101.19
diethylamine	73.14	methanol	32.04	trimethylamine	59.11
dimethylamine	45.08	methyl acrylate	86.09		
				vinyl chloride	62.5

This list is for guideline purposes only. Effective chemical contaminant removal requires a properly designed filtration system.

Corporate Office

2335 NW 29th Ave. Portland, OR 97210
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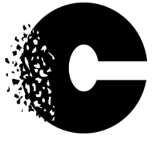
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MOLECULAR FILTRATION SPECIALISTS

Comparative Media Designations

Cameron Great Lakes, Inc.	Purafil	Flanders	Application
CP48, CCS	Purakol	TS 201	Standard activated carbon General VOC removal
CGL—CI	Puracarb	TS 202	Acid Gas Removal
CGL-PA	Purakol—AM	TS 204	Amines and Ammonia removal
CGL C/ZK6	CP Blend	TS 209	Voc removal, acid gas and formaldehyde
CGL—ZK6	Purafil	TS 205	Formaldehydes, and secondarily acid gas
CGL-DCL	Chlorosorb	N/A	Specific for high levels of chlorine
CGL-CPSU	N/A	N/A	Mercury removal

For more specific information on media types, and applications please refer to individual media specification sheets.



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Permanganate Media Comparison Chart

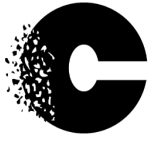
The chart below shows some comparable data between different permanganate media. When evaluating media it is important to evaluate several different factors. In addition to permanganate content you need to consider media bulk density. A unit requiring 1000 pounds of a Purafil media at 50 pounds per cubic foot, will require 1200 pounds of a ZK-HC high capacity media. This helps to increase media life.

Media	ZK 6	Purafil – 4%	Purafil Select 8 %	ZK-HC
Bulk Density, lbs/cubic ft.	60	50	50	60
KMnO4, % by weight	6	4	8	7
KMnO4, grams/cubic ft.	3.6	2	4	4.2
Hydrogen sulfide, pounds removed / cubic ft.	6.6	5.2	7	7.7

It is ideally suited for the removal of acid gases and formaldehyde.

The CGL ZK-HC media has effectively replaced Permanganate media in numerous applications including, waste water treatment plants, pulp and paper mill, semiconductor facilities, airports and hospital.

Life testing to determine remaining permanganate content is available at the Portland facility.



CAMERON GREAT LAKES, INC.

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Permanganate Media Comparison Chart

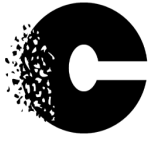
The chart below shows some comparable data between different permanganate media. When evaluating media it is important to evaluate several different factors. In addition to permanganate content you need to consider media bulk density. A unit requiring 1000 pounds of a Pu-rafil media at 50 pounds per cubic foot, will require 1200 pounds of a ZK6 media. This helps to increase media life.

Media	ZK 6	4 % alumina	HS 600
Bulk Density, lbs/cubic ft.	60	50	60
KMnO₄, % by weight	6	4	6
KMnO₄, grams/cubic ft.	3.6	2	3.6
Hydrogen Sulfide, % removal capacity	11	10.4	11
Hydrogen sulfide, pounds removed / cubic ft.	6.6	5.2	6.6
Sulfur Dioxide, % removal capacity	5	3.8	5
Formaldehyde, % removal capacity	2.3	2.1	2.3

It is ideally suited for the removal of acid gases and formaldehyde.

The CGL ZK6 media has effectively replaced Permanganate media in numerous applications including, waste water treatment plants, pulp and paper mill, semiconductor facilities, airports and hospital.

Life testing to determine remaining permanganate content is available at the Portland facility.



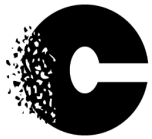
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MOLECULAR FILTRATION SPECIALISTS

DCL– HS-CL

The chart below shows some comparable data between CGL– DCL and the HS-CL. Both media are sulfate impregnated zeolites, designed for the removal of chlorine and chlorine dioxide.

Media	DCL	HS-CL
Bulk Density, lbs/cubic ft.	60	60
Impregnate	Ferrous Sulfate	Sodium Thiosulfate
% of impregnate	4.04	4.05
Substrate	Zeolite	Zeolite
Flammability	No	No
Moisture Content	14-17	15 Avg.
Cation Exchange Capacity	Yes	Yes
Dusting	Insignificant	Insignificant



CAMERON GREAT LAKES, INC.

MOLECULAR FILTRATION SPECIALISTS

CGL ZK6 HC

**OXIDIZES
ACID GASES**

ZK6 HC is an air filtration media specifically designed to oxidize gaseous pollutants such as hydrogen sulfide, sulfur dioxide, formaldehyde, ethylene, and mercaptans.

CONTROLS ODOR

This unique media is ideally suited for corrosion control and protection of electronic process controls in industrial environments; odor abatement in sewerage treatment facilities and odor and control in public buildings. It provides superb protection of perishable commodities in the fresh food industry.

**OFFERS MORE
KMnO₄**

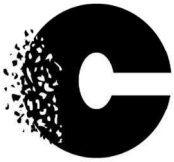
ZK6 -HC is made from a unique aluminosilicate compound possessing significant molecular sieve sorption capacity and is impregnated with 7% potassium permanganate.

**LESS DUST
FOR EASY HANDLING**

BULK DENSITY, LBS/ CU FT.	60 average
PORE SIZE, ANGSTROMS	4.0
Physical Properties	
HARDNESS, MOHS SCALE	5.1
KMnO ₄ , PERCENT BY WEIGHT	7%
SPECIFIC SURFACE AREA, SQ. YDS./OZ.	1357

2335 NW 29TH AVENUE, PORTLAND, OR 97210
PHONE: (800) 777-4044 FAX: (503) 225-0137

WWW.CAMERONGREATLAKES.COM
EMAIL: SALES@CGLCARBON.COM



CAMERON GREAT LAKES, INC.

MOLECULAR FILTRATION SPECIALISTS

CGL MR

DESCRIPTION:

CGL MR is a remanufactured coconut shell and bituminous coal based activated carbon. It has a broad pore structure range providing a wide range of molecular adsorption.

APPLICATIONS:

It controls a wide range of molecular weights making it ideally suited for applications including, wastewater treatment, spill control and clean up, and general odor control.

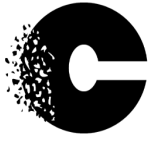
Physical Properties

ACTIVITY for CCL ₄ , (ASTM D3467-94)	55 - 65
BULK DENSITY , TYPICAL	30 lbs / cu ft
MESH SIZES , US STANDARD SERIES, (ASTM D2862-92)	4x8, 8x30, 12x40
MOISTURE , AS PACKED, (ASTM D2867-95)	2 %

This information has been gathered from standard reference materials and/or test procedures and is believed to be true and accurate. It is offered solely for your consideration and verification. None of the information presented shall be construed as constituting a warranty or representation, expressed, written, or implied, for which we assume legal responsibility or that the information or goods described is fit for any particular use either alone or in combination with other goods or processes, or that its use does not conflict with existing patent rights. No license is granted to infringe on any patent rights or practice any patent invention.

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Permanganate Media Capacity Chart

Property	
Bulk Density, lbs/cubic ft. avg.	60
KMnO ₄ , % by weight	6
Hydrogen Sulfide, % removal capacity	11
Sulfur Dioxide, % removal capacity	5
Nitric Oxide, % removal capacity	2-3
Formaldehyde, % removal capacity	2.3

The numbers above are based on a specific contaminant. Multiple contaminants can affect the capacity.

Life testing to determine remaining permanganate content is available at the Portland facility.