

PRODUCT REGULATORY STATUS

Chemical Name(s): CARBON BLACK

CAS #(s): 1333-86-4

Trade Name(s):

Thermax N990, N907 Stainless, N990 Ultra-Pure Floform, Thermax N991, N991 Ultra-Pure, N908 Stainless, N908 Stainless Ultra-Pure Powder, Fine Thermal, MFT, Carbocolor, Carbocolor Powder.

REGULATORY INFORMATION

Indication of Danger

Not a hazardous substance or preparation under the Globally Harmonized System (GHS). Not a hazardous substance or preparation under EC-directives 67/548/EEC or 1999/45/EC and their various amendments and adaptations. Not hazardous substance or preparation under CLP-Regulation (EC) No 1272/2008.

US and EU Pharmaceutical Contact Information

Carbon Black is not mentioned on any of the positive lists of the European Pharmacopoeia section 3.1, Materials Used for Manufacture of Containers (Edition 4.2, 2002). Certain materials that are not on the positive lists can be used for the manufacture of pharmaceutical packaging but it is the responsibility of the manufacturer of the pharmaceutical packaging to perform the appropriate migration tests upon that packaging. This testing must be performed for each type of pharmaceutical packaging and for each pharmaceutical contained in that packaging.

Cosmetics Applications

Carbon Black does not have an INCI (International Nomenclature of Cosmetic Ingredients) name assigned by The Cosmetic, Toiletry, and Fragrance Association (CTFA) and cannot be included in cosmetic preparations. Cancarb Carbon Blacks have not been tested in humans or animals for cosmetic purposes. For industrial safety reasons, they have been tested in animals for skin sensitization/irritation effects and have been designated as non-sensitizing and non-irritant.

California Proposition 65

"Carbon black (airborne, unbound particles of respirable size)" is a California Proposition 65 listed substance. Please note that all three listing qualifiers (airborne, unbound (not bound within a matrix), and respirable size (10 micrometers or less in diameter)) must be met for this substance to be considered a Proposition 65 substance.

Canadian WHMIS

Controlled Product Class D2A

HMIS RATING

*1 – Health (*Chronic)
1 – Flammability
0 – Reactivity

International Inventories

All components of this product are listed on or exempt from the following inventories:

Australian Inventory of Chemical Substances (AICS)
European Inventory of Existing Commercial Chemical Substances (EINECS)
Canadian Domestic Substances List (DSL)
Chinese Inventory
Japanese Existing and New Chemical Substances (ENCS)
Korean Existing Chemicals List (KECL)
Philippine Inventory of Chemicals and Chemical Substances (PICCS)
United States Toxic Substances Control Act (TSCA) Inventory

COMPLIANCE OF CANCARB CARBON BLACKS WITH VARIOUS EU AND U.S. HEAVY METAL LEGISLATION:

Electrical and Electronic Equipment (EEE) EU Directive 2002/95/EC, Restriction of the use of certain Hazardous Substances (RoHS)

The above directive prohibits the use of the following substances above the threshold levels shown below in EEE placed on the EU market after July 1, 2008:

- 0.1% by weight in homogenous materials – lead, mercury, hexavalent, chromium, polybrominated, biphenyls (PBBs), and polybrominated diphenyl, ethers (PDBEs including Decabromodiphenyl ether Deca-BDE); and,
- 0.01% by weight in homogenous materials - cadmium

To the best of our knowledge, the substances listed above are not present in Cancarb's carbon black product(s) at concentrations at or above the threshold levels.

Packaging and Packaging Waste (EU Directive 94/62/EC) and U.S. CONEG

The above legislation applies to packaging and packaging waste but not directly to their constituents. We confirm that the total content of Pb, Cd, Hg and Cr VI in Cancarb Carbon Blacks and packaging is less than 100 ppm.

End of Life Vehicles (EU Directive 2000/53/EC) Modified by Commission Decision 2002/525/EC

We confirm that we do not use Cd, Cr VI, Hg or Pb and their derivatives during the production of Cancarb Carbon Blacks.

Ozone Depleting Substances European Directive 88/540/EEC, amended by the European Directive 91/690/EC and US EPA Clean Air Act, 1993 Amendments (40 CFR 82.104)

We confirm that Cancarb does not add nor does our Carbon Black contain any Ozone Depleting Substances.

REACH

We confirm that Cancarb Carbon Black does not contain any of the "Candidate List of Substances of Very High Concern" (SVHC) at levels >0.1 % as defined in the REACH legislation and posted on the ECHA website as of December 19, 2011. None of the SVHC's are used in the manufacture of Cancarb Carbon Blacks.

**Cancarb Carbon Black
Typical Metals Analysis (ppm)**

	Typical
antimony (Sb)	<0.01
arsenic (As)	<0.5
barium (Ba)	<0.01
beryllium (Be)	<0.01
bismuth (Bi)	<0.01
cadmium (Cd)	<0.01
total chromium (Cr)	<0.5
cobalt (Co)	<0.05
copper (Cu)	<0.1
lead (Pb)	<0.01
manganese (Mn)	<0.1
mercury (Hg)	<0.05
molybdenum (Mo)	<0.01
nickel (Ni)	<0.1
selenium (Se)	<0.5
thallium (Tl)	<0.01

These data and conclusions are based on work believed to be reliable; however, we cannot and do not guarantee that similar results and/or conclusions will be obtained by others, and we disclaim any liability resulting from the use of this information.

TCLP Testing (EPA – 40 CFR 261.24): None

Cancarb has performed this testing on a typical sample and has found no listed metals, volatile organic compounds or non-metallic substances over the assigned low thresholds. Pesticides were not tested since they are not present in production and handling processes and they are not expected to be present in concentrations above low levels of concern

ORGANIC AND INORGANIC IMPURITIES:

Cancarb Carbon Blacks are not routinely analyzed for the following regulated chemicals. These chemicals are not involved in our production and handling processes and they are not expected to be present in our carbon blacks in concentrations above low ppm or less, below the levels of concern:

Organic Impurities

- Aliphatic and aromatic solvents
- Azo compounds, aromatic amines and dyes,
- Halogenated hydrocarbons including among others, brominated hydrocarbons, aliphatic chlorinated hydrocarbons, dioxins, flame retardants, fluorinated hydrocarbons, PCB's, PCT's, and ozone depleting substances (ODS) like CFC's and HCFC's
- Furans
- Glycol ethers
- Phenols
- Endocrine Disrupters, i.e., phthalates and bisphenol - A
- Pesticides and biocides
- Organotin derivatives
- Latex
- Formaldehyde
- BADGE, BFDGE and NOGE
- Acrylamide

Also, within the meaning of various United States and European regulations, Cancarb Carbon Blacks do not contain volatile organic compounds (VOC's) or hazardous air pollutants (HAP's) above trace amounts.

Inorganic Impurities

- Asbestos
- Heavy metals - please refer to the typical Cancarb Carbon Black metal analysis above for more specific information)

PRODUCTS OF ANIMAL OR PLANT ORIGIN

Cancarb Carbon Blacks are **not derived** from any products of animal or plant origin or any animal or plant by-products. They do not contain any bovine materials or any materials associated with the development of Bovine Spongiform Encephalopathy (BSE) or Creutzfeldt-Jakobs Disease (CJD). They do not contain any Genetically Modified (GMO) products or materials.

SELF-HEATING SPONTANEOUS COMBUSTION AND FLAMMABILITY

Cancarb Carbon Blacks are of mineral origin. They are not a self heating substance and do not exhibit spontaneous combustion behaviour and are not flammable according to tests carried out in accordance with UN methods or DIN EN 15188 for Transport of Dangerous Goods.

UN methods specify that if the temperature of a 100mm cube exceeds 200⁰C after being exposed to 140⁰C for 18 hours the substance is considered a self heating substance. Cancarb Carbon Blacks did not exceed 200⁰C.

In order to satisfy other requirements (Approved Requirements and test methods for the classification and packaging of dangerous goods for carriage 1996 Health & Safety Commission for the transportation of potentially self-heating substances) that prove a substance is not a self heating substance the self-heating temperature of a 27m³ cube of the product shall be equal to or more than 50⁰C. The temperature at which this volume of Cancarb Carbon Blacks become super-critical as defined by DIN EN 15188 and can self-heat to ignition is found to be 183⁰C. Hence, Cancarb's Carbon black is not classified as a self-heating substance.

Dust Explosion or Maximum Deflagration Pressure (Pmax), rate of pressure rise and Kst of a dust cloud.

A series of tests were conducted according to ASTM Standard E1226-88 on Cancarb carbon black. Dust samples were pneumatically thrown into suspension in a 1M³ vessel and ignited. The maximum rate of pressure rise is used to calculate the Kst value -- an internationally recognized index used to classify dust explosibility or deflagration for tank explosion vent design. ASTM E1226-88 requires the use of 2 X 5 KJoules igniters (10 KJoules total). After several attempts to ignite Cancarb Carbon Blacks at various concentrations using 10 KJoules with out any deflagration it was decided to incrementally increase energy and concentrations over and above the testing requirements. The same result occurred using 20 KJoules, there was no deflagration. Only when 30 KJoules of energy with a concentration of 375 g/ M³ did a minor rate of rise appear at 23 bar.m/s or K(st) 1.

Minimum dust cloud ignition energy (MIE).

This test determines the lowest spark energy required to initiate a dust explosion. Small quantities of dust are pneumatically thrown into suspension and ignited with an electric spark within a test vessel. This test assesses relative sensitivity of the sample to ignition by electrical sparks using ASTM E20-19-99 methodology. It is used in the analysis and design of fire and explosion prevention and protection systems. Cancarb carbon black's MIE is > 5130 mJ.

Minimum Dust Cloud Ignition Temperature or Auto Ignition Temperature (MAIT).

The MAIT is the minimum temperature at which a dust cloud will ignite when exposed to air heated in a furnace as described in ASTM E1491-97. The minimum ignition temperature is the lowest furnace temperature that results in propagation of flames. The MAIT is used in the analysis and design of explosion prevention and protection systems. The MAIT of Cancarb Carbon Black is >800⁰C.