



MATERIAL SAFETY DATA SHEET

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Manufacturer and Supplier:

IBM Corporation
New Orchard Road
Armonk, New York 10504
U.S.A.

24 Hour Emergency Source Information

1-800-426-4333
International Emergency Number
303-739-1111

In U.S.A. Call: 1-800-426-4333

In Canada Call: 1-800-426-4968

Product Name: Infoprint 4000 Enhanced Printing Developer, Version 2

IBM Part Number: 69G7379

IBM Material Reference Number: 940095740

Trade Names/Synonyms:

Product Use: Toner developer

MSDS Creation Date: 10/9/01

MSDS Revision Date:

MSDS Prepared By: IBM Printing Systems Division

Telephone Number: 1-800-426-4333

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

Component	Percentage	CAS Registry Number
Magnesium oxide	3-7	1309-48-4
Iron oxide (Fe ₂ O ₃)	10-30	1309-37-1
Iron oxide (Fe ₃ O ₄)	65-85	1317-61-9
Carbon black	0.1-0.2	1333-86-4
Silica, amorphous	0.003-0.04	7631-86-9

See Section 8 for exposure guidelines.

SECTION 3 - HAZARDS IDENTIFICATION

Emergency Overview:

Low hazard for recommended use and handling. Black powder with a slight odor. Carbon black has been classified as an IARC 2B (possible human) carcinogen. May cause respiratory tract or skin irritation. May form flammable or explosive dust-air mixtures. Avoid chronic pulmonary exposures to dust. Avoid exposure to eyes, skin or clothing (will stain). Keep container closed. Use with adequate ventilation.

HMIS Hazard Ratings: Health: 1 Flammability: 1 Reactivity: 0 Personal Protection: (See Section 8) – Use protective goggles. Use suitable protective gloves. Use a NIOSH approved dust/mist respirator.



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Routes of Entry and Potential Health Effects:

Inhalation: Expected to be a low hazard for recommended handling.

Long Term Effects: Potential risk of irreversible pulmonary effects.*

*Chronic exposure is not expected when this product is used as intended.

Skin Contact: Expected to be a low hazard for recommended handling.

Eye Contact: No specific hazard known. May cause transient irritation.

Ingestion: Expected to be a low ingestion hazard.

Carcinogen Status:

OSHA: N

NTP: N

ACGIH: N

IARC: Y (Carbon Black)

In 1996 the International Agency for Research on Cancer (IARC) reevaluated carbon black as a Group 2B carcinogen (possible human carcinogen), based upon the development of lung tumors in rats receiving chronic inhalation exposures to free carbon black. The effects were observed only in animals exposed to high concentrations of carbon black at levels that induce particle overload of the lung. Studies performed in animal models other than rats have not demonstrated an association between carbon black and lung tumors. Moreover, a two-year cancer bioassay using a typical toner preparation containing carbon black demonstrated no association between toner exposure and tumor development in rats.

Epidemiology studies of workers in the carbon black producing industries of North America and Western Europe do not demonstrate an association between carbon black and cancer, even in high exposure occupational settings. In addition, in its reevaluation of carbon black, IARC concluded that “there is *inadequate evidence* in humans for the carcinogenicity of carbon black”. Chronic overexposure to many dusts, including carbon black dust, may result in respiratory tract irritation and slight changes in pulmonary function. Collectively, the available animal data and human epidemiology studies suggest that carbon black, as contained in this product, does not present a cancer risk to the end user if the handling and personal protective measures contained within this MSDS are understood and followed.

SECTION 4 - FIRST AID MEASURES

Inhalation: Remove person to fresh air and seek medical attention. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

Skin Contact: Wash material off of skin with plenty of soap and water.

Eye Contact: Flush eyes with plenty of water for a minimum of 15 minutes, and seek medical attention.

Ingestion: If the material is swallowed, get immediate medical attention or advice.

Notes to Physician: Not provided.

SECTION 5 - FIRE FIGHTING MEASURES



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Means of Extinction: Dry chemical or carbon dioxide for small fires. Alcohol resistant foams for large fires.

Flash Point (Method): Not applicable

Lower Flammable Limit: Not available

Upper Flammable Limit: Not available

Autoignition Temperature: Not available

Hazardous Combustion Products: Combustion or decomposition will generate phenol derivatives, carbon monoxide, or carbon dioxide over 300 °C (572 °F).

General Fire Hazards: Minimal fire hazard. Material is self-extinguishing.

Conditions of Flammability: Not applicable

Explosion Data: Not applicable

Sensitivity to Mechanical Impact: Not applicable

Sensitivity to Static Discharge: Not applicable

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Containment Procedures: Review FIRE FIGHTING MEASURES (Section 5) and EXPOSURE CONTROLS, PERSONAL PROTECTION (Section 8) before proceeding with cleanup. Use appropriate personal protective equipment during cleanup. Prevent release of material into the natural environment.

Clean-Up Procedures: If the product is spilled, sweep up the material and recover it, or mix the spilled material with moist absorbent and shovel into suitable waste container. This material is non-hazardous under RCRA.

Evacuation Procedures: Not applicable.

Special Procedures: Not applicable.

SECTION 7 - HANDLING AND STORAGE

Handling Procedures: Use protective gloves and goggles.

Storage Procedures: Keep containers tightly closed and store in a cool, well ventilated area. Storage below 35 °C (95 °F) is recommended to prevent product from caking.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

Exposure Limits:

Carbon black (1333-86-4):

3.5 mg/M³ OSHA TWA PEL

3.5 mg/M³ ACGIH TWA TLV - ACGIH A4 - Not classifiable as a human carcinogen (Proposed addition 1995-1996)

3.5 mg/M³ NIOSH recommended 10 hour TWA



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0.1 mg/M³ NIOSH recommended 10 hour TWA (in the presence of polycyclic aromatic hydrocarbons)

Measurement

Method Particulate filter; gravimetric; (NIOSH III # 5000).

Magnesium oxide fume (1309-48-4)

15 mg/m³ OSHA TWA (Final PEL) total particulate

10 mg/m³ OSHA TWA (Vacated PEL) total particulate

Iron oxide (1309-37-1)

10 mg/m³ OSHA TWA PEL (fume, final/vacated PELS)

Silica, amorphous (7631-86-9)

6 mg/m³ NIOSH TWA

In Canada, consult local authorities for acceptable provincial values.

Ventilation: Provide adequate ventilation (ASHRAE 62). Ventilation rates should be matched to conditions.

Respirator: No respirator is required under normal conditions of use. Under conditions of frequent or heavy exposure protection may be needed.

Eye Protection: If significant eye exposure is anticipated, the use of chemical splash goggles is recommended.

Eye Wash: Where there is a potential for eye exposure to this substance, an eye wash fountain should be provided within the immediate work area for emergency use.

Clothing: Protective clothing is not required under normal conditions.

Protective Gloves: If significant skin exposure is anticipated, appropriate gloves should be worn to prevent skin contact with this substance.

Recommended Decontamination Facilities: Eye bath, washing facilities, safety shower.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid

Odor and Appearance: Odorless black powder

Melting Point: Not applicable

Boiling Point: Not applicable

Vapor Pressure: Not applicable

Vapor Density: Not applicable

Specific Gravity: 5-6 at 20 °C (68 °F)

Water Solubility: Insoluble

Volatility: Not applicable

pH: Not available

Evaporation Rate: Not applicable

Coefficient of Water/Oil Distribution: Not applicable

Odor Threshold: Not available



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SECTION 10 - STABILITY AND REACTIVITY

Stability: Stable

Conditions to Avoid: Not available

Conditions of Reactivity: Not available

Incompatible Materials: Strong oxidizing agents.

Hazardous Decomposition Products: Not applicable

Hazardous Polymerization: Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION

IBM Toner (IBM has reported the following*):

Mutagenic Data: Negative in Ames test*.

Carcinogen Status: IARC Group 2B.

Acute Toxicity Level: No data available.

Target Effects: No data available.

Carbon black:

Toxicity Data: LD₅₀ (RAT, ORAL): >10 gm/kg oral-rat LD₅₀ (EM Science MSDS); 120 mg/kg intravenous-rat LD₅₀ (THIDD6).

Carcinogen Status:

Human Data: Epidemiological studies of workers in carbon black producing industries of North America and Western Europe show no evidence of clinically significant adverse health effects due to occupational exposure to carbon black. Early studies performed in the former USSR and Eastern Europe report respiratory disease among workers exposed to carbon black, including: bronchitis, pneumoconiosis, emphysema, and rhinitis. These studies are of questionable validity due to inadequate study design and methodology, lack of appropriate controls for smoking tobacco, and other confounding variables such as exposures to carbon monoxide, coal oil, and petroleum vapors. Furthermore, review of these studies indicates that work environment concentrations of carbon black were considerably greater than current occupational exposure standards. In its Monograph Volume 65, issued April 1996, IARC reevaluated carbon black and concluded that "there is *inadequate evidence* in humans for the carcinogenicity of carbon black".

Animal Data: Chronic inflammation, lung fibrosis, and lung tumors have been observed in some rats exposed experimentally, for long periods of time, to excessive concentrations of carbon black and several other fine dust particles. Tumors have not been observed in other animal species (i.e. mice, hamsters) under similar circumstances and study conditions. Many researchers conducting rat inhalation toxicity studies believe that these effects most likely result from the massive accumulation of fine dust particles in the lung, which overwhelm the lung clearance mechanisms, resulting in "lung overload" phenomenon, rather than from a specific chemical effect associated with the dust particles in the lung.



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Many inhalation toxicologists believe that the tumor response observed in the referenced rat studies is species-specific and does not correlate to human exposure. However, the IARC reevaluation in Volume 65 concluded that "there is *sufficient evidence* in experimental animals for the carcinogenicity of carbon black". Based upon this reevaluation, IARC's overall evaluation is that "carbon black is *possibly carcinogenic to humans* (IARC Group-2B)".

Carbon black has not been listed as a carcinogen by the National Toxicology Program (NTP), nor the Occupational Safety and Health Administration (OSHA).

Local Effects: Irritant - inhalation, skin.

Acute Toxicity Level: Slightly toxic by ingestion.

Target Effects: Toxic overexposure may affect the respiratory system, the heart, skin and mucous membranes.

At Increased Risk From Exposure: Persons with certain pre-existing upper respiratory disorders, such as bronchitis or asthma.

Sensitization to Product: Not available

Irritancy of Product: Not available

Reproductive Toxicity: Not available

Teratogenicity: Not available

Mutagenicity: Not available

Toxicologically Synergistic Products: Not available

Epidemiology: Not available

Neurotoxicity: Not available

SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicity: Not available.

Environmental Fate: Not available.

SECTION 13 - DISPOSAL CONSIDERATIONS

Prevent release of material into natural environment. Observe all federal, regional, and local regulations when disposing of this substance. Contact local waste vendors for proper disposal.

SECTION 14 - TRANSPORT INFORMATION

Label Information: Not hazardous for transportation purposes.

SECTION 15 - REGULATORY INFORMATION

US Federal Regulations:

US TSCA Inventory: All components of this product are on the TSCA inventory.



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Carbon black is regulated under OSHA.

US State Regulations:

Component Analysis

CAS #	Component	CA	FL	MA	MN	NJ	PA
1309-48-4	Magnesium oxide	Y	Y	Y	Y	Y	Y
1309-37-1	Iron oxide (Fe ₂ O ₃)	Y	Y	Y	Y	Y	Y
1317-61-9	Iron oxide (Fe ₃ O ₄)	N	N	N	N	N	N
1333-86-4	Carbon black	Y	N	Y	Y	Y	Y
7631-86-9	Silica, amorphous	Y	Y	Y	Y	Y	Y

Other Regulations:

Mexico:

Magnesium oxide fume – Safety and Hygiene Conditions in the Workplace

Instruction No. 10 – TWAs: 10 mg/m³

Iron oxide fume (Fe₂O₃) – Safety and Hygiene Conditions in the Workplace

Instruction No. 10 – STELs: 10 mg/m³ and Instruction No. 10 – TWAs: .5 mg/m³

Carbon black – Safety and Hygiene Conditions in the Workplace Instruction No. 10
– STELs: 7 mg/m and Instruction No. 10 – TWAs: 3.5 mg/m

Canada:

Magnesium oxide fume – WHMIS, ingredient disclosure is required, 1% item 959 (1314)

Ferric oxide – WHMIS, ingredient disclosure is required, 1% item 762 (1327)

Carbon black – WHMIS, ingredient disclosure is required, 1% item 309 (1271)

Silica – WHMIS ingredient disclosure for Silica (amorphous, fumed) is required as a 1% item 1403 (1488). Exposure limits under OSHA exist in Ontario and Quebec.

WHMIS Classification: Class D, Division 2A

One polymer component (<1%) is listed on the NDSL; all other components are listed on the DSL.

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

SECTION 16 - OTHER INFORMATION

IBM is a registered trademark of IBM Corporation.