MATERIAL SAFETY DATA SHEET

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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In CANADA, call: 1-800-IBM-4YOU

NAME: IBM Infoprint 1116 Toner Cartridge
IBM Part Number: 28P2406, 28P2412, 28P2414, 28P2420
IBM Material Reference Number:
TRADE NAMES/SYNOMYMS: IBM 4516 Toner Cartridge, Toner, EP Cartridge
CHEMICAL FAMILY: Toner
PRODUCT USE: Replacement toner print cartridge for the IBM Infoprint 1116 printer**, 4516 Machine Type**

CREATION DATE: 07 November 2001 **REVISION DATE:**

SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS

TONER

COMPONENT: Iron oxide
CAS NUMBER: 1317-61-9
PERCENTAGE: 8-11%

COMPONENT: Styrene Acrylic Copolymer
CAS NUMBER: 58048-89-8
PERCENTAGE: 80-90%

COMPONENT: Carbon Black
CAS NUMBER: 1333-86-4
PERCENTAGE: <5%

COMPONENT: Particle Control Agent
CAS NUMBER: (1)
PERCENTAGE: < 3%

COMPONENT: Particle Control Agent
CAS NUMBER: (2)
PERCENTAGE: < 3%

(1) New Jersey Trade Secret Registration Number 80100451-5000
(2) New Jersey Trade Secret Registration Number 80100451-5015

SECTION 3 - HAZARDS IDENTIFICATION

EC CLASSIFICATION (CALCULATED): Not determined.
EMERGENCY OVERVIEW:

CARBON BLACK:
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

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ROUTES OF ENTRY: Inhalation of dust, skin contact
SIGNS AND SYMPTOMS OF EXPOSURE: Large amounts of toner on skin or mucous membranes (mouth, eyes, or nose) may cause discomfort.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None Known at intended levels of use.
PHYSICAL HAZARDS: As with most finely divided dusts, an explosion is possible when an extremely high concentration of dust and an ignition source are present. Not a hazard under normal conditions of use.
POTENTIAL HEALTH EFFECTS:

INHALATION:

SHORT TERM EFFECTS: Testing and/or information on this or similar toners, or on the constituents of this toner indicate low inhalation toxicity. As with exposure to high concentrations of any dust, minimal respiratory tract irritation may occur if excessive amounts of toner dust are inhaled. Exposure not probable with intended use.

LONG TERM EFFECTS: No adverse chronic effects known at expected level of use. Exposure not probable with intended use.

CARBON BLACK : Potential risk of irreversible pulmonary effects.
Chronic exposure is not expected when this product is used as intended

***SKIN CONTACT*:**

SHORT TERM EFFECTS: Testing and/or information on this or similar toners, or on the constituents of this toner indicate this toner is not a skin irritant and is of low dermal toxicity.

LONG TERM EFFECTS: Rare individuals may note skin rash with repeated contact. Exposure not probable with intended use.

EYE CONTACT:

SHORT TERM EFFECTS: Toner may act as mechanical irritant.

LONG TERM EFFECTS: No adverse chronic effects known. Exposure not probable with intended use.

INGESTION:

SHORT TERM EFFECTS: Testing and/or information on this or similar toners, or on the constituents of this toner indicate low oral toxicity. Exposure not probable with intended use.

LONG TERM EFFECTS: No chronic effects known. Exposure not probable with intended use.

CARCINOGEN STATUS:

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: If symptoms, such as shortness of breath or persistent coughing are experienced, remove source of contamination and move individual to fresh air. Seek medical advice if symptoms persist.

SKIN CONTACT: Wash affected area with soap and water. Should irritation occur, obtain medical advice.

EYE CONTACT: Do not rub eyes. Flush immediately with plenty of water. Remove contact lenses and continue flushing for at least 15 minutes. Seek medical attention if irritation develops and persists.

INGESTION: Immediately wash mouth out with plenty of water. If irritation occurs, seek medical advice.

SECTION 5 - FIRE FIGHTING MEASURES

CONDITIONS OF FLAMMABILITY AND EXPLOSION: Like many finely divided materials, toner dust in high concentrations can form an explosive mixture in air which, if ignited, could result in a dust explosion**.**
EXTINGUISHING MEDIA: CO_2, water spray, dry chemical or foam. Avoid full water jet.
FIRE FIGHTING: NIOSH approved self-contained breathing apparatus may be required if a large number of cartridges are involved.
FLASH POINT (METHOD): Not applicable.
LOWER FLAMMABLE LIMIT: Not available.
UPPER FLAMMABLE LIMIT: Not available.
AUTOIGNITION TEMPERATURE: Not available.
HAZARDOUS COMBUSTION PRODUCTS: CO, CO_2, and low molecular weight organics. Avoid breathing smoke.
EXPLOSION DATA: See conditions of Flammability and Explosion
SENSITIVITY TO MECHANICAL IMPACT: Not available
SENSITIVITY TO STATIC DISCHARGE: See conditions of Flammability and Explosion

SECTION 6 - ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL SPILL: If a dust cloud is possible due to a spill, remove all sources of ignition such as open sparks, flames or static discharge to prevent the ignition of the dust. Minimize dust generation during clean up. Sweep up spill with nonmetallic broom and dustpan. Contain for disposal. To avoid possible dust explosion, do not use vacuum cleaners when large amounts of toner are involved as in a spill. Oil permeated sweeping compound may assist in the cleanup of toner spilled on nonporous surfaces. Avoid inhalation of dust.

SECTION 7 - HANDLING AND STORAGE

To avoid damage to cartridge and accidental contact with toner- keep out of reach of small children. Store in cool dry place.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:

CARBON BLACK:

3.5 mg/M³	**OSHA TWA PEL (total dust measured as carbon black)**
3.5 mg/M³	**ACGIH TWA TLV - ACGIH A4 - Not classifiable as a human carcinogen (Proposed addition 1995-1996) (total dust measured as carbon black)**
3.5 mg/M³	**NIOSH recommended 10 hour TWA**

0.1 mg/M³ NIOSH recommended 10 hour TWA (in the presence of polycyclic aromatic hydrocarbons)
Measurement method: Particulate filter; gravimetric; (NIOSH III # 5000).

IRON OXIDE
5 mg/M³ ACGIH TLV(as Iron)
PARTICLE CONTROL AGENT (NJTSRN 80100451-5000)
15 mg/M³ OSHA PEL (total dust)(particulates not otherwise regulated-PNOR)
5 mg/M³ OSHA PEL (respirable dust)(particulates not otherwise regulated-PNOR)
10 mg/M³ ACGIH TLV (respirable dust)(particulates not otherwise classified-PNOC)

PARTICLE CONTROL AGENT (NJTSRN 80100451-5015)
Specific Work place limits have not been established.

In Canada, consult local authorities for acceptable provincial values.

VENTILATION: None required for intended use. Mechanical room ventilation recommended.
RESPIRATOR: None required for intended use in printer.
EYE PROTECTION: None required for intended use in printer.
PROTECTIVE GLOVES: None required for intended use in printer.
OTHER PROTECTIVE EQUIPMENT: None required for intended use in printer.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: sealed cartridge contains black powdery solid material, with slight odor
ODOR AND APPEARANCE: see above
BOILING POINT: Not available
FREEZING POINT: Not available
VAPOR PRESSURE: Not applicable
VAPOR DENSITY: Not applicable
SPECIFIC GRAVITY: not available
WATER SOLUBILITY: Negligible
VOLATILITY: Not applicable
PH: Not applicable
ODOR THRESHOLD: Not available
EVAPORATION RATE: Not applicable
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available
PRESSURIZED (Y/N): N

SECTION 10 - STABILITY AND REACTIVITY

STABILITY: Stable
CONDITIONS TO AVOID: Ignition sources in combustible atmospheres of toner dust and throwing toner into an open fire.
INCOMPATIBLE MATERIALS: Strong oxidizers.
HAZARDOUS DECOMPOSITION PRODUCTS: CO, CO_2 and other unidentified organics. **POLYMERIZATION:** This product will not polymerize.

SECTION 11 - TOXICOLOGICAL INFORMATION

CARBON BLACK:
TOXICITY DATA: >10 gm/kg oral-rat LD_{50} (EM Science MSDS); 120 mg/kg intravenous-rat LD_{50} (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.

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.

PRODUCT DATA:

ACUTE TOXICITY LEVEL: Not acutely toxic: LD_{50} expected to be >5000mg/kg.
CHRONIC TOXICITY: Contents of cartridge not expected to be toxic. Industry tests on similar generic toner showed no signs of overt toxicity. Rats exposed to high levels of toner showed a chronic inflammatory response and a mild to moderate degree of lung fibrosis. There were no pulmonary changes of any type at the lower toner exposure level, which is most relevant in regard to potential human exposures. Pure carbon black, a minor component of this toner, has been listed by IARC as a group 2B (possible carcinogen) based on rat “lung particulate overload studies”. Toner is not listed by IARC, NTP, or OSHA.

SECTION 12 - ECOLOGICAL INFORMATION

ENVIRONMENTAL IMPACT RATING (0-4): Not available
ACUTE AQUATIC TOXICITY: Not available
DEGRADABILITY: Not available
LOG BIOCONCENTRATION FACTOR (BCF): Not available

LOG OCTANOL/WATER PARTITION COEFFICIENT: Not available

SECTION 13 - DISPOSAL CONSIDERATIONS

This product is not a listed or hazardous waste in accordance with Federal Regulation 40 CFR Part 261. If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal whether a material has been contaminated and should be classified as a hazardous waste. Disposal is subject to local, state and federal regulations.

SECTION 14 - TRANSPORT INFORMATION

This product is not regulated as a hazardous material under current U.S. DOT.

SECTION 15 - REGULATORY INFORMATION

All ingredients are registered under the Toxic Substances Control Act (TSCA) or under polymer exemption.

All ingredients are exempt, registered or considered registered (polymers) under European Inventory of Existing Commercial Chemical Substances (EINECS).

None of the product ingredients are listed as Emergency Planning and Community Right to Know Act (EPCRA)- Section 302: Extremely Hazardous Substances (EHS).

Components present above the minimum quantities of listed chemicals in EPCRA - Section 313
Supplier Notification: The toner product contains <5% of a zinc compound.

This product contains no known materials which the State of California has found to cause cancer, birth defects or other reproductive harm - California Proposition 65.

CANADA: This product is a "manufactured article" and is exempt from the new substances provisions of the Canadian Environmental Protection Act.

WHMIS Classification - Manufactured article' therefore, product is exempt under WHMIS

SECTION 16 - OTHER INFORMATION

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