



Material Safety Data Sheets
AR Series
Corporate Copiers

June 2001

Model Number	MSDS Number	Page Number
AR-532T1	F00721	Page 1-2
AR-532NT1	F00721	Page 1-2
AR-330T	F00791	Page 3-4
AR-330ST	F00791	Page 3-4
AR-330NT	F00791	Page 3-4
AR-200TD	F00841	Page 5-6
AR-400ST1	F00871	Page 7-8
AR-400T	F00871	Page 7-8
AR-400NT1	F00871	Page 7-8
AR-400NT1	F00881	Page 9-10
AR-400ST1	F00881	Page 9-10
AR-400T	F00881	Page 9-10
AR-400MT	F00881	Page 9-10
AR-C15NT	F00921	Page 11-12
AR-C15NT1	F00921	Page 11-12
AR-C15ST1	F00921	Page 11-12
AR-CN15ST6	F00926	Page 13-14
AR-CN15T6	F00926	Page 13-14
AR-CN15NT6	F00926	Page 13-14
AR-CN15ST7	F00927	Page 15-16
AR-CN15T7	F00927	Page 15-16
AR-CN15NT7	F00927	Page 15-16
AR-CN15NT8	F00928	Page 17-18
AR-CN15T8	F00928	Page 17-18
AR-CN15ST8	F00928	Page 17-18
AR-500NT1	F00941	Page 19-20
AR-500ST1	F00941	Page 19-20
AR-500T	F00941	Page 19-20
AR-500T	F00951	Page 21-22
AR-500ST	F00951	Page 21-22
AR-500NT	F00951	Page 21-22
AR-540NT1	F0451	Page 23-24
AR-540NT	F0451	Page 23-24
AR-532DV1	F30721	Page 25-26
AR-532ND1	F30721	Page 25-26
AR-330ND	F30791	Page 27-28
AR-330SD	F30791	Page 27-28
AR-330DV	F30791	Page 27-28
AR-400SD	F30871	Page 29-30
AR-400MD	F30871	Page 29-30
AR-400ND	F30881	Page 31-32
AR-400S	F30881	Page 31-32
AR-400MD	F30881	Page 31-32
AR-C15ND1	F30921	Page 33-34

Model Number	MSDS Number	Page Number
AR-C15DV1	F30921	Page 33-34
AR-C15SD1	F30921	Page 33-34
AR-C15ND6	F30921	Page 33-34
AR-C15DV6	F30921	Page 33-34
AR-C15SD6	F30921	Page 33-34
AR-C15ND7	F30921	Page 33-34
AR-C15DV7	F30921	Page 33-34
AR-C15SD7	F30921	Page 33-34
AR-C15ND8	F30921	Page 33-34
AR-C15DV8	F30921	Page 33-34
AR-C15SD8	F30921	Page 33-34
AR-C15ND9	F30927	Page 35-36
AR-C15DV9	F30927	Page 35-36
AR-C15SD9	F30927	Page 35-36
AR-500ND	F30941	Page 37-38
AR-500SD	F30941	Page 37-38
AR-500MD	F30941	Page 37-38
AR-500ND	F30951	Page 39-40
AR-500SD	F30951	Page 39-40
AR-500MD	F30951	Page 39-40
AR-540ND	F3451	Page 41-42
AR-540DV	F3451	Page 41-42

S H A R P

1

Date Revised: October 1, 1997

Date Issued :Feb. 1, 1997

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-00721

Section 1. Product Identification

Product :

AR-532NT1/AR-532T1 (Black Toner)

Section 2. Supplier's Name and Address

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)

(Name and Telephone Number)

U.S.A.

Sharp Electronics Corporation

Telephone number for information: 1-800-237-4277

Emergency telephone number : 1-800-255-3924

Canada

Sharp Electronics of Canada Ltd.

Telephone number for information: 905-890-2100

Emergency telephone number : 1-800-255-3924

United

Sharp Electronics (U.K.) Ltd.

Kingdom

Telephone number for information: 01923-474013

Section 3. Ingredients

<u>Ingredients</u>	<u>CAS No.</u>	<u>Proportion</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Other Limits</u>
Carbon black	1333-86-4	< 9%	3.5mg/m ³	3.5mg/m ³	None
Silica	68909-20-6	< 1%	15mg/m ³	10mg/m ³	None
Polyester resin	NJ TSRN 80100252-5001P	< 90%	Not listed	Not listed	None
Pigment	31714-55-3	< 2%	Not listed	Not listed	None
Wax	9003-07-0	< 2%	Not listed	Not listed	None
Magnetite	1309-38-2	< 2%	Not listed	Not listed	None

Section 4. Hazardous Identification (Emergency Overview)

Toner is a fine, black powder possessing no immediate hazard. There are no anticipated carcinogenic effects from exposure based on animal tests performed using toner. When used as intended according to instructions, studies do not indicate any symptoms of fibrosis will occur.

Section 5. Health Hazard Data

Route(s) of Entry : Inhalation?

Yes

Skin?

No

Ingestion?

Possible but very unusual.

Health Hazards : Acute Toxicity: LD50 > 5,000mg/kg. LC50 > 5.97 mg/L'4Hrs

Mutagenicity (Ames Test): Negative. (S.typhimurium,Escherichia coli)

(Note: data is from testing of similar materials.)

Carcinogenicity : In 1996 the IARC reevaluated carbon black as a Group 2B carcinogen (possible human carcinogen). This classification is given to chemicals for which there is inadequate human evidence, but sufficient animal evidence on which to base an opinion of carcinogenicity. The classification is based upon the development of lung tumors in rats receiving chronic inhalation exposures to free carbon black at levels that induce particle overload of the lung. Studies performed in animal models other than rats did not show any 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.

Chronic Effect : In a study in rats of chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92% of the rats in the high concentration (16mg/m³) exposure group, and a minimal to mild degree of fibrosis was noted in 22% of the animals in the middle (4mg/m³) exposure group, but no pulmonary change was reported in the lowest (1mg/m³) exposure group, the most relevant level to potential human exposures.

Signs and Symptoms of Exposure :

Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.

Medical Conditions Generally Aggravated by Exposure : None

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-00721

Section 5. Health Hazard Data (Continued)**Emergency and First Aid Procedures :**

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.
 Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

Section 6. Physical Chemical Characteristics

Boiling/Melting Point	: Not applicable	Specific Gravity	: 1.2
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Black
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used) : More than 150⁰C (C.O.C.)
Ignition Temperature : No data available
Flammable Limits : (LEL); 34.5g/m³ (UEL); Not applicable
Extinguishing Media : CO₂, dry chemical, foam or water
Special Fire Fighting Procedure : None
Unusual Fire and Explosion Hazard : This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact : None
Sensitivity to Static Charge : None

Section 8. Reactivity Data

Stability : Stable
Incompatibility (Material to Avoid) : Strong acids and alkalines.
Hazardous Decomposition : Phenol derivatives, Carbon monoxide when heated at high temperature. (> 300⁰C)
Hazardous Polymerization : Will not occur.

Section 9. Precautions for Safe Handling and Use**Personal Protection Information (Respiratory, Eye Protection and Protective Glove):**

Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation : Not required.
Work / Hygienic Practice : Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak : Sweep up or clean up with vacuum cleaner.
Waste Disposal Method : Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.) : Health = 1 Flammability = 1 Reactivity = 0
WHMIS Legislation (Canada) : This product is not a controlled product.
Transport Information : This product is not a hazardous material.
UN No. : None allocated.

Section 11. Other Information

References : IARC (1996) IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol. 65, Printing Process and Printing inks, Carbon Black and Some Nitro Compounds, Lyon, pp-149-261
 H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-00791

Section 1. Product Identification**Product :**

AR-330NT/AR-330ST/AR-330T (Black Toner)

Section 2. Supplier's Name and Address

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)	(Name and Telephone Number)
U.S.A.	Sharp Electronics Corporation Telephone number for information: 1-800-237-4277 Emergency telephone number : 1-800-255-3924
Canada	Sharp Electronics of Canada Ltd. Telephone number for information: 905-890-2100 Emergency telephone number : 1-800-255-3924
United Kingdom	Sharp Electronics (U.K.) Ltd. Telephone number for information: 01923-474013

Section 3. Ingredients

<u>Ingredients</u>	<u>CAS No.</u>	<u>Proportion</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Other Limits</u>
Carbon black	1333-86-4	< 4%	3.5mg/m ³	3.5mg/m ³	None
Silica	68909-20-6	< 1%	15mg/m ³	10mg/m ³	None
Styrene-acrylate polyester	149367-99-7	< 55%	Not listed	Not listed	None
Polyester resin 1	NJ TSRN 80100252-5009P	< 20%	Not listed	Not listed	None
Polyester resin 2	116736-81-3	< 20%	Not listed	Not listed	None
Pigment	31714-55-3	< 2%	Not listed	Not listed	None
Wax 1	9010-79-1	< 2%	Not listed	Not listed	None
Wax 2	9015-86-9	< 2%	Not listed	Not listed	None

Section 4. Hazardous Identification (Emergency Overview)

Toner is a fine, black powder possessing no immediate hazard. There are no anticipated carcinogenic effects from exposure based on animal tests performed using toner. When used as intended according to instructions, studies do not indicate any symptoms of fibrosis will occur.

Section 5. Health Hazard Data

Route(s) of Entry : Inhalation? Skin? Ingestion?
 Yes No Possible but very unusual.

Health Hazards : Acute Toxicity: LD50 > 5,000mg/kg. LC50 > 6.42 mg/L'4Hrs
 Mutagenicity (Ames Test): Negative. (S.typhimurium, Escherichia coli)
 (Note: data is from testing of similar materials.)

Carcinogenicity : In 1996 the IARC reevaluated carbon black as a Group 2B carcinogen (possible human carcinogen). This classification is given to chemicals for which there is inadequate human evidence, but sufficient animal evidence on which to base an opinion of carcinogenicity. The classification is based upon the development of lung tumors in rats receiving chronic inhalation exposures to free carbon black at levels that induce particle overload of the lung. Studies performed in animal models other than rats did not show any 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.

Chronic Effect : In a study in rats of chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92% of the rats in the high concentration (16mg/m³) exposure group, and a minimal to mild degree of fibrosis was noted in 22% of the animals in the middle (4mg/m³) exposure group, but no pulmonary change was reported in the lowest (1mg/m³) exposure group, the most relevant level to potential human exposures.

Signs and Symptoms of Exposure :

Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.

Medical Conditions Generally Aggravated by Exposure : None

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-00791

Section 5. Health Hazard Data (Continued)**Emergency and First Aid Procedures :**

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.
 Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

Section 6. Physical Chemical Characteristics

BoilingMelting Point	: Not applicable	Specific Gravity	: 1.2
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Black
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used) : More than 150⁰C (C.O.C.)
Ignition Temperature : No data available
Flammable Limits : (LEL); Not known (UEL); Not known
Extinguishing Media : CO₂, dry chemical, foam or water
Special Fire Fighting Procedure : None
Unusual Fire and Explosion Hazard : This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact : None
Sensitivity to Static Charge : None

Section 8. Reactivity Data

Stability : Stable
Incompatibility (Material to Avoid) : Strong acids and alkalines.
Hazardous Decomposition : Phenol derivatives, Carbon monoxide when heated at high temperature. (> 300⁰C)
Hazardous Polymerization : Will not occur.

Section 9. Precautions for Safe Handling and Use**Personal Protection Information (Respiratory, Eye Protection and Protective Glove):**

Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation : Not required.
Work / Hygienic Practice : Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak : Sweep up or clean up with vacuum cleaner.
Waste Disposal Method : Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.) : Health = 1 Flammability = 1 Reactivity = 0
WHMIS Legislation (Canada) : This product is not a controlled product.
Transport Information : This product is not a hazardous material.
UN No. : None allocated.

Section 11. Other Information

References : IARC (1996) IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol. 65, Printing Process and Printing inks, Carbon Black and Some Nitro Compounds, Lyon, pp-149-261
 H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-00841

Section 5. Health Hazard Data (Continued)**Emergency and First Aid Procedures :**

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.
 Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

Section 6. Physical Chemical Characteristics

Boiling/Melting Point	: Not applicable	Specific Gravity	: 1.1
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Black
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used) : Not applicable
Ignition Temperature : > 350°C
Flammable Limits : (LEL); Not applicable (UEL); Not applicable
Extinguishing Media : CO₂, dry chemical, foam or water
Special Fire Fighting Procedure : None
Unusual Fire and Explosion Hazard : This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact : None
Sensitivity to Static Charge : None

Section 8. Reactivity Data

Stability : Stable
Incompatibility (Material to Avoid) : None
Hazardous Decomposition : CO and NO_x
Hazardous Polymerization : Will not occur.

Section 9. Precautions for Safe Handling and Use**Personal Protection Information (Respiratory, Eye Protection and Protective Glove):**

Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation : Not required.
Work / Hygienic Practice : Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak : Sweep up or clean up with vacuum cleaner.
Waste Disposal Method : Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.) : Health = 1 Flammability = 1 Reactivity = 0
WHMIS Legislation (Canada) : This product is not a controlled product.
Transport Information : This product is not a hazardous material.
UN No. : None allocated.

Section 11. Other Information

References : IARC (1996) IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol. 65, Printing Process and Printing inks, Carbon Black and Some Nitro Compounds, Lyon, pp-149-261
 H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-00871

Section 1. Product Identification

Product : _AR-400NT1/ST1/T (Black Toner)*

***Note:** This product is supplied in two mixture variations. Please consult packaging for the MSDS reference number for your particular mixture.

Information for the alternative mixture can be found in MSDS number **F-00881**

Section 2. Supplier's Name and Address

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)	(Name and Telephone Number)
U.S.A.	Sharp Electronics Corporation Telephone number for information: 1-800-237-4277 Emergency telephone number : 1-800-255-3924
Canada	Sharp Electronics of Canada Ltd. Telephone number for information: 905-890-2100 Emergency telephone number : 1-800-255-3924
United Kingdom	Sharp Electronics (U.K.) Ltd. Telephone number for information: 01923-474013

Section 3. Ingredients

Ingredients*	CAS No.	Proportion	OSHA PEL	ACGIH TLV	Other Limits
Carbon black	1333-86-4	< 9%	3.5mg/m ³	3.5mg/m ³	None
Metal complex dye	109125-51-1	< 2%	0.5mg/m ³	0.5mg/m ³	None
	109125-50-0	(total for			
	84179-66-8	all three)			
Bisphenol A polyester resin	213077-22-6	> 85%	Not listed	Not listed	None
Iron oxide	1309-38-2	< 3%	Not listed	Not listed	None
Polypropylene	9003-07-0	< 2%	Not listed	Not listed	None

***Note:** This product is supplied in two mixture variations. Please consult the packaging for the MSDS reference number for your particular mixture

Section 4. Hazardous Identification (Emergency Overview)

Toner is a fine, black powder possessing no immediate hazard. There are no anticipated carcinogenic effects from exposure based on animal tests performed using toner. When used as intended according to instructions, studies do not indicate any symptoms of fibrosis will occur.

Section 5. Health Hazard Data

Route(s) of Entry : **Inhalation?** **Skin?** **Ingestion?**
 Yes No Possible but very unusual.

Health Hazards : Acute Oral Toxicity: The LD₅₀ of this toner is over 2,000mg/kg.

Mutagenicity: The results of the Ames Test is negative.

Carcinogenicity : In 1996 the IARC reevaluated carbon black as a Group 2B carcinogen (possible human carcinogen). This classification is given to chemicals for which there is inadequate human evidence, but sufficient animal evidence on which to base an opinion of carcinogenicity. The classification is based upon the development of lung tumors in rats receiving chronic inhalation exposures to free carbon black at levels that induce particle overload of the lung. Studies performed in animal models other than rats did not show any 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.

Chronic Effect : In a study in rats of chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92% of the rats in the high concentration (16mg/m³) exposure group, and a minimal to mild degree of fibrosis was noted in 22% of the animals in the middle (4mg/m³) exposure group, but no pulmonary change was reported in the lowest (1mg/m³) exposure group, the most relevant level to potential human exposures.

Signs and Symptoms of Exposure :

Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.

Medical Conditions Generally Aggravated by Exposure : None

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-008711

Section 5. Health Hazard Data (Continued)**Emergency and First Aid Procedures :**

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.
 Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

Section 6. Physical Chemical Characteristics

BoilingMelting Point	: Not applicable	Specific Gravity	: 1.1
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Black
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used) : Not applicable
Ignition Temperature : > 350°C
Flammable Limits : (LEL); Not applicable (UEL); Not applicable
Extinguishing Media : CO₂, dry chemical, foam or water
Special Fire Fighting Procedure : None
Unusual Fire and Explosion Hazard : This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact : None
Sensitivity to Static Charge : None

Section 8. Reactivity Data

Stability : Stable
Incompatibility (Material to Avoid) : None
Hazardous Decomposition : CO and NO_x
Hazardous Polymerization : Will not occur.

Section 9. Precautions for Safe Handling and Use**Personal Protection Information (Respiratory, Eye Protection and Protective Glove):**

Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation : Not required.
Work / Hygienic Practice : Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak : Sweep up or clean up with vacuum cleaner.
Waste Disposal Method : Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.) : Health = 1 Flammability = 1 Reactivity = 0
WHMIS Legislation (Canada) : This product is not a controlled product.
Transport Information : This product is not a hazardous material.
UN No. : None allocated.

Section 11. Other Information

References : IARC (1996) IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol. 65, Printing Process and Printing inks, Carbon Black and Some Nitro Compounds, Lyon, pp-149-261
 H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-00881

Section 1. Product Identification**Product :** AR-400NT1/ST1/T/MT (Black Toner)****Note:** This product is supplied in two mixture variations. Please consult packaging for the MSDS reference number for your particular mixture.Information for the alternative mixture can be found in MSDS number **F-00871****Section 2. Supplier's Name and Address**

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)	(Name and Telephone Number)
U.S.A.	Sharp Electronics Corporation Telephone number for information: 1-800-237-4277 Emergency telephone number : 1-800-255-3924
Canada	Sharp Electronics of Canada Ltd. Telephone number for information: 905-890-2100 Emergency telephone number : 1-800-255-3924
United Kingdom	Sharp Electronics (U.K.) Ltd. Telephone number for information: 01923-474013

Section 3. Ingredients

<u>Ingredients</u>	<u>CAS No.</u>	<u>Proportion</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Other Limits</u>
Carbon black	1333-86-4	< 4%	3.5mg/m ³	3.5mg/m ³	None
Silica	68909-20-6	< 1%	15mg/m ³	10mg/m ³	None
Styrene-acrylate polyester	149367-99-7	< 55%	Not listed	Not listed	None
Polyester resin 1 NJ TSRN 80100252-5009P		< 20%	Not listed	Not listed	None
Polyester resin 2	116736-81-3	< 20%	Not listed	Not listed	None
Wax 1	9010-79-1	< 2%	Not listed	Not listed	None
Wax 2	8015-86-9	< 2%	Not listed	Not listed	None
Pigment	31714-55-3	< 1%	Not listed	Not listed	None

Section 4. Hazardous Identification (Emergency Overview)

Toner is a fine, black powder possessing no immediate hazard. There are no anticipated carcinogenic effects from exposure based on animal tests performed using toner. When used as intended according to instructions, studies do not indicate any symptoms of fibrosis will occur.

Section 5. Health Hazard Data

Route(s) of Entry : Inhalation? Skin? Ingestion?
 Yes No Possible but very unusual.

Health Hazards : Acute Toxicity: LD50 > 5,000mg/kg. LC50 > 6.42 mg/L'4Hrs
 Mutagenicity (Ames Test): Negative. (S.typhimurium, Escherichia coli)
 (Note: data is from testing of similar materials.)

Carcinogenicity : In 1996 the IARC reevaluated carbon black as a Group 2B carcinogen (possible human carcinogen). This classification is given to chemicals for which there is inadequate human evidence, but sufficient animal evidence on which to base an opinion of carcinogenicity. The classification is based upon the development of lung tumors in rats receiving chronic inhalation exposures to free carbon black at levels that induce particle overload of the lung. Studies performed in animal models other than rats did not show any 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.

Chronic Effect : In a study in rats of chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92% of the rats in the high concentration (16mg/m³) exposure group, and a minimal to mild degree of fibrosis was noted in 22% of the animals in the middle (4mg/m³) exposure group, but no pulmonary change was reported in the lowest (1mg/m³) exposure group, the most relevant level to potential human exposures.

Signs and Symptoms of Exposure :

Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.

Medical Conditions Generally Aggravated by Exposure : None

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-00881

Section 5. Health Hazard Data (Continued)**Emergency and First Aid Procedures :**

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.
 Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

Section 6. Physical Chemical Characteristics

BoilingMelting Point	: Not applicable	Specific Gravity	: 1.2
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Black
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used) : More than 150⁰C (C.O.C.)
Ignition Temperature : No data available
Flammable Limits : (LEL); Not known (UEL); Not known
Extinguishing Media : CO₂, dry chemical, foam or water
Special Fire Fighting Procedure : None
Unusual Fire and Explosion Hazard : This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact : None
Sensitivity to Static Charge : None

Section 8. Reactivity Data

Stability : Stable
Incompatibility (Material to Avoid) : Strong acids and alkalines.
Hazardous Decomposition : Phenol derivatives, Carbon monoxide when heated at high temperature. (> 300⁰C)
Hazardous Polymerization : Will not occur.

Section 9. Precautions for Safe Handling and Use**Personal Protection Information (Respiratory, Eye Protection and Protective Glove):**

Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation : Not required.
Work / Hygienic Practice : Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak : Sweep up or clean up with vacuum cleaner.
Waste Disposal Method : Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.) : Health = 1 Flammability = 1 Reactivity = 0
WHMIS Legislation (Canada) : This product is not a controlled product.
Transport Information : This product is not a hazardous material.
UN No. : None allocated.

Section 11. Other Information

References : IARC (1996) IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol. 65, Printing Process and Printing inks, Carbon Black and Some Nitro Compounds, Lyon, pp-149-261
 H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-00921

Section 1. Product Identification**Product :**

AR-C15NT1/T1/ST1 (Black Toner)

Section 2. Supplier's Name and Address

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)	(Name and Telephone Number)
U.S.A.	Sharp Electronics Corporation Telephone number for information: 1-800-237-4277 Emergency telephone number : 1-800-255-3924
Canada	Sharp Electronics of Canada Ltd. Telephone number for information: 905-890-2100 Emergency telephone number : 1-800-255-3924
United Kingdom	Sharp Electronics (U.K.) Ltd. Telephone number for information: 01923-474013

Section 3. Ingredients

<u>Ingredients</u>	<u>CAS No.</u>	<u>Proportion</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Other Limits</u>
Carbon black	1333-86-4	< 8%	3.5mg/m ³	3.5mg/m ³	None
Polyester resin	75214-60-7	> 85%	Not listed	Not listed	None
Propylene	9003-07-0	< 2%	Not listed	Not listed	None

Section 4. Hazardous Identification (Emergency Overview)

Toner is a fine, black powder possessing no immediate hazard. There are no anticipated carcinogenic effects from exposure based on animal tests performed using toner. When used as intended according to instructions, studies do not indicate any symptoms of fibrosis will occur.

Section 5. Health Hazard Data

Route(s) of Entry :	<u>Inhalation?</u>	<u>Skin?</u>	<u>Ingestion?</u>
	Yes	No	Possible but very unusual.

Health Hazards : Acute oral toxicity --- LD50 of this toner is over 2,000mg/kg.
Mutagenicity --- The result of Ames test is negative.

Carcinogenicity : In 1996 the IARC reevaluated carbon black as a Group 2B carcinogen (possible human carcinogen). This classification is given to chemicals for which there is inadequate human evidence, but sufficient animal evidence on which to base an opinion of carcinogenicity. The classification is based upon the development of lung tumors in rats receiving chronic inhalation exposures to free carbon black at levels that induce particle overload of the lung. Studies performed in animal models other than rats did not show any 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.

Chronic Effect : In a study in rats of chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92% of the rats in the high concentration (16mg/m³) exposure group, and a minimal to mild degree of fibrosis was noted in 22% of the animals in the middle (4mg/m³) exposure group, but no pulmonary change was reported in the lowest (1mg/m³) exposure group, the most relevant level to potential human exposures.

Signs and Symptoms of Exposure :
Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.

Medical Conditions Generally Aggravated by Exposure : None

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-00921

Section 5. Health Hazard Data (Continued)

Emergency and First Aid Procedures :

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.
 Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

Section 6. Physical Chemical Characteristics

Boiling/Melting Point	: Not applicable	Specific Gravity	: 1.1
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Black
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used)	: Not applicable
Ignition Temperature	: > 350°C
Flammable Limits	: (LEL); Not applicable (UEL); Not applicable
Extinguishing Media	: CO ₂ , dry chemical, foam or water
Special Fire Fighting Procedure	: None
Unusual Fire and Explosion Hazard	: This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact	: None
Sensitivity to Static Charge	: None

Section 8. Reactivity Data

Stability	: Stable
Incompatibility (Material to Avoid)	: None
Hazardous Decomposition	: CO and NO _x
Hazardous Polymerization	: Will not occur.

Section 9. Precautions for Safe Handling and Use

Personal Protection Information (Respiratory, Eye Protection and Protective Glove):

Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation	: Not required.
Work / Hygienic Practice	: Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak	: Sweep up or clean up with vacuum cleaner.
Waste Disposal Method	: Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.)	: Health = 1 Flammability = 1 Reactivity = 0
WHMIS Legislation (Canada)	: This product is not a controlled product.
Transport Information	: This product is not a hazardous material.
UN No.	: None allocated.

Section 11. Other Information

References : IARC (1996) IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol. 65, Printing Process and Printing inks, Carbon Black and Some Nitro Compounds, Lyon, pp-149-261
 H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-00926

Section 1. Product Identification**Product :**

AR-CN15NT6/T6/ST6(Cyan Toner)

Section 2. Supplier's Name and Address

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)	(Name and Telephone Number)
U.S.A.	Sharp Electronics Corporation Telephone number for information: 1-800-237-4277 Emergency telephone number : 1-800-255-3924
Canada	Sharp Electronics of Canada Ltd. Telephone number for information: 905-890-2100 Emergency telephone number : 1-800-255-3924
United Kingdom	Sharp Electronics (U.K.) Ltd. Telephone number for information: 01923-474013

Section 3. Ingredients

<u>Ingredients</u>	<u>CAS No.</u>	<u>Proportion</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Other Limits</u>
Polyester resin	75214-60-7	> 85%	Not listed	Not listed	None
Organic pigment	147-14-8	< 6%	Not listed	Not listed	None
Boron compound	114803-11-1	< 3%	Not listed	Not listed	None
Polypropylene	9003-07-0	< 2%	Not listed	Not listed	None

Section 4. Hazardous Identification (Emergency Overview)

Toner is a fine, black powder possessing no immediate hazard. There are no anticipated carcinogenic effects from exposure based on animal tests performed using toner. When used as intended according to instructions, studies do not indicate any symptoms of fibrosis will occur.

Section 5. Health Hazard Data

Route(s) of Entry :	<u>Inhalation?</u>	<u>Skin?</u>	<u>Ingestion?</u>
	Yes	No	Possible but very unusual.
Health Hazards :	Acute oral toxicity --- LD50 of this toner is over 2,000mg/kg. Mutagenicity --- The result of Ames test is negative.		
Carcinogenicity :	<u>NTP?</u>	<u>IARC Monographs?</u>	<u>OSHA Regulated?</u>
	No	No	No

Chronic Effect : In a study in rats of chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92% of the rats in the high concentration (16mg/m³) exposure group, and a minimal to mild degree of fibrosis was noted in 22% of the animals in the middle (4mg/m³) exposure group, but no pulmonary change was reported in the lowest (1mg/m³) exposure group, the most relevant level to potential human exposures.

Signs and Symptoms of Exposure :

Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.

Medical Conditions Generally Aggravated by Exposure : None

Emergency and First Aid Procedures :

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.

Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

S H A R P

Date Revised: June 14, 1999

Date Issued : April 1, 1999

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-00926

Section 6. Physical Chemical Characteristics

BoilingMelting Point	: Not applicable	Specific Gravity	: 1.1
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Red
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used)	: Not applicable
Ignition Temperature	: > 350°C
Flammable Limits	: (LEL); Not applicable (UEL); Not applicable
Extinguishing Media	: CO ₂ , dry chemical, foam or water
Special Fire Fighting Procedure	: None
Unusual Fire and Explosion Hazard	: This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact	: None
Sensitivity to Static Charge	: None

Section 8. Reactivity Data

Stability	: Stable
Incompatibility (Material to Avoid)	: None
Hazardous Decomposition	: CO and NO _x
Hazardous Polymerization	: Will not occur.

Section 9. Precautions for Safe Handling and Use

Personal Protection Information (Respiratory, Eye Protection and Protective Glove):

Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation	: Not required.
Work / Hygienic Practice	: Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak	: Sweep up or clean up with vacuum cleaner.
Waste Disposal Method	: Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.)	: Health = 1	Flammability = 1	Reactivity = 0
WHMIS Legislation (Canada)	: This product is not a controlled product.		
Transport Information	: This product is not a hazardous material.		
UN No.	: None allocated.		

Section 11. Other Information

References :

H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299

S H A R P

Date Revised: June 14, 1999

Date Issued : April 1, 1999

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-00927

Section 1. Product Identification

Product :

AR-CN15NT7/T7/ST7(Magenta Toner)

Section 2. Supplier's Name and Address

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)	(Name and Telephone Number)
U.S.A.	Sharp Electronics Corporation Telephone number for information: 1-800-237-4277 Emergency telephone number : 1-800-255-3924
Canada	Sharp Electronics of Canada Ltd. Telephone number for information: 905-890-2100 Emergency telephone number : 1-800-255-3924
United Kingdom	Sharp Electronics (U.K.) Ltd. Telephone number for information: 01923-474013

Section 3. Ingredients

<u>Ingredients</u>	<u>CAS No.</u>	<u>Proportion</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Other Limits</u>
Polyester resin	75214-60-7	> 85%	Not listed	Not listed	None
Organic pigment	980-26-7	< 8%	Not listed	Not listed	None
Boron compound	114803-11-1	< 3%	Not listed	Not listed	None
Polypropylene	9003-07-0	< 2%	Not listed	Not listed	None

Section 4. Hazardous Identification (Emergency Overview)

Toner is a fine, black powder possessing no immediate hazard. There are no anticipated carcinogenic effects from exposure based on animal tests performed using toner. When used as intended according to instructions, studies do not indicate any symptoms of fibrosis will occur.

Section 5. Health Hazard Data

Route(s) of Entry :	<u>Inhalation?</u>	<u>Skin?</u>	<u>Ingestion?</u>
	Yes	No	Possible but very unusual.
Health Hazards :	Acute oral toxicity --- LD50 of this toner is over 2,000mg/kg. Mutagenicity --- The result of Ames test is negative.		
Carcinogenicity :	<u>NTP?</u>	<u>IARC Monographs?</u>	<u>OSHA Regulated?</u>
	No	No	No

Chronic Effect : In a study in rats of chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92% of the rats in the high concentration (16mg/m³) exposure group, and a minimal to mild degree of fibrosis was noted in 22% of the animals in the middle (4mg/m³) exposure group, but no pulmonary change was reported in the lowest (1mg/m³) exposure group, the most relevant level to potential human exposures.

Signs and Symptoms of Exposure :

Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.

Medical Conditions Generally Aggravated by Exposure : None

Emergency and First Aid Procedures :

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.

Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

S H A R P

Date Revised: June 14, 1999

Date Issued : April 1, 1999

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-00927

Section 6. Physical Chemical Characteristics

BoilingMelting Point	: Not applicable	Specific Gravity	: 1.1
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Red
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used)	: Not applicable
Ignition Temperature	: > 350°C
Flammable Limits	: (LEL); Not applicable (UEL); Not applicable
Extinguishing Media	: CO ₂ , dry chemical, foam or water
Special Fire Fighting Procedure	: None
Unusual Fire and Explosion Hazard	: This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact	: None
Sensitivity to Static Charge	: None

Section 8. Reactivity Data

Stability	: Stable
Incompatibility (Material to Avoid)	: None
Hazardous Decomposition	: CO and NO _x
Hazardous Polymerization	: Will not occur.

Section 9. Precautions for Safe Handling and Use

Personal Protection Information (Respiratory, Eye Protection and Protective Glove):

Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation	: Not required.
Work / Hygienic Practice	: Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak	: Sweep up or clean up with vacuum cleaner.
Waste Disposal Method	: Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.)	: Health = 1	Flammability = 1	Reactivity = 0
WHMIS Legislation (Canada)	: This product is not a controlled product.		
Transport Information	: This product is not a hazardous material.		
UN No.	: None allocated.		

Section 11. Other Information

References :

H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-00928

Section 1. Product Identification**Product :**

AR-CN15NT8/T8/ST8(Yellow Toner)

Section 2. Supplier's Name and Address

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)	(Name and Telephone Number)
U.S.A.	Sharp Electronics Corporation Telephone number for information: 1-800-237-4277 Emergency telephone number : 1-800-255-3924
Canada	Sharp Electronics of Canada Ltd. Telephone number for information: 905-890-2100 Emergency telephone number : 1-800-255-3924
United Kingdom	Sharp Electronics (U.K.) Ltd. Telephone number for information: 01923-474013

Section 3. Ingredients

<u>Ingredients</u>	<u>CAS No.</u>	<u>Proportion</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Other Limits</u>
Polyester resin	75214-60-7	> 85%	Not listed	Not listed	None
Organic pigment	5580-57-4	< 8%	Not listed	Not listed	None
Boron compound	114803-11-1	< 3%	Not listed	Not listed	None
Polypropylene	9003-07-0	< 2%	Not listed	Not listed	None

Section 4. Hazardous Identification (Emergency Overview)

Toner is a fine, black powder possessing no immediate hazard. There are no anticipated carcinogenic effects from exposure based on animal tests performed using toner. When used as intended according to instructions, studies do not indicate any symptoms of fibrosis will occur.

Section 5. Health Hazard Data

Route(s) of Entry :	<u>Inhalation?</u>	<u>Skin?</u>	<u>Ingestion?</u>
	Yes	No	Possible but very unusual.
Health Hazards :	Acute oral toxicity --- LD50 of this toner is over 2,000mg/kg. Mutagenicity --- The result of Ames test is negative.		
Carcinogenicity :	<u>NTP?</u>	<u>IARC Monographs?</u>	<u>OSHA Regulated?</u>
	No	No	No

Chronic Effect : In a study in rats of chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92% of the rats in the high concentration (16mg/m³) exposure group, and a minimal to mild degree of fibrosis was noted in 22% of the animals in the middle (4mg/m³) exposure group, but no pulmonary change was reported in the lowest (1mg/m³) exposure group, the most relevant level to potential human exposures.

Signs and Symptoms of Exposure :

Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.

Medical Conditions Generally Aggravated by Exposure : None

Emergency and First Aid Procedures :

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.

Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

S H A R P

Date Revised: June 14, 1999

Date Issued : April 1, 1999

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-00928

Section 6. Physical Chemical Characteristics

BoilingMelting Point	: Not applicable	Specific Gravity	: 1.1
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Red
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used)	: Not applicable
Ignition Temperature	: > 350°C
Flammable Limits	: (LEL); Not applicable (UEL); Not applicable
Extinguishing Media	: CO ₂ , dry chemical, foam or water
Special Fire Fighting Procedure	: None
Unusual Fire and Explosion Hazard	: This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact	: None
Sensitivity to Static Charge	: None

Section 8. Reactivity Data

Stability	: Stable
Incompatibility (Material to Avoid)	: None
Hazardous Decomposition	: CO and NO _x
Hazardous Polymerization	: Will not occur.

Section 9. Precautions for Safe Handling and Use

Personal Protection Information (Respiratory, Eye Protection and Protective Glove):

Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation	: Not required.
Work / Hygienic Practice	: Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak	: Sweep up or clean up with vacuum cleaner.
Waste Disposal Method	: Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.)	: Health = 1	Flammability = 1	Reactivity = 0
WHMIS Legislation (Canada)	: This product is not a controlled product.		
Transport Information	: This product is not a hazardous material.		
UN No.	: None allocated.		

Section 11. Other Information

References :

H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-00941

Section 1. Product Identification

Product : _AR-500NT1/ST1/T (Black Toner)*

***Note:** This product is supplied in two mixture variations. Please consult packaging for the MSDS reference number for your particular mixture.

Information for the alternative mixture can be found in MSDS number **F-00951**

Section 2. Supplier's Name and Address

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)	(Name and Telephone Number)
U.S.A.	Sharp Electronics Corporation Telephone number for information: 1-800-237-4277 Emergency telephone number : 1-800-255-3924
Canada	Sharp Electronics of Canada Ltd. Telephone number for information: 905-890-2100 Emergency telephone number : 1-800-255-3924
United Kingdom	Sharp Electronics (U.K.) Ltd. Telephone number for information: 01923-474013

Section 3. Ingredients

<u>Ingredients*</u>	<u>CAS No.</u>	<u>Proportion</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Other Limits</u>
Carbon black	1333-86-4	< 7%	3.5mg/m ³	3.5mg/m ³	None
Metal complex dye	109125-51-1	< 2%	0.5mg/m ³	0.5mg/m ³	None
	109125-50-0	(total for			
	84179-66-8	all three)			
Bisphenol A polyester resin	213077-22-6	> 85%	Not listed	Not listed	None
Iron oxide	1309-38-2	< 3%	Not listed	Not listed	None
Polypropylene	9003-07-0	< 2%	Not listed	Not listed	None

***Note:** This product is supplied in two mixture variations. Please consult the packaging for the MSDS reference number for your particular mixture

Section 4. Hazardous Identification (Emergency Overview)

Toner is a fine, black powder possessing no immediate hazard. There are no anticipated carcinogenic effects from exposure based on animal tests performed using toner. When used as intended according to instructions, studies do not indicate any symptoms of fibrosis will occur.

Section 5. Health Hazard Data

Route(s) of Entry :	<u>Inhalation?</u>	<u>Skin?</u>	<u>Ingestion?</u>
	Yes	No	Possible but very unusual.

Health Hazards : Acute Oral Toxicity: The LD₅₀ of this toner is over 2,000mg/kg.

Mutagenicity: The results of the Ames Test is negative.

Carcinogenicity : In 1996 the IARC reevaluated carbon black as a Group 2B carcinogen (possible human carcinogen). This classification is given to chemicals for which there is inadequate human evidence, but sufficient animal evidence on which to base an opinion of carcinogenicity. The classification is based upon the development of lung tumors in rats receiving chronic inhalation exposures to free carbon black at levels that induce particle overload of the lung. Studies performed in animal models other than rats did not show any 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.

Chronic Effect : In a study in rats of chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92% of the rats in the high concentration (16mg/m³) exposure group, and a minimal to mild degree of fibrosis was noted in 22% of the animals in the middle (4mg/m³) exposure group, but no pulmonary change was reported in the lowest (1mg/m³) exposure group, the most relevant level to potential human exposures.

Signs and Symptoms of Exposure :

Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.

Medical Conditions Generally Aggravated by Exposure : None

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-00941

Section 5. Health Hazard Data (Continued)**Emergency and First Aid Procedures :**

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.
 Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

Section 6. Physical Chemical Characteristics

BoilingMelting Point	: Not applicable	Specific Gravity	: 1.1
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Black
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used) : Not applicable
Ignition Temperature : > 350°C
Flammable Limits : (LEL); Not applicable (UEL); Not applicable
Extinguishing Media : CO₂, dry chemical, foam or water
Special Fire Fighting Procedure : None
Unusual Fire and Explosion Hazard : This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact : None
Sensitivity to Static Charge : None

Section 8. Reactivity Data

Stability : Stable
Incompatibility (Material to Avoid) : None
Hazardous Decomposition : CO and NO_x
Hazardous Polymerization : Will not occur.

Section 9. Precautions for Safe Handling and Use**Personal Protection Information (Respiratory, Eye Protection and Protective Glove):**

Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation : Not required.
Work / Hygienic Practice : Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak : Sweep up or clean up with vacuum cleaner.
Waste Disposal Method : Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.) : Health = 1 Flammability = 1 Reactivity = 0
WHMIS Legislation (Canada) : This product is not a controlled product.
Transport Information : This product is not a hazardous material.
UN No. : None allocated.

Section 11. Other Information

References : IARC (1996) IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol. 65, Printing Process and Printing inks, Carbon Black and Some Nitro Compounds, Lyon, pp-149-261
 H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-00951

Section 1. Product Identification**Product** : _AR-500NT/AR-500ST/ AR-500T (Black Toner)****Note:** This product is supplied in two mixture variations. Please consult packaging for the MSDS reference number for your particular mixture.Information for the alternative mixture can be found in MSDS number **F-00941****Section 2. Supplier's Name and Address**

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)	(Name and Telephone Number)
U.S.A.	Sharp Electronics Corporation Telephone number for information: 1-800-237-4277 Emergency telephone number : 1-800-255-3924
Canada	Sharp Electronics of Canada Ltd. Telephone number for information: 905-890-2100 Emergency telephone number : 1-800-255-3924
United Kingdom	Sharp Electronics (U.K.) Ltd. Telephone number for information: 01923-474013

Section 3. Ingredients

Ingredients	CAS No.	Proportion	OSHA PEL	ACGIH TLV	Other Limits
Carbon black	1333-86-4	< 4%	3.5mg/m ³	3.5mg/m ³	None
Silica	68909-20-6	< 1%	15mg/m ³	10mg/m ³	None
Styrene -acrylate polyester	149367-99-7	< 55%	Not listed	Not listed	None
Polyester resin 1	NJ TSRN 80100252-5009P	< 20%	Not listed	Not listed	None
Polyester resin 2	116736-81-3	< 20%	Not listed	Not listed	None
Wax 1	9010-79-1	< 2%	Not listed	Not listed	None
Wax 2	8015-86-9	< 2%	Not listed	Not listed	None
Pigment	31714-55-3	< 1%	Not listed	Not listed	None

Section 4. Hazardous Identification (Emergency Overview)

Toner is a fine, black powder possessing no immediate hazard. There are no anticipated carcinogenic effects from exposure based on animal tests performed using toner. When used as intended according to instructions, studies do not indicate any symptoms of fibrosis will occur.

Section 5. Health Hazard Data

Route(s) of Entry	Inhalation?	Skin?	Ingestion?
	Yes	No	Possible but very unusual.
	Yes	No	Possible but very unusual.

Health Hazards : Acute Toxicity: LD50 > 5,000mg/kg. LC50 > 6.42 mg/L'4Hrs
Mutagenicity (Ames Test): Negative. (S.typhimurium, Escherichia coli)
(Note: data is from testing of similar materials.)

Carcinogenicity : In 1996 the IARC reevaluated carbon black as a Group 2B carcinogen (possible human carcinogen). This classification is given to chemicals for which there is inadequate human evidence, but sufficient animal evidence on which to base an opinion of carcinogenicity. The classification is based upon the development of lung tumors in rats receiving chronic inhalation exposures to free carbon black at levels that induce particle overload of the lung. Studies performed in animal models other than rats did not show any 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.

Chronic Effect : In a study in rats of chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92% of the rats in the high concentration (16mg/m³) exposure group, and a minimal to mild degree of fibrosis was noted in 22% of the animals in the middle (4mg/m³) exposure group, but no pulmonary change was reported in the lowest (1mg/m³) exposure group, the most relevant level to potential human exposures.

Signs and Symptoms of Exposure

Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.

Medical Conditions Generally Aggravated by Exposure : None

S H A R P

Date Revised: November 15, 1999

Date Issued: July 1, 1999

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-00951

Section 5. Health Hazard Data (Continued)

Emergency and First Aid Procedures :

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.
 Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

Section 6. Physical Chemical Characteristics

BoilingMelting Point	: Not applicable	Specific Gravity	: 1.2
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Black
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used)	: Not applicable
Ignition Temperature	: Not applicable
Flammable Limits	: (LEL); Not applicable (UEL); Not applicable
Extinguishing Media	: CO ₂ , dry chemical, foam or water
Special Fire Fighting Procedure	: None
Unusual Fire and Explosion Hazard	: This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact	: None
Sensitivity to Static Charge	: None

Section 8. Reactivity Data

Stability	: Stable
Incompatibility (Material to Avoid)	: None
Hazardous Decomposition	: Phenol derivatives, Carbon monoxide when heated at high temperature. (> 300 ⁰ C)
Hazardous Polymerization	: Will not occur.

Section 9. Precautions for Safe Handling and Use

Personal Protection Information (Respiratory, Eye Protection and Protective Glove): Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation: Not required.

Work / Hygienic Practice: Inhalation should be minimized as with any non-toxic dust.

Steps to be taken in case of Spill or Leak : Sweep up or clean up with vacuum cleaner.

Waste Disposal Method: Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.)	: Health = 1	Flammability = 1	Reactivity = 0
WHMIS Legislation (Canada)	: This product is not a controlled product.		
Transport Information	: This product is not a hazardous material.		
UN No.	: None allocated.		

Section 11. Other Information

References : IARC (1996) IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol. 65, Printing Process and Printing inks, Carbon Black and Some Nitro Compounds, Lyon, pp-149-261
 H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-0451

Section 1. Product Identification

Product :

AR-540NT/AR-540NT1 (Black Toner)

Section 2. Supplier's Name and Address

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)	(Name and Telephone Number)
U.S.A.	Sharp Electronics Corporation Telephone number for information: 1-800-237-4277 Emergency telephone number : 1-800-255-3924
Canada	Sharp Electronics of Canada Ltd. Telephone number for information: 905-890-2100 Emergency telephone number : 1-800-255-3924
United Kingdom	Sharp Electronics (U.K.) Ltd. Telephone number for information: 01923-474013

Section 3. Ingredients

Ingredients	CAS No.	Proportion	OSHA PEL	ACGIH TLV	Other Limits
Carbon black	1333-86-4	< 10%	3.5mg/m ³	3.5mg/m ³	None
Silica	68909-20-6	< 1%	15mg/m ³	10mg/m ³	None
Polyester resin	NJ TSRN 80100252-5001P	< 90%	Not listed	Not listed	None
Pigment	31714-55-3	< 3%	Not listed	Not listed	None
Wax	9003-07-0	< 3%	Not listed	Not listed	None
Magnetite	1309-38-2	< 3%	Not listed	Not listed	None

Section 4. Hazardous Identification (Emergency Overview)

Toner is a fine, black powder possessing no immediate hazard. There are no anticipated carcinogenic effects from exposure based on animal tests performed using toner. When used as intended according to instructions, studies do not indicate any symptoms of fibrosis will occur.

Section 5. Health Hazard Data

Route(s) of Entry : Inhalation?

Yes

Skin?

No

Ingestion?

Possible but very unusual.

Health Hazards : **Health Hazards :** Acute Toxicity: LD50 > 2,000mg/kg. LC50 > 5.97 mg/L'4Hrs
Mutagenicity (Ames Test): Negative. (S.typhimurium, Escherichia coli)

(Note: data is from testing of similar materials.)

Carcinogenicity : In 1996 the IARC reevaluated carbon black as a Group 2B carcinogen (possible human carcinogen). This classification is given to chemicals for which there is inadequate human evidence, but sufficient animal evidence on which to base an opinion of carcinogenicity. The classification is based upon the development of lung tumors in rats receiving chronic inhalation exposures to free carbon black at levels that induce particle overload of the lung. Studies performed in animal models other than rats did not show any 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.

Chronic Effect : In a study in rats of chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92% of the rats in the high concentration (16mg/m³) exposure group, and a minimal to mild degree of fibrosis was noted in 22% of the animals in the middle (4mg/m³) exposure group, but no pulmonary change was reported in the lowest (1mg/m³) exposure group, the most relevant level to potential human exposures.

Signs and Symptoms of Exposure :

Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.

Medical Conditions Generally Aggravated by Exposure : None

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-0451

Section 5. Health Hazard Data (Continued)**Emergency and First Aid Procedures :**

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.
 Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

Section 6. Physical Chemical Characteristics

BoilingMelting Point	: Not applicable	Specific Gravity	: 1.2
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Black
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used) : More than 150⁰C (C.O.C.)
Ignition Temperature : No data available
Flammable Limits : (LEL); 34.5 g/m³ (UEL); Not applicable
Extinguishing Media : CO₂, dry chemical, foam or water
Special Fire Fighting Procedure : None
Unusual Fire and Explosion Hazard : This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact : None
Sensitivity to Static Charge : None

Section 8. Reactivity Data

Stability : Stable
Incompatibility (Material to Avoid) : Strong acids or alkalines.
Hazardous Decomposition : Phenol derivatives, carbon monoxide when heated to high temperatures (> 300⁰C)
Hazardous Polymerization : Will not occur.

Section 9. Precautions for Safe Handling and Use**Personal Protection Information (Respiratory, Eye Protection and Protective Glove):**

Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation : Not required.
Work / Hygienic Practice : Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak : Sweep up or clean up with vacuum cleaner.
Waste Disposal Method : Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.) : Health = 1 Flammability = 1 Reactivity = 0
WHMIS Legislation (Canada) : This product is not a controlled product.
Transport Information : This product is not a hazardous material.
UN No. : None allocated.

Section 11. Other Information

References : IARC (1996) IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol. 65, Printing Process and Printing inks, Carbon Black and Some Nitro Compounds, Lyon, pp-149-261
 H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299

Date Revised : October 1, 1997

Date Issued : Feb. 1, 1997

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-30721

Section 1. Product Identification**Product :**

AR-532ND1/AR-532DV1 (Black Developer)

Section 2. Supplier's Name and Address

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)	(Name and Telephone Number)
U.S.A.	Sharp Electronics Corporation Telephone number for information: 1-800-237-4277 Emergency telephone number : 1-800-255-3924
Canada	Sharp Electronics of Canada Ltd. Telephone number for information: 905-890-2100 Emergency telephone number : 1-800-255-3924
United Kingdom	Sharp Electronics (U.K.) Ltd. Telephone number for information: 01923-474013

Section 3. Ingredients

<u>Ingredients</u>	<u>CAS No.</u>	<u>Proportion</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Other Limits</u>
Ferrite		> 97%	Not listed	Not listed	None
Zinc oxide	1314-13-2				
Iron oxide	1309-37-1				
Copper oxide	1317-38-0				
Magnesium oxide	1309-48-4				
Polyester resin	NJ TSRN 80101252-5001P	< 4%	Not listed ₃	Not listed ₃	None
Carbon black	1333-86-4	< 0.4%	3.5mg/m ³	3.5mg/m ³	None

Section 4. Hazardous Identification (Emergency Overview)

Developer is a black powder containing small amounts of toner, and possessing no immediate hazard. There are no anticipated carcinogenic effects from exposure based on animal tests performed using toner.

Section 5. Health Hazard DataRoute(s) of Entry : Inhalation?

Yes

Skin?

No

Ingestion?

Possible but very unusual.

Health Hazards : Acute Toxicity: LD50 > 5,000mg/kg. LC50 > 5.97 mg/L'4Hrs

Mutagenicity (Ames Test): Negative. (S.typhimurium, Escherichia coli)

(Note: data is from testing of the included toner.)

Carcinogenicity : In 1996 the IARC reevaluated carbon black as a Group 2B carcinogen (possible human carcinogen). This classification is given to chemicals for which there is inadequate human evidence, but sufficient animal evidence on which to base an opinion of carcinogenicity. The classification is based upon the development of lung tumors in rats receiving chronic inhalation exposures to free carbon black at levels that induce particle overload of the lung. Studies performed in animal models other than rats did not show any association between carbon black and lung tumors. While there have been no studies to date using developer, a two-year cancer bioassay using a typical toner preparation containing carbon black (a small amount of toner is included in the developer mixture) demonstrated no association between toner exposure and tumor development in rats.

Signs and Symptoms of Exposure :

Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.

Medical Conditions Generally Aggravated by Exposure : None

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-30721

Section 5. Health Hazard Data (Continued)

Emergency and First Aid Procedures :

- Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.
 Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

Section 6. Physical Chemical Characteristics

BoilingMelting Point	: Not applicable	Specific Gravity	: about 5
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Black
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used)	: Not applicable
Ignition Temperature	: No data available
Flammable Limits	: (LEL); Not applicable (UEL); Not applicable
Extinguishing Media	: CO ₂ , dry chemical, foam or water
Special Fire Fighting Procedure	: None
Unusual Fire and Explosion Hazard	: This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact	: None
Sensitivity to Static Charge	: None

Section 8. Reactivity Data

Stability	: Stable
Incompatibility (Material to Avoid)	: Strong acids or alkalines
Hazardous Decomposition	: Phenol derivatives, Carbon monoxide when heated at high temperature (> 300°C)
Hazardous Polymerization	: Will not occur.

Section 9. Precautions for Safe Handling and Use

Personal Protection Information (Respiratory, Eye Protection and Protective Glove):

Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation	: Not required.
Work / Hygienic Practice	: Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak	: Sweep up or clean up with vacuum cleaner.
Waste Disposal Method	: Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.)	: Health = 1 Flammability = 1 Reactivity = 0
WHMIS Legislation (Canada)	: This product is not a controlled product.
Transport Information	: This product is not a hazardous material.
UN No.	: None allocated.

Section 11. Other Information

References : IARC (1996) IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol. 65, Printing Process and Printing inks, Carbon Black and Some Nitro Compounds, Lyon, pp-149-261
 H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299

Date Revised : August 7, 1998

Date Issued : Feb. 1, 1998

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-30791

Section 1. Product Identification**Product :**

AR-330ND/AR-330SD/AR-330DV (Black Developer)

Section 2. Supplier's Name and Address

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)	(Name and Telephone Number)
U.S.A.	Sharp Electronics Corporation Telephone number for information: 1-800-237-4277 Emergency telephone number : 1-800-255-3924
Canada	Sharp Electronics of Canada Ltd. Telephone number for information: 905-890-2100 Emergency telephone number : 1-800-255-3924
United Kingdom	Sharp Electronics (U.K.) Ltd. Telephone number for information: 01923-474013

Section 3. Ingredients

Ingredients	CAS No.	Proportion	OSHA PEL	ACGIH TLV	Other Limits
Ferrite powder		> 97%	Not listed	Not listed	None
Iron oxide	1309-37-1				
Iron oxide	1317-61-9				
Magnesium oxide	1309-48-4				
Carbon black	1333-86-4	< 0.4%	3.5mg/m ³	3.5mg/m ³	None
Polyester styrene-acrylate	149367-99-7	< 2%	Not listed	Not listed	None

Section 4. Hazardous Identification (Emergency Overview)

Developer is a black powder containing small amounts of toner, and possessing no immediate hazard. There are no anticipated carcinogenic effects from exposure based on animal tests performed using toner.

Section 5. Health Hazard Data**Route(s) of Entry : Inhalation?**

Yes

Skin?

No

Ingestion?

Possible but very unusual.

Health Hazards : Acute Toxicity: LD50 > 5,000mg/kg. LC50 > 6.42 mg/L'4Hrs

Mutagenicity (Ames Test): Negative. (S.typhimurium, Escherichia coli)

(Note: data is from testing of the included toner.)

Carcinogenicity : In 1996 the IARC reevaluated carbon black as a Group 2B carcinogen (possible human carcinogen). This classification is given to chemicals for which there is inadequate human evidence, but sufficient animal evidence on which to base an opinion of carcinogenicity. The classification is based upon the development of lung tumors in rats receiving chronic inhalation exposures to free carbon black at levels that induce particle overload of the lung. Studies performed in animal models other than rats did not show any association between carbon black and lung tumors. While there have been no studies to date using developer, a two-year cancer bioassay using a typical toner preparation containing carbon black (a small amount of toner is included in the developer mixture) demonstrated no association between toner exposure and tumor development in rats.

Signs and Symptoms of Exposure

Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.

Medical Conditions Generally Aggravated by Exposure : None

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-30791

Section 5. Health Hazard Data (Continued)

Emergency and First Aid Procedures :

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.
 Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

Section 6. Physical Chemical Characteristics

BoilingMelting Point	: Not applicable	Specific Gravity	: 5
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Black
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used) : Not applicable
Ignition Temperature : No data available
Flammable Limits : (LEL); Not known (UEL); Not known
Extinguishing Media : CO₂, dry chemical, foam or water
Special Fire Fighting Procedure : None
Unusual Fire and Explosion Hazard : This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact : None
Sensitivity to Static Charge : None

Section 8. Reactivity Data

Stability : Stable
Incompatibility (Material to Avoid) : Strong acids or alkalines
Hazardous Decomposition : Phenol derivatives, Carbon monoxide when heated at high temperature (> 300°C)
Hazardous Polymerization : Will not occur.

Section 9. Precautions for Safe Handling and Use

Personal Protection Information (Respiratory, Eye Protection and Protective Glove):

Use of a dust mask is recommended when handling a large quantity of developer or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation : Not required.
Work / Hygienic Practice : Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak : Sweep up or clean up with vacuum cleaner.
Waste Disposal Method : Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.) : Health = 1 Flammability = 1 Reactivity = 0
WHMIS Legislation (Canada) : This product is not a controlled product.
Transport Information : This product is not a hazardous material.
UN No. : None allocated.

Section 11. Other Information

References : IARC (1996) IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol. 65, Printing Process and Printing inks, Carbon Black and Some Nitro Compounds, Lyon, pp-149-261
 H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299

Date Revised: August 7, 1999
Date Issued: December 1, 1998

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-30871

Section 1. Product Identification

Product : AR-400ND/AR-400SD/AR-400SD/AR-400MD (Black Developer)*

***Note:** This product is supplied in two mixture variations. Please consult packaging for the MSDS reference number for your particular mixture.

Information for the alternative mixture can be found in MSDS number **F-30881**

Section 2. Supplier's Name and Address

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)	(Name and Telephone Number)
U.S.A.	Sharp Electronics Corporation Telephone number for information: 1-800-237-4277 Emergency telephone number : 1-800-255-3924
Canada	Sharp Electronics of Canada Ltd. Telephone number for information: 905-890-2100 Emergency telephone number : 1-800-255-3924
United Kingdom	Sharp Electronics (U.K.) Ltd. Telephone number for information: 01923-474013

Section 3. Ingredients

Ingredients	CAS No.	Proportion	OSHA PEL	ACGIH TLV	Other Limits
Ferrite carrier		> 95%	Not listed	Not listed	None
Iron oxide (Fe ₂ O ₃)	1309-37-1				
Iron oxide (Fe ₃ O ₄)	1317-61-9				
Magnesium oxide	1309-48-4				
Bisphenol A type polyester resin	213077-22-6	< 4%	Not listed ₃	Not listed ₃	None
Carbon black	1333-86-4	<0.4%	3.5mg/m ₃	3.5mg/m ₃	None

Section 4. Hazardous Identification (Emergency Overview)

Developer is a black powder containing small amounts of toner, and possessing no immediate hazard. There are no anticipated carcinogenic effects from exposure based on animal tests performed using toner.

Section 5. Health Hazard Data

Route(s) of Entry : <u>Inhalation?</u>	<u>Skin?</u>	<u>Ingestion?</u>
Yes	No	Possible but very unusual.

Health Hazards : Acute oral toxicity --- LD₅₀ of the toner which is included in this developer is over 2,000mg/kg.
Mutagenicity --- The toner, which is included in this developer has been tested on the Ames test.
The result is negative.

Carcinogenicity: In 1996 the IARC reevaluated carbon black as a Group 2B carcinogen (possible human carcinogen). This classification is given to chemicals for which there is inadequate human evidence, but sufficient animal evidence on which to base an opinion of carcinogenicity. The classification is based upon the development of lung tumors in rats receiving chronic inhalation exposures to free carbon black at levels that induce particle overload of the lung. Studies performed in animal models other than rats did not show any association between carbon black and lung tumors. While there have been no studies to date using developer, a two-year cancer bioassay using a typical toner preparation containing carbon black (a small amount of toner is included in the developer mixture) demonstrated no association between toner exposure and tumor development in rats.

Signs and Symptoms of Exposure: Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.

Medical Conditions Generally Aggravated by Exposure : None

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-30871

Section 5. Health Hazard Data (Continued)**Emergency and First Aid Procedures :**

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.
 Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

Section 6. Physical Chemical Characteristics

BoilingMelting Point	: Not applicable	Specific Gravity	: About 5
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Black
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used) : Not applicable
Ignition Temperature : > 350°C
Flammable Limits : (LEL); Not applicable (UEL); Not applicable
Extinguishing Media : CO₂, dry chemical, foam or water
Special Fire Fighting Procedure : None
Unusual Fire and Explosion Hazard : This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact : None
Sensitivity to Static Charge : None

Section 8. Reactivity Data

Stability : Stable
Incompatibility (Material to Avoid) : None
Hazardous Decomposition : CO and NO_x
Hazardous Polymerization : Will not occur.

Section 9. Precautions for Safe Handling and Use**Personal Protection Information (Respiratory, Eye Protection and Protective Glove):**

Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation : Not required.
Work / Hygienic Practice : Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak : Sweep up or clean up with vacuum cleaner.
Waste Disposal Method : Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.) : Health = 1 Flammability = 1 Reactivity = 0
WHMIS Legislation (Canada) : This product is not a controlled product.
Transport Information : This product is not a hazardous material.
UN No. : None allocated.

Section 11. Other Information

References : IARC (1996) IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol. 65, Printing Process and Printing inks, Carbon Black and Some Nitro Compounds, Lyon, pp-149-261
 H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299

Date Revised: August 7, 1999
Date Issued: December 1, 1998

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-30881

Section 1. Product Identification

Product : AR-400ND/AR-400SD/AR-400SD/AR-400MD (Black Developer)*

***Note:** This product is supplied in two mixture variations. Please consult packaging for the MSDS reference number for your particular mixture.

Information for the alternative mixture can be found in MSDS number **F-30871**

Section 2. Supplier's Name and Address

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)	(Name and Telephone Number)
U.S.A.	Sharp Electronics Corporation Telephone number for information: 1-800-237-4277 Emergency telephone number : 1-800-255-3924
Canada	Sharp Electronics of Canada Ltd. Telephone number for information: 905-890-2100 Emergency telephone number : 1-800-255-3924
United Kingdom	Sharp Electronics (U.K.) Ltd. Telephone number for information: 01923-474013

Section 3. Ingredients

Ingredients	CAS No.	Proportion	OSHA PEL	ACGIH TLV	Other Limits
Ferrite carrier		> 97%	Not listed	Not listed	None
Iron oxide (Fe ₂ O ₃)	1309-37-1				
Iron oxide (Fe ₃ O ₄)	1317-61-9				
Magnesium oxide	1309-48-4				
Graft polymer(Polyester styrene-copolymer)	14937-99-7	< 2%	Not listed ₃	Not listed ₃	None
Carbon black	1333-86-4	<0.2%	3.5mg/m ³	3.5mg/m ³	None

Section 4. Hazardous Identification (Emergency Overview)

Developer is a black powder containing small amounts of toner, and possessing no immediate hazard. There are no anticipated carcinogenic effects from exposure based on animal tests performed using toner.

Section 5. Health Hazard Data

Route(s) of Entry : Inhalation? Skin? Ingestion?
Yes No Possible but very unusual.

Health Hazards Acute Toxicity: LD50 > 5,000mg/kg. LC50 > 6.42 mg/L/4Hrs
Mutagenicity (Ames Test): Negative. (S.typhimurium, Escherichia coli)
(Note: data is from testing of the toner contained in the developer.)

Carcinogenicity: In 1996 the IARC reevaluated carbon black as a Group 2B carcinogen (possible human carcinogen). This classification is given to chemicals for which there is inadequate human evidence, but sufficient animal evidence on which to base an opinion of carcinogenicity. The classification is based upon the development of lung tumors in rats receiving chronic inhalation exposures to free carbon black at levels that induce particle overload of the lung. Studies performed in animal models other than rats did not show any association between carbon black and lung tumors. While there have been no studies to date using developer, a two-year cancer bioassay using a typical toner preparation containing carbon black (a small amount of toner is included in the developer mixture) demonstrated no association between toner exposure and tumor development in rats.

Signs and Symptoms of Exposure: Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.

Medical Conditions Generally Aggravated by Exposure : None

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-30881

Section 5. Health Hazard Data (Continued)**Emergency and First Aid Procedures :**

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.
 Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

Section 6. Physical Chemical Characteristics

BoilingMelting Point	: Not applicable	Specific Gravity	: 5
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Black
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used) : Not applicable
Ignition Temperature : Not applicable
Flammable Limits : (LEL); Not known (UEL); Not known
Extinguishing Media : CO₂, dry chemical, foam or water
Special Fire Fighting Procedure : None
Unusual Fire and Explosion Hazard : This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact : None
Sensitivity to Static Charge : None

Section 8. Reactivity Data

Stability : Stable
Incompatibility (Material to Avoid) : Strong acids or alkalines
Hazardous Decomposition : Phenol derivatives. Carbon monoxide when heated to high temperatures (> 300°C)
Hazardous Polymerization : Will not occur.

Section 9. Precautions for Safe Handling and Use**Personal Protection Information (Respiratory, Eye Protection and Protective Glove):**

Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation : Not required.
Work / Hygienic Practice : Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak : Sweep up or clean up with vacuum cleaner.
Waste Disposal Method : Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.) : Health = 1 Flammability = 1 Reactivity = 0
WHMIS Legislation (Canada) : This product is not a controlled product.
Transport Information : This product is not a hazardous material.
UN No. : None allocated.

Section 11. Other Information

References : IARC (1996) IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol. 65, Printing Process and Printing inks, Carbon Black and Some Nitro Compounds, Lyon, pp-149-261
 H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299

Date Revised: June 15, 1999

Date Issued : April 1, 1999

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-30921

Section 1. Product Identification**Product :**

AR-C15ND1/DV1/SD1, ND6/DV6/SD6, ND7/DV7/SD7, ND8/DV8/SD8 (Black and Colored Developers)

Section 2. Supplier's Name and Address

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)	(Name and Telephone Number)
U.S.A.	Sharp Electronics Corporation Telephone number for information: 1-800-237-4277 Emergency telephone number : 1-800-255-3924
Canada	Sharp Electronics of Canada Ltd. Telephone number for information: 905-890-2100 Emergency telephone number : 1-800-255-3924
United Kingdom	Sharp Electronics (U.K.) Ltd. Telephone number for information: 01923-474013

Section 3. Ingredients

<u>Ingredients</u>	<u>CAS No.</u>	<u>Proportion</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Other Limits</u>
Carbon black	1333-86-4	< 0.6%	3.5mg/m ³	3.5mg/m ³	None
Ferrite Mixture:		> 95%	Not listed	Not listed	None
Manganese oxide	1344-43-0				
Magnesium oxide	1309-48-4				
Strontium oxide	1314-11-0				
Iron oxide	1309-37-1				
Polyester resin	75214-60-7	< 5%	Not listed	Not listed	None

Section 4. Hazardous Identification (Emergency Overview)

Developer is a black powder containing small amounts of toner, and possessing no immediate hazard. There are no anticipated carcinogenic effects from exposure based on animal tests performed using toner.

Section 5. Health Hazard Data**Route(s) of Entry : Inhalation?**

Yes

Skin?

No

Ingestion?

Possible but very unusual.

Health Hazards: Acute oral toxicity --- LDL_0 of the toner which is included in this developer is over 2,000mg/kg.

Mutagenicity --- The toner, which is included in this developer has been tested on the Ames test.

The result is negative.

Carcinogenicity: In 1996 the IARC reevaluated carbon black as a Group 2B carcinogen (possible human carcinogen). This classification is given to chemicals for which there is inadequate human evidence, but sufficient animal evidence on which to base an opinion of carcinogenicity. The classification is based upon the development of lung tumors in rats receiving chronic inhalation exposures to free carbon black at levels that induce particle overload of the lung. Studies performed in animal models other than rats didnot show any association between carbon black and lung tumors. While there have been no studies to date using developer, a two-year cancer bioassay using a typical toner preparation containing carbon black (a small amount of toner is included in the developer mixture) demonstrated no association between toner exposure and tumor development in rats.

Signs and Symptoms of Exposure :

Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.

Medical Conditions Generally Aggravated by Exposure : None

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-30921

Section 5. Health Hazard Data (Continued)**Emergency and First Aid Procedures :**

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.
 Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

Section 6. Physical Chemical Characteristics

Boiling/Melting Point	: Not applicable	Specific Gravity	: about 5
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Black
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used) : Not applicable
Ignition Temperature : > 350°C
Flammable Limits : (LEL); Not applicable (UEL); Not applicable
Extinguishing Media : CO₂, dry chemical, foam or water
Special Fire Fighting Procedure : None
Unusual Fire and Explosion Hazard : This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact : None
Sensitivity to Static Charge : None

Section 8. Reactivity Data

Stability : Stable
Incompatibility (Material to Avoid) : None
Hazardous Decomposition : CO and NO_x
Hazardous Polymerization : Will not occur.

Section 9. Precautions for Safe Handling and Use**Personal Protection Information (Respiratory, Eye Protection and Protective Glove):**

Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation : Not required.
Work / Hygienic Practice : Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak : Sweep up or clean up with vacuum cleaner.
Waste Disposal Method : Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.) : Health = 1 Flammability = 1 Reactivity = 0
WHMIS Legislation (Canada) : This product is not a controlled product.
Transport Information : This product is not a hazardous material.
UN No. : None allocated.

Section 11. Other Information

References : IARC (1996) IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol. 65, Printing Process and Printing inks, Carbon Black and Some Nitro Compounds, Lyon, pp-149-261
 H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299

Date Revised: June 15, 1999

Date Issued : April 1, 1999

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-30927

Section 1. Product Identification**Product :**

AR-C15ND9/DV9/SD9 (Magenta Developer)

Section 2. Supplier's Name and Address

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)	(Name and Telephone Number)
U.S.A.	Sharp Electronics Corporation Telephone number for information: 1-800-237-4277 Emergency telephone number : 1-800-255-3924
Canada	Sharp Electronics of Canada Ltd. Telephone number for information: 905-890-2100 Emergency telephone number : 1-800-255-3924
United Kingdom	Sharp Electronics (U.K.) Ltd. Telephone number for information: 01923-474013

Section 3. Ingredients

<u>Ingredients</u>	<u>CAS No.</u>	<u>Proportion</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Other Limits</u>
Iron powder	7439-89-6	> 89%	Not listed	Not listed	None
Styrene-Acrylate copolymer	25767-47-9	< 10%	Not listed	Not listed	None

Section 4. Hazardous Identification (Emergency Overview)

Based on our tests, it does not present an acute health hazard.

Section 5. Health Hazard Data**Route(s) of Entry :** Inhalation?

Yes

Skin?

No

Ingestion?

Possible but very unusual.

Health Hazards : The toner, which is included in this developer, has been tested on "Acute oral toxicity " and "Ames

test". It does not represent a health hazard.

Carcinogenicity : NTP?

No

IARC Monographs?

No

OSHA Regulated?

No

Signs and Symptoms of Exposure :

Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.

Medical Conditions Generally Aggravated by Exposure : None**Emergency and First Aid Procedures :**

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.

Eye--- In case of contact, immediately flush eyes with water for 15 minutes

S H A R P

Date Revised: Feb. 1, 1997

Date Issued : July 8, 1996

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-30927

Section 6. Physical Chemical Characteristics

BoilingMelting Point	: Not applicable	Specific Gravity	: about 7.5
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Dark red
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used)	: Not applicable
Ignition Temperature	: > 350°C
Flammable Limits	: (LEL); Not applicable (UEL); Not applicable
Extinguishing Media	: CO ₂ , dry chemical, foam or water
Special Fire Fighting Procedure	: None
Unusual Fire and Explosion Hazard	: This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact	: None
Sensitivity to Static Charge	: None

Section 8. Reactivity Data

Stability	: Stable
Incompatibility (Material to Avoid)	: None
Hazardous Decomposition	: CO and NO _x
Hazardous Polymerization	: Will not occur.

Section 9. Precautions for Safe Handling and Use**Personal Protection Information (Respiratory, Eye Protection and Protective Glove):**

Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation	: Not required.
Work / Hygienic Practice	: Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak	: Sweep up or clean up with vacuum cleaner.
Waste Disposal Method	: Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.)	: Health = 1	Flammability = 1	Reactivity = 0
WHMIS Legislation (Canada)	: This product is not a controlled product.		
Transport Information	: This product is not a hazardous material.		
UN No.	: None allocated.		

Date Revised: November 15, 1999

Date Issued: July 1., 1999

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-30941

Section 1. Product Identification**Product :** AR-500ND/AR-500SD/AR-500SD/AR-500MD (Black Developer)****Note:** This product is supplied in two mixture variations. Please consult packaging for the MSDS reference number for your particular mixture.Information for the alternative mixture can be found in MSDS number **F-30951****Section 2. Supplier's Name and Address**

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)	(Name and Telephone Number)
U.S.A.	Sharp Electronics Corporation Telephone number for information: 1-800-237-4277 Emergency telephone number : 1-800-255-3924
Canada	Sharp Electronics of Canada Ltd. Telephone number for information: 905-890-2100 Emergency telephone number : 1-800-255-3924
United Kingdom	Sharp Electronics (U.K.) Ltd. Telephone number for information: 01923-474013

Section 3. Ingredients

<u>Ingredients</u>	<u>CAS No.</u>	<u>Proportion</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Other Limits</u>
Ferrite carrier		> 95%	Not listed	Not listed	None
Iron oxide (Fe ₂ O ₃)	1309-37-1				
Iron oxide (Fe ₃ O ₄)	1317-61-9				
Magnesium oxide	1309-48-4				
Bisphenol A type polyester resin	213077-22-6	< 4%	Not listed ₃	Not listed ₃	None
Carbon black	1333-86-4	<0.4%	3.5mg/m ₃	3.5mg/m ₃	None

Section 4. Hazardous Identification (Emergency Overview)

Developer is a black powder containing small amounts of toner, and possessing no immediate hazard. There are no anticipated carcinogenic effects from exposure based on animal tests performed using toner.

Section 5. Health Hazard Data

<u>Route(s) of Entry</u> :	<u>Inhalation?</u>	<u>Skin?</u>	<u>Ingestion?</u>
	Yes	No	Possible but very unusual.

Health Hazards : Acute oral toxicity --- LD₅₀ of the toner which is included in this developer is over 2,000mg/kg.
Mutagenicity --- The toner, which is included in this developer has been tested on the Ames test.
The result is negative.

Carcinogenicity: In 1996 the IARC reevaluated carbon black as a Group 2B carcinogen (possible human carcinogen). This classification is given to chemicals for which there is inadequate human evidence, but sufficient animal evidence on which to base an opinion of carcinogenicity. The classification is based upon the development of lung tumors in rats receiving chronic inhalation exposures to free carbon black at levels that induce particle overload of the lung. Studies performed in animal models other than rats did not show any association between carbon black and lung tumors. While there have been no studies to date using developer, a two-year cancer bioassay using a typical toner preparation containing carbon black (a small amount of toner is included in the developer mixture) demonstrated no association between toner exposure and tumor development in rats.

Signs and Symptoms of Exposure: Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.

Medical Conditions Generally Aggravated by Exposure : None

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-30941

Section 5. Health Hazard Data (Continued)**Emergency and First Aid Procedures :**

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.

Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

Section 6. Physical Chemical Characteristics

BoilingMelting Point	: Not applicable	Specific Gravity	: About 5
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Black
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used)	: Not applicable
Ignition Temperature	: > 350°C
Flammable Limits	: (LEL); Not applicable (UEL); Not applicable
Extinguishing Media	: CO ₂ , dry chemical, foam or water
Special Fire Fighting Procedure	: None
Unusual Fire and Explosion Hazard	: This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact	: None
Sensitivity to Static Charge	: None

Section 8. Reactivity Data

Stability	: Stable
Incompatibility (Material to Avoid)	: None
Hazardous Decomposition	: CO and NO _x
Hazardous Polymerization	: Will not occur.

Section 9. Precautions for Safe Handling and Use**Personal Protection Information (Respiratory, Eye Protection and Protective Glove):**

Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation	: Not required.
Work / Hygienic Practice	: Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak	: Sweep up or clean up with vacuum cleaner.
Waste Disposal Method	: Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.)	: Health = 1 Flammability = 1 Reactivity = 0
WHMIS Legislation (Canada)	: This product is not a controlled product.
Transport Information	: This product is not a hazardous material.
UN No.	: None allocated.

Section 11. Other Information

References : IARC (1996) IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol. 65, Printing Process and Printing inks, Carbon Black and Some Nitro Compounds, Lyon, pp-149-261
 H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299

Date Revised: November 15, 1999

Date Issued: July 1, 1999

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-30951

Section 1. Product Identification**Product :** AR-500ND/AR-500SD/AR-500SD (Black Developer)****Note:** This product is supplied in two mixture variations. Please consult packaging for the MSDS reference number for your particular mixture.Information for the alternative mixture can be found in MSDS number **F-30941****Section 2. Supplier's Name and Address**

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)	(Name and Telephone Number)
U.S.A.	Sharp Electronics Corporation Telephone number for information: 1-800-237-4277 Emergency telephone number : 1-800-255-3924
Canada	Sharp Electronics of Canada Ltd. Telephone number for information: 905-890-2100 Emergency telephone number : 1-800-255-3924
United Kingdom	Sharp Electronics (U.K.) Ltd. Telephone number for information: 01923-474013

Section 3. Ingredients

<u>Ingredients</u>	<u>CAS No.</u>	<u>Proportion</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Other Limits</u>
Ferrite carrier		> 97%	Not listed	Not listed	None
Iron oxide (Fe ₂ O ₃)	1309-37-1				
Iron oxide (Fe ₃ O ₄)	1317-61-9				
Magnesium oxide	1309-48-4				
Graft polymer(Polyester styrene-copolymer)	14937-99-7	< 2%	Not listed ₃	Not listed ₃	None
Carbon black	1333-86-4	<0.2%	3.5mg/m ₃	3.5mg/m ₃	None

Section 4. Hazardous Identification (Emergency Overview)

Developer is a black powder containing small amounts of toner, and possessing no immediate hazard. There are no anticipated carcinogenic effects from exposure based on animal tests performed using toner.

Section 5. Health Hazard Data

<u>Route(s) of Entry</u> :	<u>Inhalation?</u>	<u>Skin?</u>	<u>Ingestion?</u>
	Yes	No	Possible but very unusual.

Health Hazards Acute Toxicity: LD50 > 5,000mg/kg. LC50 > 6.42 mg/L/4Hrs

Mutagenicity (Ames Test): Negative. (S.typhimurium, Escherichia coli)

(Note: data is from testing of the toner contained in the developer.)

Carcinogenicity: In 1996 the IARC reevaluated carbon black as a Group 2B carcinogen (possible human carcinogen). This classification is given to chemicals for which there is inadequate human evidence, but sufficient animal evidence on which to base an opinion of carcinogenicity. The classification is based upon the development of lung tumors in rats receiving chronic inhalation exposures to free carbon black at levels that induce particle overload of the lung. Studies performed in animal models other than rats did not show any association between carbon black and lung tumors. While there have been no studies to date using developer, a two-year cancer bioassay using a typical toner preparation containing carbon black (a small amount of toner is included in the developer mixture) demonstrated no association between toner exposure and tumor development in rats.

Signs and Symptoms of Exposure: Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.**Medical Conditions Generally Aggravated by Exposure :** None

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-30951

Section 5. Health Hazard Data (Continued)**Emergency and First Aid Procedures :**

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.
 Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

Section 6. Physical Chemical Characteristics

BoilingMelting Point	: Not applicable	Specific Gravity	: 5
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Black
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used) : Not applicable
Ignition Temperature : Not applicable
Flammable Limits : (LEL); Not known (UEL); Not known
Extinguishing Media : CO₂, dry chemical, foam or water
Special Fire Fighting Procedure : None
Unusual Fire and Explosion Hazard : This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact : None
Sensitivity to Static Charge : None

Section 8. Reactivity Data

Stability : Stable
Incompatibility (Material to Avoid) : Strong acids or alkalines
Hazardous Decomposition : Phenol derivatives. Carbon monoxide when heated to high temperatures (> 300°C)
Hazardous Polymerization : Will not occur.

Section 9. Precautions for Safe Handling and Use**Personal Protection Information (Respiratory, Eye Protection and Protective Glove):**

Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation : Not required.
Work / Hygienic Practice : Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak : Sweep up or clean up with vacuum cleaner.
Waste Disposal Method : Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.) : Health = 1 Flammability = 1 Reactivity = 0
WHMIS Legislation (Canada) : This product is not a controlled product.
Transport Information : This product is not a hazardous material.
UN No. : None allocated.

Section 11. Other Information

References : IARC (1996) IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol. 65, Printing Process and Printing inks, Carbon Black and Some Nitro Compounds, Lyon, pp-149-261
 H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299

Date Revised: October 1, 1997

Date Issued : May 16, 1994

MATERIAL SAFETY DATA SHEET (1/2)

MSDS No. F-3451

Section 1. Product Identification**Product :**

AR-540ND/AR-540DV (Black Developer)

Section 2. Supplier's Name and Address

Sharp Corporation

22-22 Nagaike-cho, Abeno-ku, Osaka, Japan

Local suppliers are listed below. Please contact the nearest supplier for additional information.

(Country)	(Name and Telephone Number)
U.S.A.	Sharp Electronics Corporation Telephone number for information: 1-800-237-4277 Emergency telephone number : 1-800-255-3924
Canada	Sharp Electronics of Canada Ltd. Telephone number for information: 905-890-2100 Emergency telephone number : 1-800-255-3924
United Kingdom	Sharp Electronics (U.K.) Ltd. Telephone number for information: 01923-474013

Section 3. Ingredients

<u>Ingredients</u>	<u>CAS No.</u>	<u>Proportion</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Other Limits</u>
Ferrite		> 97%	Not listed	Not listed	None
Zinc oxide	1314-13-2				
Iron oxide	1309-37-1				
Copper oxide	1317-38-0				
Magnesium oxide	1309-48-4				
Polyester Resin NJ TSRN 80100252-50001P		< 5%	Not listed ₃	Not listed ₃	None
Carbon black	1333-86-4	< 0.4%	3.5mg/m ³	3.5mg/m ³	None

Section 4. Hazardous Identification (Emergency Overview)

Developer is a black powder containing small amounts of toner, and possessing no immediate hazard. There are no anticipated carcinogenic effects from exposure based on animal tests performed using toner.

Section 5. Health Hazard Data

Route(s) of Entry : Inhalation? Skin? Ingestion?
 Yes No Possible but very unusual.

Health Hazards : Acute Toxicity: LD50 > 2,000mg/kg. LC50 > 5.97 mg/L/4Hrs
 Mutagenicity (Ames Test): Negative. (S.typhimurium, Escherichia coli)
 (Note: data is from testing of the included toner.)

Carcinogenicity : In 1996 the IARC reevaluated carbon black as a Group 2B carcinogen (possible human carcinogen). This classification is given to chemicals for which there is inadequate human evidence, but sufficient animal evidence on which to base an opinion of carcinogenicity. The classification is based upon the development of lung tumors in rats receiving chronic inhalation exposures to free carbon black at levels that induce particle overload of the lung. Studies performed in animal models other than rats did not show any association between carbon black and lung tumors. While there have been no studies to date using developer, a two-year cancer bioassay using a typical toner preparation containing carbon black (a small amount of toner is included in the developer mixture) demonstrated no association between toner exposure and tumor development in rats.

Signs and Symptoms of Exposure :
 Minimal irritation to respiratory tract may occur as with exposure to any non-toxic dust.

Medical Conditions Generally Aggravated by Exposure : None

MATERIAL SAFETY DATA SHEET (2/2)

MSDS No. F-3451

Section 5. Health Hazard Data (Continued)**Emergency and First Aid Procedures :**

Inhalation --- Remove to fresh air. If effects occur, consult medical personnel.
 Eye --- In case of contact, immediately flush eyes with water for 15 minutes.

Section 6. Physical Chemical Characteristics

BoilingMelting Point	: Not applicable	Specific Gravity	: 5.0
Vapor Pressure	: Not applicable	Solubility in Water	: Negligible
Vapor Density	: Not applicable	PH	: Not applicable
Evaporation Rate	: Not applicable	Viscosity	: Not applicable
Appearance	: Fine powder	Color	: Black
Odor	: Odorless		

Section 7. Fire and Explosion Data

Flash Point (Method Used) : Not applicable
Ignition Temperature : No data available
Flammable Limits : (LEL); Not applicable (UEL); Not applicable
Extinguishing Media : CO₂, dry chemical, foam or water
Special Fire Fighting Procedure : None
Unusual Fire and Explosion Hazard : This material has no unusual fire or explosion hazards.
Sensitivity to Mechanical Impact : None
Sensitivity to Static Charge : None

Section 8. Reactivity Data

Stability : Stable
Incompatibility (Material to Avoid) : Strong acids or alkalines
Hazardous Decomposition : Phenol derivatives, Carbon monoxide when heated to high temperatures (>300 C)
Hazardous Polymerization : Will not occur.

Section 9. Precautions for Safe Handling and Use**Personal Protection Information (Respiratory, Eye Protection and Protective Glove):**

Use of a dust mask is recommended when handling a large quantity of toner or during long term exposure, as with any non-toxic dust.

Engineering Control / Ventilation : Not required.
Work / Hygienic Practice : Inhalation should be minimized as with any non-toxic dust.
Steps to be taken in case of Spill or Leak : Sweep up or clean up with vacuum cleaner.
Waste Disposal Method : Waste material may be disposed under conditions which meet all federal, state and local environmental regulations.

Section 10. Regulatory Information

NFPA Rating (U.S.A.) : Health = 1 Flammability = 1 Reactivity = 0
WHMIS Legislation (Canada) : This product is not a controlled product.
Transport Information : This product is not a hazardous material.
UN No. : None allocated.

Section 11. Other Information

References : IARC (1996) IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol. 65, Printing Process and Printing inks, Carbon Black and Some Nitro Compounds, Lyon, pp-149-261
 H. Muhle, B. Bellmann, O. Creutzenberg, C. Dasenbrock, H. Ernst, R. Kilpper, J. C. MacKenzie, P. Morrow, U. Mohr, S. Takenaka, and R. Mermelstein (1991) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp. 280-299