

1. PRODUCT AND COMPANY IDENTIFICATION

- A) PRODUCT: Toner
 B) COMPANY: Samsung Electronics Company
 416, Maetan-3Dong, Yeongtong-Gu, Suwon-City, Gyeonggi-Do, Korea 443-742
 C) E-MAIL: Printermsds@samsung.com
 D) TELEPHONE NO.: 82-2-2255-0114

2. HAZARDS IDENTIFICATION

A) EMERGENCY OVERVIEW

Odorless black fine powder.

Not highly flammable, but when suspended in air, is combustible as with most organic powders.

CARCINOGENIC EFFECTS: Carbon black is reclassified as a group 2B by IARC, but inhalation test using a typical toner showed no association between toner exposure and animal tumors.

B) POTENTIAL HEALTH EFFECTS

- EYES : Solid or dusts may cause irritation or corneal injury.
- SKIN CONTACT : Essentially nonirritating to skin.
- SKIN ABSORPTION : Skin absorption is unlikely due to physical properties.
- INGESTION : Oral toxicity is believed to be low.
- INHALATION : Minimal irritation to respiratory track may occur.

C) FIRE AND EXPLOSION

- SENSITIVITY TO MECHANICAL IMPACT : None
- SENSITIVITY TO STATIC CHARGE : None

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	CAS No.	Proportion (% by wt.)	OSHA PEL	ACGIH TLV	Other Limits
Polyester	213077-22-6 75214-60-7	> 87.0	Not listed	Not listed	None
Carbon Black	1333-86-4	< 5.0	3.5mg/m ³	3.5mg/m ³	None
Wax**	8002-74-2	< 3.0	Not listed	Not listed	None
Amorphous silica	68909-20-6	< 3.0	20mppcf	10.0mg/m ³	None
Organic pigment*	104815-18-1 119029-85-5 125304-21-4	< 2.0	Not listed	Not listed	None

*:See [Section 15] **:See [Section 16]

4. FIRST-AID MEASURES

- A) EYES : Flush eyes immediately with plenty of water for at least 15 minutes
 B) SKIN : Flush with plenty of water. Use soap.
 C) INGESTION : No adverse effects anticipated by this route of exposure incidental to proper handling.
 D) INHALATION : Remove to fresh air. If effects occur, consult medical personnel.

5. FIRE-FIGHTING MEASURES

- A) FLAMMABLE PROPERTIES : Not highly flammable
- B) FLASH POINT : No data available
- C) FLAMMABLE LIMITS
 - o LEL : No data available
 - o UEL : No data available
- D) EXTINGUISHING MEDIA : Water fog, foam, CO₂, dry chemical.
- E) FIRE-FIGHTING EQUIPMENT : Wear full bunker gear including a positive pressure self-contained breathing apparatus in case of burning in large quantities.

6. ACCIDENTAL RELEASE MEASURES

Minimize the release of particulates. Wear personal protective equipment. Do not use vacuum cleaner. After by lightly spraying with water to prevent development of dust, spills should be swept up or wiped up. Then residuals can be removed with soap and water. Preferred to use the material in a place, covering up the floor and surrounding matters with suitable sheets such as paper, in a case of being not fit to scrub the floor with water. These used sheets should be wrapped up in spills and transfer into a suitable container for disposal. Garments may be washed or dry cleaned, after removal of loose toner. of burning in large quantities.

7. HANDLING AND STORAGE

Avoid creating dust. Clean up all spills promptly. Inhalation and contact with skin or eyes should be avoided. Provide general ventilation. Good general ventilation should be sufficient for most conditions. Store in a cool, well ventilated place away from flames and spark-producing equipment. May toners be preferred to use or to handle at the suitable place without concerning about smudges to which are given rise by releasing them.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

- A) Control parameters
 - o OSHA PEL : TWA 5.0mg/m³(Inert of Nuisance Dust:Respirable fraction)
15.0mg/m³(Inert of Nuisance Dust:Total dust)
 - o ACGIH TLV : TWA(2008)
3.0mg/m³(Particulates Not Otherwise Classified:Respirable Particle Mass)
10.0mg/m³(Particulates Not Otherwise Classified:Inhalable Particle Mass)
- B) RESPIRATORY PROTECTION : For most conditions, no respiratory protection should be needed; however, in dusty atmospheres, use an approved dust respirator.
- C) SKIN PROTECTION : No precautions should be needed under normal use.
- D) EYE PROTECTION : No precautions should be needed under normal use.

9. PHYSICAL AND CHEMICAL PROPERTIES

A) APPEARANCE	Black fine powder
B) ODOR	Odorless
C) BOILING POINT	N.A.(not applicable)
D) VAP PRESS	N.A.
E) VAP DENSITY	N.A.
F) SOL IN WATER	Negligible
G) SP. GRAVITY	ca. 1.20
H) MELTING POINT	N.A.
I) pH	N.A.
J) % VOLATILE`	N.A.

10. STABILITY AND REACTIVITY

A) STABILITY

This is a stable product.

B) INCOMPATIBILITY

(SPECIAL MATERIALS TO AVOID) Oxidizing materials..

C) HAZARDOUS DECOMPOSITION PRODUCTS

CO or NO_x (by high heat and fire)

D) HAZARDOUS POLYMERIZATION

Will not occur.

11. TOXICOLOGICAL INFORMATION

A) MUTAGENIC EFFECTS : Negative

(Estimated from the data of other products and constituent components.)

B) CARCINOGENIC EFFECTS :

In 1996, the IARC reevaluated carbon black as a GROUP 2B carcinogen (possible human carcinogen).

This evaluation is given to carbon black for which there is inadequate human evidence, but sufficient animal evidence. The latter is based upon the development of lung tumors in rat receiving chronic inhalation exposures to free carbon black at level that induce particle overload of the lung.

Studies performed in animal models other than rats have not demonstrated an association between carbon black and lung tumors. Moreover, a two-year cancer bioassay using a typical toner preparation containing carbon black demonstrated no association between toner exposure and tumor development in rats.

C) CHRONIC EFFECTS:

In a study in rats (H.Muhle) by chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92% of the rats in the 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 changes was reported in the lowest (1mg/m³) exposure group, the most relevant level to potential human exposures.

12. ECOLOGICAL INFORMATION

None

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD

Waste must be disposed of in accordance with country and local environmental control regulations.

14. TRANSPORTATION INFORMATION

A) TRANSPORT INFORMATION : This is not a hazardous product.

B) UN No. : None allocated.

15. REGULATORY INFORMATION

A) TSCA : All chemical substances in this product comply with all applicable rules or orders under TSCA.

B) EU : Organic pigment is treated as a new chemicals.

16. OTHER INFORMATION

Paraffine is not hazardous except for its flammable properties, but "Paraffine wax fume" is one of hazardous chemicals. Its ACGIH TLVs(TWA) and NIOSH RELs(TWA) is the same value(2mg/m³).

○ NFPA Rating : Health = 1 Flammability = 1 Reactivity = 0

o 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.

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge.

It dose not represent a guarantee for the properties of the product described in terms of the legal warranty.

