



August 2019

## PRODUCT STEWARDSHIP SUMMARY: INKJET COLORANTS

### Overview

This Product Stewardship Summary provides a general overview of Cabot Corporation's CAB-O-JET® black and color Inkjet Colorants. Cabot's Inkjet Colorants are aqueous dispersions of surface-treated pigments that are utilized in the inkjet market.

### Chemical Identity

Cabot's CAB-O-JET® Inkjet Colorants are aqueous dispersions containing 80-90% water, 10-20% of a black or colored pigment, and <0.5% of a biocide which is necessary to prevent bacterial growth. The pigments used include cyan, magenta and yellow organic pigments and carbon black. In order to use pigments as colorants, the particle size of the pigment has to fall into a certain distribution range and display stability in the media in which it is used. Without surface modification, these pigments cannot form stable colloidal dispersions. In the CAB-O-JET® Inkjet Colorants, a stable dispersion is achieved by chemically modifying a portion of the pigment particle surface. The modified particles possess the right particle size distribution for their particular application. The pigment surface modification attaches functional groups, such as ionizable groups, to the surface of the pigment particle and imparts certain physiochemical properties to the pigment. These surface groups keep the particles separate from each other so that a stable colloidal dispersion can be achieved. Compared to the traditional method of using polymeric resins or surfactants to stabilize the pigments, the CAB-O-JET® Inkjet Colorants use electrostatic repulsion to stabilize the pigment dispersion.

### Physical and Chemical Properties

The CAB-O-JET® Inkjet Colorants are aqueous dispersions that contain up to 90% water. The dispersions are non-flammable, non-explosive, non-corrosive, and non-reactive. The pigments are not soluble in water, but are dispersible due to their surface treatments.

### Uses

The CAB-O-JET® products are specifically designed to work using inkjet technology and must meet exact performance characteristics to flow effectively through the print head and produce a high-quality image on paper. Inkjet printing technology is widely used for home and office desktop printing, and is increasingly used in commercial applications including book printing, newspapers, and direct mail.



### Health Effects

Limited toxicology testing on surface modified carbon black products show negative mutagenicity, mild skin and eye irritation, and no acute oral toxicity. Limited testing on surface modified colored pigments (cyan, magenta and yellow) show negative mutagenicity, negative skin irritation (except for a few products that are mild skin irritants), slight eye irritation, and no acute oral toxicity.

Since the surface modification of pigments is only a small fraction of the base pigment, the health effects of surface modified pigments are likely to be substantially similar to the base pigments. The black pigment, carbon black, is classified by the International Agency for Research on Cancer (IARC) as a Group 2B carcinogen (possibly carcinogenic to humans) based on “sufficient evidence” in animals and “inadequate evidence” in humans (IARC, 2010). However, mortality studies of carbon black manufacturing workers do not show an association between carbon black exposure and elevated lung cancer rates, or any other type of cancer. Worker studies indicate, however, that regular exposure to carbon black and other poorly soluble particles may play a role in declining lung function; and may cause bronchitis symptoms after many years of exposure. Carbon black is not a chemical irritant, but may cause mechanical irritation of the throat, eyes and skin. It is not a skin sensitizer.

Based on limited toxicology data, the colored pigments (cyan, magenta and yellow) demonstrate low acute toxicity, possible mild skin and eye irritation, and negative mutagenicity. On an acute exposure basis, there are no known cases where pigments have caused human death or serious harm from a single dose by any route of administration. This low order of toxicity is likely due to the insolubility and general inertness of organic pigments.

### Environmental Effects

Based on their physical/chemical properties, most pigments released into the environment will be distributed mainly in soil or sediments. Since these pigments are not soluble in water, it is not possible to carry out many standard ecotoxicity tests for these substances. However, tests using carbon black suspensions or filtrates indicate that it has low toxicity to aquatic and terrestrial organisms in the environment. Aquatic data are not available for the other pigments.

### Exposure Potential

Inkjet Colorants are formulated into inks, and then packaged into inkjet cartridges. Consumer exposure to Inkjet Colorants is expected to be negligible.

In the workplace, the surface modification reaction of the base pigments occurs in a closed system. The final surface modified pigments are in an aqueous dispersion. Therefore, workers have minimal or no inhalation exposure to Inkjet Colorants. Any potential workplace exposures are appropriately managed with engineering controls and personal protective equipment.

### Risk Management

Risk is measured as a function of both hazard and exposure. If the hazard and/or exposure are low, the potential for risk is low. Exposure of workers to Inkjet Colorants is controlled through engineering controls and personal protective equipment. Consumer exposure to Inkjet Colorants is negligible. Therefore, Inkjet Colorants are considered to pose a low risk to humans.



### Cabot Corporation Contacts

We appreciate your interest in Inkjet Colorants. If you need additional information, please feel free to contact Cabot's Product Support and Toxicology Group at [regulatory.inquiries@cabotcorp.com](mailto:regulatory.inquiries@cabotcorp.com)

### Disclaimer

This Product Stewardship Summary is intended to provide the general public with an overview of this chemical substance. It is not intended to provide emergency response, medical or treatment information. In-depth safety and health information can be found on the current Safety Data Sheet (SDS) for the product.

### References

IARC. 2010. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Volume 93 - Carbon Black, Titanium Dioxide, and Talc. World Health Organization, International Agency for Research on Cancer, Lyons, France. [<http://monographs.iarc.fr/ENG/Monographs/vol93/mono93-1.pdf>]

This information is being provided as of the date hereof. Please visit [cabotcorp.com/certifications](http://cabotcorp.com/certifications) for any updates to this information.

The CAB-O-JET® Ink Jet name is a registered trademark of Cabot Corporation.

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