PRODUCT STEWARDSHIP SUMMARY

2024-10-28

Product Stewardship Summary

for Carbon black, amorphous (CAS-No. 1333-86-4)

AROSPERSE®, CK 3, COLOUR BLACK, CORAX®, DUREX®, EB, ECORAX®, HIBLACK®, PRINTEX®, NIPex®, NEROX®, PANTHER®, PBR, PUREX®, LAMP BLACK, SABLE, SPECIAL BLACK, XPB, Y

The products mentioned above are pure "carbon black, amorphous" and chemically produced.

Chemical Identity (or category description)

Carbon black (CAS 1333-86-4) is an engineered material, primarily composed of elemental carbon with minimal quantities of oxygen, hydrogen and nitrogen. Carbon black is obtained from the partial combustion or thermal decomposition of hydrocarbons and exists as aggregates of spherical colloidal particles, structurally arranged in aciniform morphology. The aggregates are loosely held together by weaker forces forming larger entities called agglomerates, which is the form in which carbon black is placed on the market.

Physical/chemical properties

Carbon black is an odourless, inert, solid inorganic substance with a low vapor pressure. It has a physical appearance of black finely divided powder, which may also be pelletized. Carbon black is insoluble in water and organic solvents.

Uses – applications, functions

Carbon black is used in a diverse number of materials in order to enhance their physical, electrical, and optical properties. Volume wise, its largest use is as a reinforcement and performance additive in rubber products e.g., in tires. Besides for rubber reinforcement, carbon black is also used in a variety of special applications like in coatings, polymers, printing inks and batteries. In these applications, carbon black imparts and/or enhances material properties like conductivity, viscosity, static charge control, durability, and protection against UV radiation. These types of carbon blacks are typically referred to as specialty carbon blacks.

Health effects

Several studies have been conducted during the last decades to study the potential effects of carbon black on human health. Carbon black is not considered to be a skin sensitizer or a chemical irritant. However, mechanical irritation of the throat, eyes and skin can occur when handling carbon black due to its particulate nature.
Carbon black has been classified in Group 2B ("possibly carcinogenic to humans") by the International Agency for Research on Cancer (IARC) based on "sufficient evidence" in animals and "inadequate evidence" in humans (IARC, 2010)[1]. The conclusion by IARC is based solely on the observation that rats only develop lung tumours under conditions of "lung overload". Mice and hamsters did not develop tumours under similar conditions. Thus, the reliability of lung tumours induced in rats by inert poorly soluble particles, like carbon black, as a predictor of hazard to humans is still a matter of intense scientific debate[2,3]. Especially, because epidemiological evidence from well-conducted investigations has not shown that exposure to carbon black has a carcinogenic potential for humans. This is in line with IARC's evaluation of the epidemiological data on Carbon Black.

[1] International Agency for Research on Cancer. Carbon Black, Titanium Dioxide and Talc. IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Volume 93, Lyon, France (2010).

[2] Driscoll, K. E., & Borm, P. J. A. (2020). Expert workshop on the hazards and risks of poorly soluble low toxicity particles. Inhalation Toxicology, 1-10. https://doi.org/10.1080/08958378.2020.1735581

[3] ECETOC 2013. Poorly Soluble Particles/Lung Overload, Technical Report No. 122 ISSN-0773-8072-122 (Print); ISSN-2073-1526-122 (Online)

Environmental effects

The physical/chemical properties of carbon black lead to a distribution mainly in soil or sediment if it is released into the environment. Due to the insolubility of carbon black, it is not possible to perform standard ecotoxicity bioassays. However, different bioassays using filtrates or suspensions have been conducted indicating a low aquatic and terrestrial toxic potential. In addition, carbon black is not bioaccumulative and does not have adverse biodegradability properties.

Exposure – exposure potential

Carbon black is utilized in a broad range of consumer products, including tires, rubber products, surface coatings, inks, and toners. In all of these products, carbon black is bound into a matrix.
Therefore, IARC and other organizations have concluded that consumer exposure to carbon black through the use of these products is negligible (IARC, 2010). Potential exposure to carbon black may occur in the workplace. However, workplace exposures are appropriately managed with engineering controls and personal protective equipment.
Occupational exposure limits (OELs) for airborne carbon black vary across different countries and are subject to change. Country or region specific OELs are communicated in the supply chain via the safety data sheet[4]. In use scenarios where the OEL is exceeded, operations personnel are required to wear a protective respirator.

Risk Management – recommended measures

Under normal application conditions, carbon black does not display explosive potential. However, in the presence of significant igniting energy, e.g., a welding torch, carbon black / air mixtures may explode. For this reason, carbon black sources must be removed or hermetically sealed prior to equipment repairs in the vicinity of welding operations or equipment generating high operating temperatures. Carbon monoxide build-up in sealed containers such as in silos or unventilated storage facilities is possible. Here too, ignition sources should be removed, and self-contained air supply systems are mandatory before entering. Carbon black should be stored under dry conditions.

Spilled material should be collected to avoid dust build-up and stored in appropriate containers or burned in appropriate firing facilities.
Waste from residues must be disposed in accordance with local and national regulations.
Observe national regulations.

Product can be burned in suitable incineration plants or disposed of in an appropriate landfill that is licensed in accordance with the regulations issued by the appropriate federal, provincial, state, and local authorities.

Contaminated reusable packaging containers may be returned to manufacturer. Paper bags may be incinerated, or recycled, or disposed of in an appropriate landfill in accordance with national and local laws. Non-contaminated packaging may be re-used. Contaminated packaging should ideally be emptied; it can then be recycled after having been decontaminated. Packaging which cannot be decontaminated should be disposed accordingly.

Contacts

We appreciate your interest in carbon black. For additional information please refer to the Safety Data Sheet for our products. Safety Data Sheets can be downloaded under the following link https://orioncarbons.com/orion/safety/safety-data-sheets/. If you need further assistance, please contact Orion's Product Stewardship department at sds.eu@orioncarbons.com.

[4] Safety data sheets for all of Orion's products are available under https://orioncarbons.com/orion/safety/safety-data-sheets/

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This Product Stewardship Summary replaces all previous versions.

This document was created electronically. Therefore, it is not signed.

Orion Engineered Carbons

DISCLAIMER

All information given in this Product Stewardship Summary is based on our present knowledge and experience. However, it implies no liability or other legal responsibility on our part. In particular, no warranty, whether expressed or implied, or guarantee of product properties in the legal sense is intended or implied. All information is intended for persons having the required skill and know-how and do not relieve you from verifying the suitability of the information, or the product used, for a specific purpose prior to use by testing. The testing should be carried out only by qualified experts. Use or application of such information or product is at your sole responsibility and risk, without any liability on the part of Orion Engineered Carbons GmbH and any of its affiliated companies. If no contractual provisions are agreed that effectively limit our liability, e.g. in a framework agreement between Orion Engineered Carbons GmbH or its affiliates and you or your affiliates, all product sales are subject to the respective standard terms and conditions of sale issued by Orion (which terms and conditions are available under https://orioncarbons.com/legal/compliance-guidelines/#terms_conditions).

For additional information please consult the Safety Data Sheets and Technical Bulletins to our products. We reserve the right, however, to make any changes as required by law, further developments or as necessitated by technical progress at any time, without prior or subsequent notice. This document is valid until the next relevant legislative and/or regulatory change with a maximum of two years as of the date of issue.

PRODUCT STEWARDSHIP & HEALTH

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