Safety Data Sheet (SDS)

Header Information and Contact

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Section 1 Identification of the Substance/Mixture and of the Company/Undertaking

Date: 2022-10-22
Product identifier: 12x40
Product name: Silver impregnated coconut shell granular activated carbon
Chemical name: Activated Carbon
Chemical formula: C
Synonyms: Activated Carbon

Section 2 Hazards Identification

Not classified as hazardous under Regulation (EC) No 1272/2008 (CLP).
Not classified as dangerous under Directives 67/548/EEC or 1999/45/EC.
No further information.
Special hazards to humans and the environment: None identified.
Label elements: This substance is not classified as hazardous; no hazard labeling is required.
Other hazards (PBT/vPvB):
According to the information requirements and criteria defined in the Guidance on Information Requirements and Chemical Safety Assessment (Chapter R.11), the PBT/vPvB criteria in Annex XIII do not apply to inorganic substances, but do apply to organometallics.
Activated carbon with a high-density skeleton (HDS) is considered inorganic; therefore, PBT assessment is not applicable.
For ATEX design criteria, see Section 16.6.
Important warnings:
Contact with strong oxidizers (e.g., ozone, liquid oxygen, chlorine, permanganates, etc.) may cause fire.
Wet activated carbon consumes oxygen from the air and may create dangerously low-oxygen atmospheres in confined spaces. Before entering vessels containing activated carbon, measure xygen content and follow confined-space/low-oxygen work procedures.
Spent (used) activated carbon may exhibit the properties of substances it has adsorbed.

Section 3 Composition/Information on Ingredients

Substance-related information:
Activated carbon, HDS
Content: < 99%
CAS: 7440-44-0
EINECS: 231-153-3
Silver
Content: < 1.1%
CAS: 7440-22-4
EINECS: 231-131-3

Section 4 First Aid Measures

General advice: Non-powdered activated carbon generates very little dust; accidental exposure risk is low. The following first aid guidance is based on exposure to powdered activated carbon.

Inhalation: Move to fresh air and rest. If coughing or respiratory symptoms occur, seek medical attention.

Skin contact: Remove contaminated clothing and wash skin with water and soap. If irritation occurs, seek medical attention.

Eye contact: Rinse cautiously with plenty of water immediately (remove contact lenses if easy to do). If irritation occurs, seek medical attention.

Ingestion: Rinse mouth and drink at least 0.5 liters of water. If gastrointestinal symptoms occur, seek medical attention.

Self-protection of first aiders: Ensure self-protection before entering hazardous environments.

Most important symptoms and effects:

oCongestion may occur after large oral intake.

oContact with eyes, skin, or mucous membranes may cause irritation.

Indication of any immediate medical attention and special treatment needed: Not applicable

Section 5 Firefighting Measures

Suitable extinguishing media: Water mist/water spray, dry powder, carbon dioxide, or foam.

Unsuitable extinguishing media: None.

Special hazards:

Avoid generating dust.

Wet activated carbon may cause oxygen depletion in confined spaces.

Hazardous decomposition products: Carbon monoxide. Spent activated carbon may generate other combustion products.

After a fire, hot spots may persist deep within the activated carbon for a long time.

Smoldering activated carbon in confined spaces can lead to carbon monoxide accumulation above its lower explosive concentration.

Advice for firefighters:

For indoor or large outdoor fires, use standard firefighting PPE including positive-pressure SCBA.

If feasible, move smoldering activated carbon to a safe area (preferably outdoors).

Section 6 Accidental Release Measures

Personal precautions: No special personal protection required for virgin (unused) activated carbon. For personal protection, see Section 8.

Environmental precautions: Avoid discharge to sewers and prevent contamination of water bodies.

Methods for containment and cleanup: Recover spilled material using vacuum methods and rinse residues with plenty of water; avoid dust generation.

Additional information:

Wet activated carbon consumes oxygen; confined spaces may become oxygen-deficient. Test xygen concentration before entry and follow low-oxygen work procedures.

Spent/used activated carbon may contain contaminants and must be handled according to national laws or permit requirements, with appropriate risk management measures.

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Section 7 Handling and Storage

Precautions for safe handling:

Protective measures: Wear appropriate protective equipment (see Section 8).

Technical measures (dust control): Follow good work practices and engineering controls during unloading to minimize dust.

Environmental protection: Ensure containment and adequate ventilation.

Specific operational rules: Measure oxygen content before entering vessels containing activated carbon; follow low-oxygen procedures.

Fire and explosion prevention: Avoid dust formation; keep activated carbon away from ignition sources.

Further information: Wet activated carbon can cause oxygen depletion.

Conditions for safe storage, including any incompatibilities:

Technical measures and conditions: Avoid high temperatures and direct sunlight.

Packaging materials: Store in original packaging.

Storage requirements: Keep away from strong oxidizers and strong acids; keep away from heat sources.

Storage recommendations: Store in a cool, well-ventilated area away from sources of contamination.

Storage class: —

Further information: Limit access to areas storing wet activated carbon; for enclosed storage rooms, consider oxygen monitors with alarms set at 18 vol.%.

Specific end use(s): —

Section 8 Exposure Controls/Personal Protection

Occupational exposure limits (example: Germany)

Activated carbon (alveolar fraction): long-term 1.5 mg/m³

Activated carbon (respirable fraction): long-term 4 mg/m³

Biological limits: None established. Other applicable limits: None.

DNEL/DMEL and PNEC:

DNEL (workers, inhalation, long-term—local effects): 3 mg/m³

DNEL (consumers, inhalation, long-term—local effects): 0.5 mg/m³

Based on ACGIH (2001) OEL for inhalable carbon black dust to minimize soiling and pulmonary function effects.

PNEC: Not derived (substance is highly insoluble; no ecotoxicity data).

Exposure controls:

Occupational hygiene: Apply good basic occupational hygiene practices when handling activated carbon outside containers.

Safety controls:

Low-oxygen work procedures must be in place. Wet activated carbon can cause oxygen depletion. Measure oxygen content before vessel entry, or install room oxygen sensors with alarms at 18 vol.%.

Technical measures:

Industrial/professional use of granular activated carbon or its slurry: No special technical measures required.

Industrial use of powdered activated carbon with high-level containment and only occasional exposure: No additional technical measures required.

Personal protective equipment (PPE):

Handling non-powdered or slurry activated carbon: Generally no PPE required.

Respiratory protection: For powdered activated carbon (HDS), use a half mask with P2 filters (≥90% efficiency) or higher.

Hand protection: Not specifically required, but gloves are recommended.

Eye protection: Use safety goggles with side shields when granular activated carbon exposure is possible.

Body protection: Standard work clothing.

Environmental exposure controls:

Product-related measures: Local exhaust at source, closed storage, and proper waste disposal.

Management measures: Implement ISO 14001; maintain procedures/work instructions.

Organizational measures: Employee awareness training, periodic procedure reviews, environmental audits by certified personnel.

Consumer exposure controls:

Normal household use (filter media products) is safe under all reasonably foreseeable conditions.

Section 9 Physical and Chemical Properties

Appearance: Solid, black, odorless
Basic safety data:
pH (20°C): 6.8
Melting range: > 1000°C (estimated in inert atmosphere)
Boiling range: > 1000°C (estimated in inert atmosphere)
Flash point: —
Auto-ignition temperature: 350–450°C
Vapor pressure: —
True density: 2.31 g/cm³
Bulk density: 440–520 kg/m³
Water solubility (20°C): 0 (insoluble; per OECD 105 column elution, GLP, pH 6.8, 20°C)

n-Octanol/water partition coefficient (log Pow): — (see insolubility note above)
Dynamic viscosity: — (solid)
Dust explosion limits (LEL/UEL): —
Other information: Physicochemical properties of waste material may differ from those of virgin activated carbon.

Section 10 Stability and Reactivity

Reactivity: No reactivity under specified storage, transport, and use conditions.
Chemical stability: Stable under specified conditions.
Possibility of hazardous reactions: Contact with strong oxidizers (chlorine, liquid oxygen, permanganates, ozone) may lead to rapid combustion/possible explosion.
Conditions to avoid: Keep operating temperatures below 200°C and avoid direct sunlight.
Incompatible materials: Strong oxidizers, strong acids.
Hazardous decomposition products: Carbon monoxide or carbon dioxide.

Section 11 Toxicological Information

Toxicokinetics/metabolism/distribution: Based on physicochemical properties, lack of adverse effects in toxicological studies, and clinical use as an adsorbent for treating acute poisoning and diarrhea, HDS activated carbon is presumed not to be absorbed via oral, dermal, or inhalation routes.
Non-human/human toxicology data: Not mandatory under REACH; generally unavailable.
Acute toxicity:
Oral (female rat) LD50 > 2000 mg/kg bw (no treatment-related effects), OECD 423/EU B.1 tris; conclusion: reliable.
Dermal: No data; may be waived under REACH Annex VII (oral and inhalation data available).
Inhalation (rat, 1 hour) LC0: 64.4 mg/L (nominal) or 8.5 mg/L (analytical); initial test LC100: 235 mg/L (nominal). Observations included fur soiling, stress, moist rales, body weight loss, lung discoloration; no deaths (at LC0). Method similar to OECD 403.
Conclusion: Inhalation LC50 > 8.5 mg/L.
STOT-single exposure: No specific target organ toxicity information.
Irritation/corrosion:
Skin (rabbit, 4 h): Non-irritant, OECD 404.
Eye (rabbit): Non-irritant, OECD 405 / EU B.5.
Respiratory irritation: No information.
Sensitization:
Skin: Not sensitizing.
Respiratory: No information.
Repeated exposure toxicity (chronic inhalation): Non-standard method; 1 year (7 h/day, 5 days/week) in rats/guinea pigs/mice; study unreliable; NOAEC not identified.
CMR (carcinogenicity/mutagenicity/reproductive toxicity):
In vitro mutagenicity: Three key in vitro tests negative; no genotoxicity.
In vivo mutagenicity: No data.
Reproductive toxicity: No data.
Overall evaluation: No classification required for mutagenicity under CLP/EU-GHS and 67/548/EEC; supportive chronic studies did not indicate systemic effects (hyperplasia/premalignant lesions).

Section 12 Ecological Information

Toxicity: No data; due to very low solubility, aquatic toxicity is not expected.
Persistence and degradability:
HDS is a durable material, not degraded by natural chemical/enzymatic processes.
Only under extreme conditions (e.g., refluxing in concentrated sulfuric/nitric acid) is it gradually xidized to CO_2 .
It cannot convert into absorbable soluble forms, cannot reach cellular sites for biodegradation; due to insolubility, biodegradation testing is not feasible.
Bioaccumulative potential:
No log Kow (inorganic/near-inorganic); particle size > 0.5 μm and insoluble, limiting transmembrane passage.
Very low bioaccumulation potential in aquatic organisms (BCF < 10).
Mobility in soil: Environmental compartment distribution: —
Surface tension: Not applicable (insoluble).
Adsorption/desorption: Insoluble and analytical methods cannot distinguish source carbon; testing is technically not feasible. The substance is mainly elemental carbon, chemically inert, and will not undergo further biodegradation.
PBT assessment: HDS is considered inorganic; PBT assessment not applicable.
Other adverse effects: Aqueous slurries containing high amounts of HDS carbon may have high pH.

Section 13 Disposal Considerations

Waste treatment methods: No specific disposal method for virgin activated carbon, but avoid discharge to sewers.
Waste code (EWC/AVV): 15 02 03
Appropriate packaging: —
Additional information: Spent/used activated carbon may require specific disposal considerations/packaging.

Section 14 Transport Information

ADR/RID: Not regulated
AND: Not regulated
IMDG/IMO: Not regulated
ICAO/IATA: Not regulated
Environmental hazards: Not classified as hazardous to the environment during transport.
Special precautions for user:
Wet activated carbon can cause oxygen depletion. Measure oxygen content before entering vessels containing activated carbon and follow low-oxygen work procedures.
Transport in bulk according to Annex II of MARPOL and the IBC Code: Not applicable.

Section 15 Regulatory Information

Safety, health and environmental regulations:
EU authorization/restrictions: No authorization; no restrictions.
Other EU regulations: —
National regulations: —
Chemical safety assessment: A chemical safety assessment has been completed in accordance with REACH; the annex provides an overview of risk management measures based on the assessment.
Relevant R/H statements: None.
Changes in this version: Added inhalation DNEL; risk management measures based on CSA; annex expanded with CSR-related information.
Training requirements: Basic training is required on substance hazards and risk management measures.
Recommended use restrictions: Avoid contact with strong oxidizers (and strong acids).

Section 16 Other Information

Uses and exposure categories (overview)

Industrial/professional/consumer uses: Oral (short/long) = 0 (not identified); dermal and inhalation (short/long) = "+" (recommended use).
Environmental compartments (water/air/soil, short-term/continuous): All "+" (recommended use).
Symbols: "+" recommended use, "-" not recommended, "0" use not identified.

This SDS complies with the requirements of Regulation (EC) No. 1907/2006.
ATEX design criteria information (for equipment design, operating conditions, and risk management)
Typical data (table):
Flammability class (ambient conditions, BS EN 13821): B
Flammability class under elevated temperature (see MIT data): A
Low-energy ignition source (limited conditions) A/B; in a 20 L spherical vessel with 100 and 500 J ignition (ambient), class B
Maximum explosion pressure Pmax: 5.9 barg
Explosion index Kst: 21 bar·m·s^{-1}
Rate of pressure rise dP/dt: 79 bar·s^{-1} (sealed vessel under defined conditions)
Dust explosion class: St1
Minimum ignition energy (MIE): > 500 J (BS EN 1382:2002)
Minimum ignition temperature (MIT): 590°C (BS EN 50281-2-1:1999)
Minimum layer ignition temperature (LIT): > 450°C (5 mm dust layer; BS EN 50281-2-1:1999)
Note: Refer to each product's SDS for product-specific typical data.
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