

Activated Carbon

Safety data sheet in the 16-section GHS format · CAS 7440-44-0

Velora Chemicals Private Limited
Ahmedabad, Gujarat, India
+91 99255 22674 · info@velorachemicals.com

1. Identification of the substance and of the supplier

Product name	Activated Carbon
Synonyms	activated charcoal, GAC, PAC, granular activated carbon, powdered activated carbon
C.A.S. number	7440-44-0 is the number carried on virtually every commercial invoice and safety data sheet, and is the identifier the EU REACH registrations were built on - but it is strictly the CAS number for elemental carbon. 64365-11-3 is the CAS entry that actually denotes activated charcoal; 16291-96-6 denotes non-activated charcoal. Activated carbon is a UVCB - a substance of unknown or variable composition - so no single CAS number is chemically correct for it. The EU splits it into two registered substances by activation route: Activated Carbon High Density Skeleton (EC 931-328-0, steam or physically activated) and Activated Carbon Low Density Skeleton (chemically activated, e.g. with phosphoric acid). A sheet quoting the HDS registration for a chemically activated product is wrong
Molecular formula	C (nominal only)
Grade supplied	Coconut shell & coal; GAC / PAC / pellets
Product group	Water & Effluent Treatment
Identified uses	Water and effluent treatment, Potable water, Gas and vapour phase, Solvent recovery, Gold recovery — CIL, CIP and CIC, Sugar, sweetener and edible-oil decolourising, Pharmaceutical and fine-chemical purification
Supplier	Velora Chemicals Private Limited
Emergency contact	Medical, fire or spill emergency — call the emergency services first: 112 (all-India), 101 fire, 108 ambulance. Velora Chemicals Private Limited does not at present operate a 24-hour chemical emergency advice line, and this sheet does not pretend otherwise. Every consignment despatched by road carries an emergency information panel under rule 134 of the Central Motor Vehicles Rules 1989 bearing a number from which expert advice on this material can be obtained, and the producer's safety data sheet issued with the consignment carries the producer's own 24-hour number where one is operated. For product, grade and documentation queries in business hours: +91 99255 22674.

2. Hazards identification

GHS signal word	There is NO EU harmonised (CLP Annex VI) classification for activated carbon, so every classification in the market is supplier self-classification and suppliers of the same commodity disagree. Cabot Norit, Chemviron and Clarimex classify it as not hazardous, with no signal word, no pictogram and no hazard statement. Haycarb and Carbon Activated Corporation classify it as an irritant with signal word WARNING and pictogram GHS07. Velora states both positions rather than choosing one, and the governing document for any consignment is the producer's own sheet for that grade
-----------------	---

Hazard classification	Where a producer does classify, the hazard statements seen across real producer sheets are: Skin Irrit. 2, H315 - causes skin irritation; Eye Irrit. 2A, H319 - causes serious eye irritation, or Eye Irrit. 2B, H320 - causes eye irritation; STOT SE 3, H335 - may cause respiratory irritation; and aquatic toxicity Category 4. Several major producers classify the same product as not hazardous. Note separately that the GHS physical-hazard class Self-heating substances (Category 1, H251; Category 2, H252) is decided by the same UN Test N.4 used for transport Division 4.2 - producers address that question in Section 14 by claiming the transport exemption rather than in Section 2, and at least one markets a grade named non-self-heating powder, which implies that some chemically activated grades are self-heating. Exposure limits: OSHA has not established a PEL; ACGIH gives 2.5 mg/m ³ respirable dust as a TWA, and the particulates-not-otherwise-specified values of 10 mg/m ³ inhalable and 3 mg/m ³ respirable are used by analogy. No Indian occupational exposure limit for activated carbon dust was identified - Not available
Precautionary statements	Velora adopts the more protective of the two market positions for labelling purposes. Pictogram GHS07; signal word WARNING; hazard statements H315, H319, H335 and H413. Precautionary statements: P261 avoid breathing dust; P264 wash thoroughly after handling; P271 use only outdoors or in a well-ventilated area; P280 wear protective gloves, eye and face protection; P302+P352 if on skin, wash with plenty of water; P305+P351+P338 if in eyes, rinse cautiously with water for several minutes, remove contact lenses if present and easy to do, continue rinsing; P304+P340 if inhaled, remove person to fresh air and keep comfortable for breathing; P312 call a poison centre or doctor if you feel unwell; P332+P313 if skin irritation occurs, get medical advice; P337+P313 if eye irritation persists, get medical advice; P362+P364 take off contaminated clothing and wash it before reuse; P403+P233 store in a well-ventilated place and keep container tightly closed; P405 store locked up where required; P501 dispose of contents and container in accordance with local regulations. Other hazards not resulting in classification: combustible solid; dust can form an explosive mixture with air; ADSORBS OXYGEN FROM AIR AND CAN CREATE AN OXYGEN-DEFICIENT ATMOSPHERE IN AN ENCLOSED SPACE (sections 7 and 8); self-heating potential is decided by UN Test N.4, see section 14.

3. Composition / information on ingredients

Substance	Activated Carbon
C.A.S. number	7440-44-0 is the number carried on virtually every commercial invoice and safety data sheet, and is the identifier the EU REACH registrations were built on - but it is strictly the CAS number for elemental carbon. 64365-11-3 is the CAS entry that actually denotes activated charcoal; 16291-96-6 denotes non-activated charcoal. Activated carbon is a UVCB - a substance of unknown or variable composition - so no single CAS number is chemically correct for it. The EU splits it into two registered substances by activation route: Activated Carbon High Density Skeleton (EC 931-328-0, steam or physically activated) and Activated Carbon Low Density Skeleton (chemically activated, e.g. with phosphoric acid). A sheet quoting the HDS registration for a chemically activated product is wrong
Molecular weight	Not applicable - activated carbon is not a discrete molecular compound. It is up to about 90% carbon with oxygen, hydrogen, sulphur and nitrogen present as atoms or in surface functional groups (carboxyl, carbonyl, phenol, lactone, ether, quinone), the mix depending on feedstock and activation agent. A molar mass of 12.011 g/mol is the atomic mass of carbon and does not describe the product
Composition	Coconut shell & coal; GAC / PAC / pellets

4. First-aid measures

Eye contact	Flush the eyes immediately with plenty of water for at least 15 minutes. The effect of carbon dust in the eye is mechanical, so do not let the casualty rub. Remove contact lenses if easily possible and continue rinsing. Get medical attention if symptoms occur or persist.
--------------------	---

Skin contact	Wash the skin with soap and water. Get medical attention if symptoms occur. This is dust housekeeping rather than chemical protection - the material does not attack skin.
Inhalation	RESCUERS MUST NOT ENTER a vessel, tank, silo, hopper, filter housing or shipping container to retrieve a casualty without self-contained breathing apparatus, a standby person and a rescue plan — an unprotected rescuer becomes the second casualty, and that is the commonest way a confined-space incident kills two people instead of one. Remove the casualty to fresh air. If breathing is difficult and you are trained to do so, give oxygen. If the casualty is unconscious but breathing normally, place in the recovery position and monitor breathing. IF THE CASUALTY IS NOT BREATHING NORMALLY, BEGIN CPR AT ONCE and send for an automated defibrillator and an ambulance. Call emergency medical services immediately. For dust exposure alone: move to fresh air, rest in a position comfortable for breathing, and seek medical attention if symptoms persist. Most important symptoms and effects - acute: mechanical irritation of eyes, skin and upper airway from dust; after exposure in or near an enclosed space, headache, dizziness, confusion and collapse from oxygen deficiency or carbon monoxide. Delayed: none expected from the dust. Immediate medical attention and special treatment - treat any collapse in or near an enclosed space as asphyxia and possible carbon monoxide poisoning and measure carboxyhaemoglobin; dust in the eye is a mechanical injury, so examine for corneal abrasion.
Ingestion	Do NOT induce vomiting. Rinse the mouth thoroughly with water and give water to drink. Seek medical attention if gastrointestinal symptoms develop.

5. Fire-fighting measures

Flash point	Not applicable - activated carbon has no flash point and is not a flammable liquid. It is nevertheless a COMBUSTIBLE SOLID that smoulders rather than flames, and the dust can form an explosive mixture with air. Ignition temperature is approximately 350 C by ASTM D3466 for steam-activated coconut shell, with other producers quoting above 220 C; one major producer records no data. Quote a range and name the method; do not state a single autoignition figure. Combustion products are carbon monoxide and carbon dioxide
Suitable extinguishing media	Water spray or water fog, applied in quantity — a smouldering bed of this material has to be wetted through, not merely cooled at the surface. Carbon dioxide, dry chemical powder, foam, sand or nitrogen may knock down surface flame but will not extinguish a deep-seated glowing fire inside a bed or a bulk pile; do not treat them as sufficient. Confirm the medium against the producer's safety data sheet for the grade supplied.
Unsuitable extinguishing media	Do not use solid water jets or any high-pressure medium: they raise an explosive dust cloud from the burning material and from adjacent material. Do not use compressed air or dry-powder blasting into a dust-laden space.
Special hazards arising from the substance	Activated carbon is a COMBUSTIBLE SOLID that SMOULDERS RATHER THAN FLAMES, typically deep inside the bed or pile where it cannot be seen, and it can go on doing so for days after the surface appears to be out. Combustion and smouldering generate CARBON MONOXIDE in hazardous quantity together with carbon dioxide. Airborne dust can form an explosive mixture with air. Wetting activated carbon is itself exothermic, so applied water may raise the bed temperature before it lowers it. After any fire, a vessel, silo or container holding or having held this material must be treated as an oxygen-deficient, carbon-monoxide-contaminated confined space — see section 7. Packaging (multiwall paper, polypropylene or HDPE bags, drums and pallets) adds substantially to the fire load.

Advice for fire-fighters

Fire-fighters must wear self-contained breathing apparatus and full protective clothing. Keep unnecessary personnel away and upwind. Fight a bed or pile fire from a protected position; expect to apply water for an extended period and to break open or excavate the material to reach the seat of the smouldering. Monitor the wetted material for at least 24 hours for re-ignition before standing down. Do not reseal a container of material that may still be smouldering. Any vessel, silo, hopper or container involved in or next to the fire must afterwards be treated as a confined space with a possibly oxygen-deficient and carbon-monoxide-contaminated atmosphere — test before entry, breathing apparatus, standby person, rescue plan. Prevent firefighting run-off from entering drains, surface water or groundwater.

6. Accidental release measures

Keep unnecessary personnel away and upwind, and ventilate. ELIMINATE IGNITION SOURCES AND PROHIBIT SMOKING. Wear the protective equipment in section 8, including respiratory protection, before approaching. DO NOT DAMP OR WET THE MATERIAL: wetting activated carbon is exothermic and wet carbon scavenges oxygen from the surrounding air. Dry-collect only — vacuum with a HEPA-filtered unit, or sweep gently without raising dust, into labelled closable containers for disposal under section 13. Never blow spilled powder down with compressed air. Spilled carbon is slippery, particularly once wet, so do not walk through it, and wash and dry the floor afterwards. A SPILL INSIDE A VESSEL, TANK, SILO, CONTAINER OR PIT IS A CONFINED-SPACE JOB — test for oxygen and carbon monoxide and work under permit. Prevent entry to drains, surface water and groundwater. Do not return spilled material to the original container.

7. Handling and storage

- **The hazard that kills on this product is not the dust. It is oxygen depletion in enclosed spaces, and it is on every major producer's safety data sheet.** Activated carbon — especially when wet — adsorbs oxygen out of the air around it. A vessel, tank, silo, hopper, filter housing or shipping container that holds activated carbon, or that merely held it, can therefore have an oxygen-deficient atmosphere inside while looking entirely ordinary. Cabot Norit's sheet says the space must be evaluated for oxygen and carbon monoxide before entry; Haycarb's says do not enter closed vessels without self-contained breathing apparatus; Chemviron's records a risk of suffocation due to oxygen deficiency. Treat every such entry as confined-space work: test the atmosphere, ventilate, use breathing apparatus where the test demands it, post a standby person, and have a rescue plan before anyone goes in. Do not send an unprotected rescuer after a collapsed colleague — that is how one casualty becomes two. We should be straight about the basis for this warning: we could not find a publicly documented fatality attributed specifically to activated-carbon oxygen depletion, so it is stated here on the authority of the producers' own sheets rather than on an incident record. It is not a reason to discount it.
- **Classification: there is no harmonised classification for this product, and suppliers of the same commodity disagree.** No European CLP Annex VI entry exists for activated carbon, so every classification in the market is supplier self-classification. Cabot Norit, Chemviron and Clarimex classify it as not hazardous — no signal word, no pictogram, no hazard statement. Haycarb and Carbon Activated Corporation classify it as an irritant with signal word **Warning** and the exclamation-mark pictogram, and between them the statements seen are Skin Irrit. 2 (H315), Eye Irrit. 2A (H319) or 2B (H320), STOT SE 3 (H335, respiratory irritation) and aquatic toxicity Category 4. We state both positions rather than picking the convenient one, and the governing document for any consignment is the producer's own sheet for that grade. If your EHS system needs a single answer, work to the irritant classification — it is the more protective of the two and it costs you only dust discipline you should have anyway.
- **It is a combustible solid, and the fire behaviour is not what people expect.** Activated carbon has no flash point and is not a flammable liquid, but it burns — it smoulders rather than flames, often deep inside a bed where you cannot see it, and it can go on doing so long after the surface looks out. Ignition temperature is around 350 °C by ASTM D3466 for steam-activated coconut shell, with other producers quoting above 220 °C and at least one recording no data — so take the figure for your grade from its own sheet rather than from a range. Combustion gives carbon monoxide and carbon dioxide. **Do not put a solid water jet on it.** Producer sheets list solid water streams as unsuitable extinguishing media because high-pressure water can raise an explosive dust cloud; use fog or spray. And remember that wetting carbon is itself exothermic, so water makes a self-heating problem worse before it makes it better. The dust can form an explosive mixture with air.
- **Self-heating, and the vapours that cause it.** Beyond the obvious incompatibles — strong oxidisers such as ozone, liquid oxygen, chlorine and permanganates, which can cause rapid combustion, plus strong acids, alkali metals and hydrocarbons — there is one incompatibility that is routinely missed, and it is a process-design issue rather than a storage one. Vapours with a high heat of adsorption release enough energy on being adsorbed to create hot spots in the carbon bed. The United

States EPA's chemical safety alert on carbon adsorption deodorising systems names organic sulphur compounds and mercaptans, ketones, aldehydes, organic acids and high organic vapour concentrations generally, and documents a 1995 fire and explosion involving three crude sulphate turpentine tanks connected to activated carbon drums, which damaged further tanks, released toxic gases and required nearby residents to be evacuated. The alert also describes a day-and-night breathing effect, where overnight cooling draws air into the system and supplies the oxygen a hot carbon surface needs. Its recommendations are worth following: design and operate to the manufacturer's specification, test the vapour-and-carbon interaction before deployment, fit vacuum breakers and flame arrestors, separate carbon vessels from flammable chemical storage, and inspect frequently.

- **Dust and PPE.** The routine exposure is nuisance dust, and the controls are the ordinary ones: enclose the tipping point, put local exhaust on it, slit and empty bags away from the general workspace, and launder overalls rather than brushing them down, because brushing re-aerosolises the dust. Safety glasses or goggles where dust is airborne, gloves for prolonged contact, and an approved particulate respirator where enclosure and extraction cannot hold airborne levels down. On limits: OSHA has not established a permissible exposure limit for activated carbon; ACGIH gives 2.5 mg/m³ respirable dust as a time-weighted average, and the particulates-not-otherwise-specified values of 10 mg/m³ inhalable and 3 mg/m³ respirable are used by analogy. **No Indian occupational exposure limit for activated carbon dust was identified — Not Available.** Note also that the Factories Act 1948 Second Schedule, which many Indian safety data sheets still cite for exposure limits generally, was repealed on 21 November 2025 by the Occupational Safety, Health and Working Conditions Code, 2020, under which permissible limits fall to be prescribed by the State Government. Use the value your own EHS standard adopts and record which one.

- **First aid.** Eyes — flush immediately with plenty of water for at least 15 minutes; the effect is mechanical abrasion, so do not let the casualty rub; remove contact lenses if easily possible and keep rinsing; get medical attention if symptoms persist. Skin — wash with soap and water; this is dust housekeeping, not chemical protection, and the material does not attack skin. Inhalation — move to fresh air if cough or breathing difficulty occurs, rest in a position comfortable for breathing, and seek attention if symptoms continue; but if the exposure happened in or near a vessel, tank or other enclosed space, treat it as a possible oxygen-deficiency or carbon monoxide event rather than dust irritation. Ingestion — do not induce vomiting, rinse the mouth thoroughly, give water to drink, and seek attention if gastrointestinal symptoms develop.

- **Spill.** Dry-collect first — vacuum with a HEPA-filtered unit, or sweep carefully without raising dust, into a labelled container. Spilled carbon is slippery, particularly when wet, so do not walk through it. Keep washings out of storm drains. Avoid wetting the material if it is to be recovered rather than disposed of, both because wetting is exothermic and because wet carbon is the form that depletes oxygen.

- **Storage.** Cool, dry, well ventilated, in closed containers, in the original packaging, away from heat, hot surfaces, sparks, open flame, direct sunlight and all ignition sources; no smoking. Separated from oxidisers and from flammable chemical storage. Keep it dry: moisture pickup shows up as high moisture content on test, and wet carbon is both the self-heating risk and the oxygen-depletion risk. Shelf life is a packaging-integrity question rather than a chemical-degradation one — virgin carbon does not age — but adsorption capacity is consumed by whatever the carbon is exposed to, so an open bag in a workshop is quietly loading itself with solvent vapour and arriving at your column part-spent.

- **Spent carbon.** Worth settling before you buy rather than after. Spent activated carbon from some processes may be a hazardous waste under the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, which has consequences for disposal, for take-back arrangements and for whether reactivation is open to you. The position for any specific waste stream depends on what the carbon has adsorbed and is **Not Available** as a general answer — check it against your own consent and the applicable schedules.

Storage: Cool, dry, well ventilated, in closed containers, in the original packaging, away from heat, hot surfaces, sparks, open flame, direct sunlight and all ignition sources; no smoking. Separated from oxidisers and from flammable chemical storage. Keep the material dry - wetting is exothermic and makes self-heating worse, and absorbed moisture also shows up as high moisture content on test. THE CONFINED-SPACE HAZARD IS THE ONE THAT KILLS AND IT IS ON EVERY MAJOR PRODUCER'S SHEET: activated carbon, especially when wet, ADSORBS OXYGEN FROM THE AIR and can create an oxygen-deficient atmosphere in an enclosed space. Before anyone enters a vessel, tank, silo, hopper, filter housing or container that contains or has previously contained activated carbon, the atmosphere must be tested for oxygen and for carbon monoxide, and the space worked as a confined space with self-contained breathing apparatus, a standby person and a rescue plan. Do not rely on the space looking empty. In fire, do not use solid water jets - high-pressure media can raise an explosive dust cloud; use water fog or spray, and expect the material to smoulder deep in the bed long after the surface looks out. No publicly documented fatality attributed specifically to activated-carbon oxygen depletion was located when this record was compiled, so the hazard is stated here on the authority of the producers' own sheets rather than on an incident record.

8. Exposure controls / personal protection

Occupational exposure limits. OSHA has set no substance-specific permissible exposure limit for activated carbon, BUT its Particulates Not Otherwise Regulated limit does apply and is enforceable: 15 mg/m³ total dust and 5 mg/m³ respirable fraction as 8-hour time-weighted averages, 29 CFR 1910.1000 Table Z-1 — the figures Cabot Norit and Haycarb both print on their own sheets. ACGIH publishes NO threshold limit value for activated carbon or activated charcoal; the nearest applicable ACGIH values are those for Particles (insoluble or poorly soluble) Not Otherwise Specified, 10 mg/m³ inhalable and 3 mg/m³ respirable, used by analogy. A figure of 2.5 mg/m³ circulates attributed to ACGIH; it appears on one producer sheet which records “ACGIH TLV: data not available” in the same section, so it is not an ACGIH value and is not reproduced here. No Indian occupational exposure limit for activated carbon dust was identified — Not available. Note that the Factories Act 1948 Second Schedule, still cited for exposure limits on many Indian sheets, was repealed on 21 November 2025 by the Occupational Safety, Health and Working Conditions Code, 2020.

Personal protection. Respiratory protection. For routine dust exposure, an approved particulate respirator — minimum EN 149 FFP2 or NIOSH N95, and FFP3 or P100 where dust is heavy — wherever enclosure and extraction cannot hold airborne levels down. FOR ENTRY INTO ANY VESSEL, TANK, SILO, HOPPER, FILTER HOUSING OR SHIPPING CONTAINER THAT CONTAINS OR HAS CONTAINED ACTIVATED CARBON: positive-pressure self-contained breathing apparatus, or airline apparatus with an escape set, under a confined-space permit, with the atmosphere tested for oxygen and carbon monoxide first, a standby person posted and a rescue plan in place. A particulate respirator gives NO protection whatever against oxygen deficiency, and this is the single most important line in this section. Eye protection: safety glasses or goggles to EN 166 wherever dust is airborne. Hand and body: general-purpose work gloves for prolonged handling; launder overalls rather than brushing them down, because brushing re-aerosolises the dust.

Engineering controls. Enclose every transfer, tipping, bag-slitting and sampling point and fit local exhaust extraction at each, and keep airborne concentrations below the limit in force at the place of use. Provide an eyewash within reach of the working position, and a safety shower wherever the material is classified corrosive or irritant or is handled in quantity. Do not eat, drink or smoke in the handling area; wash before breaks. Where no limit is stated above, occupational exposure limits vary by jurisdiction: check the limit in force at the place of use and the producer's sheet for the grade supplied, and record which value your assessment adopted. Select eye, skin and respiratory protection on the strength of a measured or modelled exposure assessment, not on this sheet alone.

9. Physical and chemical properties

Appearance	Black granules, powder, extruded pellets, fibres or felts. Generally odourless; a slight sulphurous smell when wet is reported by some producers
Physical state	Solid, porous. Particle size across the range of traded forms spans roughly 1 micrometre to 10 mm
Melting / freezing point	Not applicable (producer sheets state Not applicable). Carbon's sublimation temperature of roughly 3,600 C is not a property of the traded product and should not be quoted on a safety data sheet
Boiling point	Not applicable
Relative density	Three different densities exist for this product and they differ by nearly a factor of ten, so a sheet printing a single density figure is not usable. Bulk (apparent) density, which includes inter-particle voids and is what determines how many kilograms fill a vessel: approximately 0.25-0.64 g/cm ³ across traded grades (ASTM D2854). Particle density, including the granule's own pores but not the voids between granules: approximately 0.82 g/cm ³ for steam-activated coconut shell. True or skeletal (helium) density of the carbon framework itself: 2.31 g/cm ³ at 20 C. Specify which one your vessel loading calculation uses
Solubility in water	Insoluble

pH	Grade-dependent; there is no single figure. Producer sheets for coconut-shell grades quote a pH range of 1–11 across their product families and others quote 7–10; several decline to give a figure at all. IS 2752:1995 sets NO pH requirement for granular activated carbon — its Table 1 covers carbon tetrachloride adsorption, moisture, ash, hardness number, retentivity index, iodine number, half dechlorination value and surface area, and nothing else. IS 8366:1989 sets pH only for Type 3, pharmaceutical decolourising, at 6.5–7.5. IS 877:1989 clause 9 gives the Indian test method; ASTM D3838 is the international one. Take the figure for the grade from the lot certificate rather than from a generic sheet.
Flash point	Not applicable - activated carbon has no flash point and is not a flammable liquid. It is nevertheless a COMBUSTIBLE SOLID that smoulders rather than flames, and the dust can form an explosive mixture with air. Ignition temperature is approximately 350 °C by ASTM D3466 for steam-activated coconut shell, with other producers quoting above 220 °C; one major producer records no data. Quote a range and name the method; do not state a single autoignition figure. Combustion products are carbon monoxide and carbon dioxide
Auto-ignition / ignition temperature	Approximately 350 °C for steam-activated coconut shell by ASTM D3466; other producers quote above 220 °C and at least one records no data. Take the figure for the grade from its own sheet rather than from this range.
Explosive / dust-explosion properties	Not explosive as a substance. The DUST can form an explosive mixture with air. A minimum cloud ignition temperature of approximately 590 °C has been reported to BS EN 50281-2-1. Kst, Pmax and minimum ignition energy: no data available for the grade quoted — obtain them from the producer before basing any ATEX or DSEAR zoning or explosion-protection design on this sheet.
Vapour pressure	Not applicable (non-volatile solid)
Vapour density	Not applicable
Partition coefficient (log Pow)	Not applicable (insoluble, non-partitioning solid)
Particle characteristics	Traded as powder (PAC, typically at least 95% passing a 150 µm sieve), as granules (GAC, specified by mesh pair — 8×30 and 12×40 for water, 4×8 and 6×12 for gas and gold work), and as extruded or pelletised material at 3–4 mm. Particle size across all traded forms runs roughly 1 µm to 10 mm. Specify the mesh or size distribution on the purchase order and take it from the lot certificate: ASTM D2862 for granular, ASTM D5158 for powdered, IS 877:1989 clause 6 in India.
Molecular weight	Not applicable - activated carbon is not a discrete molecular compound. It is up to about 90% carbon with oxygen, hydrogen, sulphur and nitrogen present as atoms or in surface functional groups (carboxyl, carbonyl, phenol, lactone, ether, quinone), the mix depending on feedstock and activation agent. A molar mass of 12.011 g/mol is the atomic mass of carbon and does not describe the product

10. Stability and reactivity

Incompatible materials	Strong oxidising agents - ozone, liquid oxygen, chlorine, permanganates - contact with which may cause rapid combustion. Strong acids. Alkali metals. Hydrocarbons. And the incompatibility most often missed: vapours with a high heat of adsorption. The US EPA's chemical safety alert on carbon adsorption deodorising systems identifies organic sulphur compounds and mercaptans, ketones, aldehydes, organic acids and high vapour concentrations of organics generally, where adsorption releases enough heat to create hot spots in the carbon bed. A 1995 fire and explosion involving crude sulphate turpentine tanks connected to activated carbon deodorising drums is the documented case
-------------------------------	---

Conditions to avoid

Cool, dry, well ventilated, in closed containers, in the original packaging, away from heat, hot surfaces, sparks, open flame, direct sunlight and all ignition sources; no smoking. Separated from oxidisers and from flammable chemical storage. Keep the material dry - wetting is exothermic and makes self-heating worse, and absorbed moisture also shows up as high moisture content on test. THE CONFINED-SPACE HAZARD IS THE ONE THAT KILLS AND IT IS ON EVERY MAJOR PRODUCER'S SHEET: activated carbon, especially when wet, ADSORBS OXYGEN FROM THE AIR and can create an oxygen-deficient atmosphere in an enclosed space. Before anyone enters a vessel, tank, silo, hopper, filter housing or container that contains or has previously contained activated carbon, the atmosphere must be tested for oxygen and for carbon monoxide, and the space worked as a confined space with self-contained breathing apparatus, a standby person and a rescue plan. Do not rely on the space looking empty. In fire, do not use solid water jets - high-pressure media can raise an explosive dust cloud; use water fog or spray, and expect the material to smoulder deep in the bed long after the surface looks out. No publicly documented fatality attributed specifically to activated-carbon oxygen depletion was located when this record was compiled, so the hazard is stated here on the authority of the producers' own sheets rather than on an incident record.

11. Toxicological information

Acute oral, dermal and inhalation toxicity: low. No LD50 or LC50 is established for activated carbon. Skin and eye effects: mechanical irritation from dust; some producers classify Skin Irrit. 2 (H315) and Eye Irrit. 2A (H319) or 2B (H320), others do not classify at all. Respiratory: dust may cause transient upper-airway irritation; some producers classify STOT SE 3 (H335). Sensitisation, germ cell mutagenicity, reproductive toxicity and specific target organ toxicity on repeated exposure: no data, and no classification by any producer reviewed. CARCINOGENICITY: activated carbon is not classified by IARC, is not listed by the US National Toxicology Program, and carries no CLP carcinogenicity classification. Aspiration hazard: not applicable to a solid. Numerical endpoints for a specific grade: refer to the producer's sheet, to the ECHA registration for Activated Carbon High Density Skeleton (EC 931-328-0) and to PubChem.

12. Ecological information

Haycarb classifies coconut-shell activated carbon Aquatic Chronic 4, H413 — may cause long-lasting harmful effects to aquatic life; other producers do not classify it. Treat releases on the protective basis: prevent entry to drains, surface water and groundwater, and treat aqueous effluent before discharge. The material is insoluble in water, is not expected to be bioaccumulative, and is readily removed by filtration. The point that matters in practice is that SPENT carbon carries whatever it has adsorbed: classify the waste stream by its adsorbate, not by the carbon — see section 13.

13. Disposal considerations

Dispose of the substance and its container through an authorised facility under the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 where the waste is scheduled under those Rules, and otherwise as non-hazardous industrial waste, in each case under the conditions of the State Pollution Control Board consent in force at the site. Whether a particular waste stream is scheduled depends on the substance and on what it has been mixed with, so classify the waste before consigning it. Do not reuse empty containers for any other purpose.

14. Transport information**UN number**

UN 1362 where the material is classified; the specific entry is CARBON, ACTIVATED. Do not confuse it with UN 1361, CARBON, animal or vegetable origin, which is the NON-activated material and expressly includes charcoal made from coconut shell, bone, bamboo, jute and wood - that is the FEEDSTOCK for activated carbon, not the product, and since 2026 its shipping regime is markedly more onerous. Much traded activated carbon moves exempt and is not dangerous goods at all: see the class and packing-group fields and the notes

Class	Class 4.2 - substances liable to spontaneous combustion / self-heating - where the material is classified. ADR classification code S2, Kemler danger number 40, tunnel restriction code (E), transport category 4, packing instructions P002/IBC08/LP02/R001, limited quantity 0; US 49 CFR ERG guide 133, special provision W31 requiring non-bulk packagings to be hermetically sealed, passenger and cargo aircraft limit 0.5 kg, vessel stowage category A. The exemption is the normal commercial position for steam-activated material but it is CONDITIONAL and the conditions changed on 1 January 2026 - see notes
Packing group	III where classified. The UN self-heating test N.4 (UN Manual of Tests and Criteria section 33.4.6, formerly 33.3.1.6) is what decides classification: cubic wire-mesh baskets of 25 mm and 100 mm side are held in an oven, and a positive result is spontaneous ignition or a temperature rise of 60 C or more above oven temperature. Positive in the 25 mm cube at 140 C gives packing group II; positive in the 100 mm cube at 140 C with the 25 mm cube negative gives packing group III, subject to package-volume conditions; negative in the 100 mm cube at 140 C means the material is not Division 4.2 at all. US PHMSA accepted on N.4 data (letter of interpretation 23-0058) that specific steam-activated and chemically activated products do not meet the Division 4.2 definition, and reminded shippers that classification is the shipper's own responsibility. The package-volume sub-criteria were transcribed from secondary sources because the UN Model Regulations text was unreachable, and should be checked against the Regulations before being relied on
Proper shipping name	CARBON, ACTIVATED - but only where the material is classified. Most steam-activated carbon moves as ordinary non-dangerous cargo under the exemption, in which case there is no proper shipping name and the consignment is not described as dangerous goods at all. Which of the two applies to a given lot depends on the activation route and, for chemically activated grades, on a UN Test N.4 result - see the packing group field and the notes. Do not pre-print either description on a transport document without settling the lot's position first

15. Regulatory information

Supply in India is subject to the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 where the substance is scheduled, and to any product-specific licensing named on the product page. Classification and labelling follow the GHS as adopted in the jurisdiction of use.

Note: TRANSPORT IS THE FIELD THAT CHANGED, AND MOST PAPERWORK IN CIRCULATION IS OUT OF DATE. IMDG Amendment 42-24 became mandatory on 1 January 2026. It REMOVED special provisions 223 and 925 FROM THE UN 1361 AND UN 1362 ENTRIES - SP 925 goes entirely, while SP 223 remains in Chapter 3.3 and still applies to other entries, so do not read this as SP 223 having been deleted from the Code - and introduced SP 978 for UN 1361 and SP 979 for UN 1362, with a new documentation requirement at 5.4.4.2 requiring the exemption certificate to be submitted with the SOLAS VI/2 cargo information. Under SP 979 steam-activated carbon can be exempted on a shipper's certificate, while a chemically activated grade is exempt only on a negative UN Test N.4 report from a recognised laboratory; without the relevant proof the material ships as Class 4.2, packing group III. Safety data sheets still citing SP 925 or IMDG 2020 - including some from major producers - are citing a repealed provision, and a buyer relying on one is relying on nothing. THE EXEMPTIONS DIFFER BY MODE AND ARE NOT INTERCHANGEABLE. Sea, IMDG SP 979: steam-activated carbon on a shipper's certificate; chemically activated only on a negative UN Test N.4 report, with the exemption certificate submitted under 5.4.4.2. Road and rail, ADR/RID SP 646: steam-activated exempt; chemically activated exempt on a negative Test N.4, subject to package-size limits that depend on the result. Air, IATA SP A3: A TEST N.4 REPORT IS REQUIRED FOR BOTH STEAM AND CHEMICALLY ACTIVATED CARBON - a shipper's certificate alone is not enough, so anyone air-freighting samples on the strength of the sea rule is uncovered. Settle the mode before you settle the paperwork. The verbatim text of SP 646 and A3 was unreachable when this record was compiled, so their effect is stated from the European activated carbon producers' association rather than quoted. Carriers have gone further than the Code: Maersk's advisory effective 1 October 2025 will carry either grade as dangerous goods under UN 1362 or as non-dangerous goods on documents, but accepts bookings only from PRE-AUDITED shippers, refuses reefer containers, and requires for chemically activated grades a self-heating test certificate no more than three months old with the laboratory's accreditation letter and a 24-hour oven-and-cargo temperature trace. THE REQUIREMENT THAT CATCHES A TRADER is that the SP 979 declaration must come from the REAL PRODUCER of the cargo, on the producer's letterhead, signed and stamped - a trader cannot issue it for itself - together with the safety data sheet before container release and a vanning certificate before gate-in, for both grades. CINS recommends that cargo-management processes stop relying on the special provisions altogether. A SEPARATE POINT OF HONESTY: the roughly 68 container fires between January 2015 and December 2022 documented by CINS involved CHARCOAL produced as fuel (UN 1361), most of it misdeclared - not activated carbon. The incidents should not be attributed to this product. On specification, the iodine number (ASTM D4607, or IS 2752 Annex A-2) is a relative indicator of micropore volume in milligrams of iodine adsorbed per gram; ASTM's own scope says it does not necessarily measure capacity for other species and that any relationship to surface area cannot be generalised across feedstocks, so it is not a quality score and it is not convertible to BET area. Commercial grades run roughly 500-2,000 m²/g BET; figures above about 2,000 m²/g belong to research materials. Three Indian Standards exist and all three are free on the public BIS archive: IS 877:1989 methods of sampling and test, IS 2752:1995 granular activated carbon specification, and IS 8366:1989 powdered activated carbon specification. IS 8366:1989

defines Type 1 for decolourising vegetable oils, fats and waxes, Type 2 for sugar and corn sugar solutions and Type 3 for pharmaceuticals. The legible limits are: moisture 15% maximum for all three types; particle size at least 95% passing 150 micrometres and at least 80% passing 125 micrometres for all three; and for Type 3, pH 6.5-7.5, matter soluble in water 0.5% maximum, iron 0.05% maximum, chloride 0.35% maximum, sulphate 0.8% maximum and a pass on the cyanogen-compounds test. We do NOT reproduce the ash, oil-retention or decolourising-power limits: the only publicly available scan of the standard is degraded and two readings of those rows disagreed. Take them from a clean copy before writing them into a purchase order. There is no Indian Quality Control Order and no compulsory BIS certification for activated carbon, and no Indian anti-dumping duty on it - the Indian measure people have in mind is on carbon black, a different heading and a different product.

16. Other information

Version	1.0
Date of issue	07 October 2026
Supersedes	No previous version
Regulatory basis as at the date of issue	EU CLP Regulation 1272/2008 as amended (noting that there is NO Annex VI harmonised entry for activated carbon); UN Model Regulations and the IMDG Code Amendment 42-24, mandatory from 1 January 2026, including special provision 979; ADR/RID special provision 646; IATA special provision A3; 29 CFR 1910.1000 Table Z-1; and, in India, the Manufacture, Storage and Import of Hazardous Chemical Rules 1989 and the Hazardous and Other Wastes (Management and Transboundary Movement) Rules 2016.

How this sheet was compiled and what governs. This sheet was prepared by Velora Chemicals Private Limited as the supplier, from PubChem, the ECHA CLP inventory including Annex VI harmonised classifications, ILO International Chemical Safety Cards and published producer safety data sheets. Values that could not be confirmed from those sources are shown as "Not available" rather than estimated. **The producer's safety data sheet for the specific grade and lot supplied is the governing document** and is issued with the consignment; where the two differ, the producer's sheet prevails. This sheet carries no warranty of the properties of any particular batch. Velora Chemicals Private Limited is a bulk supplier and trader, not a manufacturer.

Sources consulted: USDA AMS 2024 Technical Report on Activated Charcoal; producer safety data sheets from Cabot Norit, Chemviron, Haycarb, Clarimex and Carbon Activated Corporation; EU Activated Carbon Consortium (REACH HDS and LDS registrations); IMDG Code Amendment 42-24 as summarised by West of England P&I, ICHCA, Britannia P&I and the CINS Charcoal Guidance of September 2024; Maersk customer advisory on activated carbon effective 1 October 2025; US PHMSA letter of interpretation 23-0058; US EPA Chemical Safety Alert on carbon adsorption deodorising systems; ASTM D4607, D2854, D2866, D2867, D3466, D3802, D3838, D5228, D5742 (ASTM Committee D28); ISO 9277:2022; AWWA B604-18 and B600-16; IS 877:1989, IS 2752:1995 and IS 8366:1989; IUPAC Technical Report on physisorption characterisation (Thommes et al., 2015).