

Tungsten Carbide Mining and Wear Scrap Specification — Buttons, Picks and Wear Components

Material category: Mining, construction and industrial wear carbide

Mining, construction and industrial wear tungsten carbide scrap: drill bit buttons and inserts, road and tunnelling picks, oil and gas carbide and wear components, typically arising with steel bodies, rock debris and site soiling. Mining and wear carbide is a tougher, higher-binder family of hardmetal recovered from rock drilling, tunnelling, construction and heavy industrial wear applications. It arrives dirtier and more steel-bound than tooling scrap, and this specification explains what that means commercially.

Material description

Mining and wear carbide comes from applications where the failure mode is impact and abrasion rather than controlled cutting. Rock drill bits carry pressed-in carbide buttons; roadheader and continuous-miner picks carry a conical carbide tip brazed into a steel body; construction and milling drums carry replaceable carbide-tipped tools; and heavy industry uses carbide wear protection in nozzles, chute liners, seal faces, bushings and pump components.

Grades used in these applications typically sit at the tougher end of the hardmetal range, because a rock tool that is too hard fractures rather than wearing. That metallurgical difference is why mining and wear material is a distinct commercial stream from cutting tools and should not be described as equivalent to it, even though both are WC-Co.

Typical material forms

- Loose mining buttons and drill bit inserts recovered from worn or crushed bit bodies
- Complete rock drill bits and button bits with carbide still pressed into the steel body
- Conical picks and road-milling tools with brazed carbide tips in steel bodies
- Tunnelling and roadheader tooling, including holder blocks where these travel with the tools
- Oil and gas carbide — drill bit inserts, downhole wear components and hardfacing carbide items
- Industrial wear parts — nozzles, bushings, seal faces, liners, guides and pump components

Specification table (typical characteristics)

Material category	Mining, construction and industrial wear tungsten carbide scrap
Material form	Loose buttons, complete drill bits, picks, oil and gas carbide, wear parts and liners
Primary recoverable material	Tungsten from sintered WC-Co components recovered from tool bodies
Binder / alloy considerations	Rock and wear grades typically use tougher, higher-binder formulations; binder type and fraction vary by grade and lot, analysis available or agreed where applicable
Common attachments	Steel bit bodies, pick shanks, holder blocks, braze alloy and retaining hardware
Common contamination considerations	Rock, grit, soil and drilling fines, rust, hardfacing composites and non-carbide wear items
Moisture considerations	Free water and retained moisture common after outdoor storage; draining and screening before packing recommended
Evaluation method	Visual inspection with attention to carbide-to-steel ratio and soiling; XRF screening where agreed; contractual figures require agreed sampling and analysis
Typical packaging	Small steel drums for recovered carbide; reinforced bins or bulk containers for complete tools

Lot segregation	Recovered buttons, complete tools and wear parts packed and labelled as separate fractions
Inspection availability	Third-party inspection can be arranged at the loading location; scope agreed contractually
Documentation	Commercial invoice, packing list by fraction, transport documents and lane-specific customs or waste-shipment paperwork

Evaluation considerations

- Whether carbide has been recovered from tool bodies, or is offered still fitted in steel
- Typical tool type and consistency of the population across the lot
- Quantity of rock, grit, soil, sand and drilling residue travelling with the material
- Degree of corrosion and oxidation on steel bodies after outdoor storage
- Presence of hardfacing composites, weld deposits and non-sintered carbide items
- Whether the lot is a single-site arising or an aggregation from multiple operations

Common contamination and deduction factors

- Steel bit bodies, pick shanks, holder blocks and retaining hardware
- Rock, gravel, sand, clay and drilling fines packed into tool cavities
- Rust and heavy oxidation from prolonged outdoor storage
- Free water and retained moisture in drums and bulk bags
- Hydraulic oil, grease and drilling fluid residue
- Non-carbide wear items such as hardfaced steel, ceramic liners and abrasion-resistant plate
- Occasional mixed general scrap collected alongside the tools on site

Inspection and analysis

Screening a mining and wear lot has a different objective from screening tooling. The elemental question is usually secondary; the primary question is how much of the presented weight is carbide at all. A reading taken on a carbide button confirms the button, but tells nothing about the steel body it was pressed into or the rock in the drum.

Where elemental screening is used, tungsten and cobalt identify the sintered carbide, iron identifies steel bodies and hardfacing, and nickel and chromium can indicate alloyed steels or nickel-bound grades. Because soiling interferes with surface readings, sample pieces should be cleaned before screening.

- Handheld XRF reads the surface of the piece it is pointed at. Coatings, braze alloy, oxide layers, cutting-fluid residue and plating can bias a surface reading.
- A reading on one piece is not a lot average. Heterogeneous lots require representative sampling across drums, layers and size fractions before any figure is treated as commercially meaningful.
- XRF is an elemental technique. It does not measure grain size, binder distribution, sintering condition, carbon balance or the mechanical history of a component.
- Screening results are an indication used to sort and to price-discuss. Contractual figures require the sampling and analysis method the parties have agreed in writing.

Packaging and lot segregation

- Loose buttons and recovered carbide in small steel drums, kept within safe handling weight
- Complete bits and picks in reinforced bins or strong bulk containers, palletised
- Rock, fines and free water removed before packing where practicable
- Fractions packed and labelled separately: recovered carbide, complete tools, wear parts
- Packages closed against water ingress during transit and yard storage

Customs classification

Classification of mining and wear carbide depends on the composition and form of the goods shipped — recovered carbide behaves differently from complete steel tools in a customs description — as well as on the destination

country and its customs interpretation.

Where mineral residue, soil or drilling fines travel with the material, additional import controls may apply in some jurisdictions independently of tariff classification.

Nautica does not assign a definitive tariff code in advance. Importers should confirm classification, duty treatment and any waste-shipment or phytosanitary/soil-related requirement with their customs broker or the competent authority before contracting.

Documentation

Commercial invoice, packing list, transport documents and any customs, waste-shipment or licensing documentation required for the specific trade lane. Documentary requirements are confirmed per shipment and per destination.

Commercial and specification disclaimer

This document describes typical characteristics of a secondary raw material stream. Scrap of this type is heterogeneous by nature: composition, alloy or binder content, contamination and recoverable content vary between lots and within a single lot.

Nothing on this page constitutes a guaranteed specification, a warranty of composition, a declaration of purity or an offer capable of acceptance. Guaranteed specifications, tolerances, sampling protocol, analysis method, acceptance criteria, deduction mechanics and rejection rights exist only where they are written into the signed sales contract between buyer and seller for a specific lot.

Where a buyer requires assured values, those values must be defined contractually and verified by an agreed inspection or analysis procedure before shipment.

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