

Tungsten Carbide Cutting Tool Scrap Specification — Inserts, End Mills, Drills, Rods and Dies

Material category: Solid carbide cutting and tooling scrap

Solid tungsten carbide cutting tool scrap: worn and rejected indexable inserts, end mills, drills, reamers, rods and dies arising from machining operations, tool rooms and regrind shops.

Cutting tool scrap is the most consistent tungsten carbide stream in the trade because it comes from a controlled industrial process: metal cutting. This specification covers indexable inserts, solid round tooling, rods and dies, and explains what distinguishes a straightforward tooling lot from a difficult one.

Material description

Cutting tool scrap is generated wherever metal is machined. Indexable inserts are consumed by turning, milling, boring, threading and parting operations and are discarded once every cutting edge is worn. Solid round tools — drills, end mills, reamers, burrs — are discarded when they can no longer be reground economically or when the geometry has been ground away. Blank rod ends and off-specification pressings come from tool manufacturers and regrinding shops rather than from end users.

This origin makes the stream comparatively predictable. It is generated by identifiable equipment in identifiable quantities, it is collected in a shop environment where separation is normal practice, and it is typically presented in a narrower size band than a general mixed lot. That predictability is why cutting tool arisings are usually the first stream a collector segregates.

Typical material forms

- Indexable inserts — turning, milling, threading, grooving and parting geometries, coated and uncoated
- Solid carbide end mills, including worn, broken and shank-only remnants
- Solid carbide drills, reamers, step tools and micro tooling
- Unground and ground carbide rod, blanks, and rod offcuts from tool manufacturing
- Drawing dies, punches, cold-heading tooling and forming dies, sometimes still in steel casings
- Regrind residue in solid form — ground-off tool bodies and rejected pressings

Specification table (typical characteristics)

Material category	Solid tungsten carbide cutting and tooling scrap
Material form	Indexable inserts, end mills, drills, reamers, rod, blanks, dies and punches
Primary recoverable material	Tungsten from sintered WC-Co tooling substrate
Binder / alloy considerations	Cutting grades typically use lower binder fractions and may contain additional cubic carbides; varies by grade and lot, analysis available or agreed where applicable
Common attachments	Steel shanks on part-ground tooling, braze alloy on tipped tools, holder hardware
Common contamination considerations	High speed steel tooling, ceramic and cermet inserts, PCD/PCBN tips, insert boxes and swarf
Moisture considerations	Coolant and cutting oil drained before packing; residual film typical of used tooling
Evaluation method	Visual and type-based sorting, density and file checks, XRF screening where agreed; contractual figures require agreed sampling and analysis
Typical packaging	Small steel drums or pails, reduced fill for inserts, palletised and strapped
Lot segregation	Separate packages for inserts, solid round tooling, rod and brazed items

Inspection availability	Third-party inspection can be arranged at the loading location; scope agreed contractually
Documentation	Commercial invoice, packing list by fraction, transport documents, plus customs and waste-shipment paperwork required for the lane

Evaluation considerations

- Proportion of solid carbide to steel-bodied and brazed items in the lot
- Presence of high speed steel tooling mixed into the drums
- Degree of segregation — inserts separated from round tooling and from rod
- Cleanliness: free of cutting fluid, swarf, chips and insert-box plastics
- Uniformity of the stream against the description and photographs offered
- Absence of ceramic, cermet and PCD/PCBN-tipped tooling, which are not WC-Co

Common contamination and deduction factors

- Steel insert holders, clamps, shims, screws, wrenches and tool bodies
- High speed steel drills, taps and end mills mixed with carbide tooling
- Ceramic and cermet inserts, and PCD or PCBN-tipped tools, which follow different recovery routes
- Plastic insert boxes, blister packs, labels and cardboard
- Cutting fluid, coolant, oil and machining swarf carried in the container
- Grinding wheel fragments and abrasive residue from regrind operations

Inspection and analysis

Coated tooling makes surface analysis particularly easy to misread in this stream. A titanium-based or aluminium-oxide coating sits directly in the analytical path, and a reading taken on an unprepared coated face reports the coating far more strongly than the substrate beneath it. Where screening is used to sort, reading a fractured or ground face — or a lightly cleaned reference spot — gives a more representative indication.

Elements normally of interest when screening a tooling lot are tungsten and cobalt for the substrate, iron for steel carry-over from holders and HSS, nickel for nickel-bound grades, and chromium as a further indicator of steel content. Titanium and tantalum readings may reflect coatings or cubic carbide additions and should not be read as impurities without context.

- 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

- Small steel drums, pails or strong bins, palletised and strapped
- Inserts packed in reduced-fill units to keep package weight manageable
- Separate packages for inserts, solid round tooling, rod and brazed items
- Free coolant and oil drained before packing; packages closed against ingress
- Each package labelled with lot reference, fraction and net weight

Customs classification

The customs classification applied to carbide tooling scrap depends on the composition and physical form of the goods actually shipped, on the destination jurisdiction, and on how the competent authority interprets the description of the material.

Lots that include steel-bodied or brazed tooling can be treated differently from lots of solid carbide, because the goods description must reflect the non-carbide material travelling with the carbide.

Nautica does not state a definitive tariff code for this stream in advance. Importers should confirm classification, duty treatment and any licensing or notification obligation with their customs broker or the competent customs 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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