

Tool Steel Scrap Specification — Die Blocks, Mould Tooling and Alloy Tool Steel Arisings

Material category: Tool steel and die steel scrap

Tool steel and die steel scrap: die blocks, mould bases and cavities, punches, dies, bar ends and machining arisings from cold-work, hot-work, plastic-mould and shock-resisting tool steel families, evaluated lot by lot.

Tool steel scrap is dominated by size, weight and grade uncertainty rather than by contamination. Die blocks and mould bases arrive in pieces a receiving yard cannot always handle, and the alloy families that determine value differ mainly by elements a handheld instrument reads only partially. This specification covers both problems.

Material description

Tool steel is alloy steel formulated for hardness, wear resistance, toughness or hot strength in tooling service. In the secondary market it is bought for its alloy content — chromium, molybdenum, vanadium, tungsten and nickel in varying proportions — and for the fact that large sections of it arrive in clean, single-piece, single-grade form, which is rare in scrap.

The material comes from press shops and forging plants replacing worn dies, plastics processors decommissioning moulds, stamping operations retiring punches and die sets, tool rooms clearing obsolete tooling, and machine shops generating bar ends and offcuts from tool steel stock.

Typical material forms

- Forging and stamping die blocks, in as-removed or pre-cut condition
- Plastic injection mould bases, cavities and cores, stripped of non-steel components
- Punches, dies, die sets, stripper plates and forming tooling
- Bar ends, blocks, plate offcuts and machined blanks from tool steel stock
- Rolls, shafts, mandrels and hot-work tooling from metal-forming operations
- Tool steel turnings and machining offcuts, drained and packed as a separate fraction

Specification table (typical characteristics)

Material category	Tool steel and die steel scrap (secondary raw material)
Accepted forms	Die blocks, mould bases and cavities, punches and dies, rolls and mandrels, bar ends, plate offcuts, turnings
Typical alloy families	Cold-work (D-series), hot-work (H-series), oil- and air-hardening (O and A series), plastic-mould (P-series), shock-resisting (S-series), water-hardening carbon grades
Composition	Chemistry is grade-dependent. This page does not state a guaranteed composition: alloy family, element ranges and any deleterious-element limits must be confirmed for the specific lot by material identification, XRF or OES analysis, mill certificates where available, or an agreed inspection before shipment.
Identification	Surviving marking and die-shop records, origin process, XRF for alloying elements on a prepared surface; OES where carbon-dependent grades must be resolved
Size considerations	Maximum piece dimensions and weight agreed before offering; cutting scope and resulting size agreed in writing where required
Mould tooling preparation	Copper and beryllium-copper inserts, hydraulics, heaters, wiring, bushings and non-steel hardware removed before the material is offered as tool steel

Common contamination	Non-ferrous inserts and fittings, hydraulic residue, electrical components, carbide and HSS tooling, transport fixtures and packing debris
Exclusions	Fire-damaged tooling, sealed or pressurised assemblies, material carrying hazardous process residue, unstripped live hydraulic assemblies
Typical packaging	Stacked and banded solids, crates or bins for smaller tooling, separate closed drums for turnings; weight distributed for safe loading
Inspection	Third-party inspection can be arranged at the loading location; scope and appointment agreed in the sales contract
Documentation	Commercial invoice, packing list and transport documents; mill certificates or analysis where they exist and have been agreed; waste-shipment and customs documentation as required by the specific trade lane

Common contamination and deduction factors

- Copper and beryllium-copper cooling inserts left in mould cavities
- Hydraulic fittings, hoses, oil residue and remaining hydraulic fluid
- Electrical heaters, thermocouples, wiring looms and control components
- Bronze bushings, brass fittings, springs, seals and non-ferrous hardware
- Carbide inserts, HSS tooling and cemented carbide wear parts mixed into the steel
- Concrete, wood, plastic packing and bolted-on steel frames or transport fixtures
- Fire-damaged tooling and material contaminated with hazardous process residue, which is excluded

Inspection and analysis

Screening places tool steel in a family by reading its alloying elements on a prepared surface, and it detects non-ferrous inserts and foreign tooling in a lot. That is the routine use of instruments in this stream and it is done before packing.

Carbon content, which separates several tool steel grades sharing a similar alloy signature, is not readable by handheld XRF. Optical emission spectroscopy or laboratory analysis on an agreed sample is what establishes a grade-level figure, and where the buyer's route depends on it the method belongs in the contract.

- Handheld XRF reads a small surface area of the piece it is pointed at; scale, paint, plating, coatings, oxide and machining residue all bias that reading.
- Handheld instruments read alloying elements well but are weak or blind on light elements — carbon in particular — so they cannot separate grades that differ mainly by carbon content.
- A reading on one piece is not a lot average. Mixed-grade lots require representative sampling across packages, layers and size fractions before a figure is treated as commercially meaningful.
- Screening results are used to sort and to open a price discussion. Contractual figures require the sampling protocol, laboratory method and acceptance criteria the parties have agreed in writing.

Customs classification

Customs classification for alloy tool steel scrap depends on the actual composition and physical form of the goods, on whether the material is solid scrap, turnings, powder or residue, on the destination country and on how the competent authority in that jurisdiction interprets the material description.

Mixed-grade and mixed-family lots can create additional classification complexity, because the description of the goods on the invoice and packing list must reflect what is actually shipped rather than the best fraction in the load.

Nautica does not assign a definitive tariff code in advance for this stream. Buyers and importers should confirm the applicable classification, duty treatment and any import licensing or waste-shipment obligation with their own customs broker or the competent customs authority for the destination 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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