

ADVANCED MATERIALS

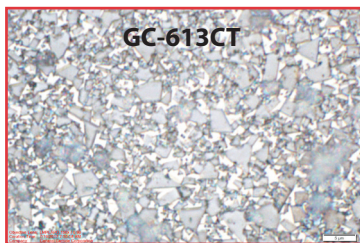
Advancements in Metallurgy Lead to Development of Specialty Tungsten Carbide Grades

Over the past decade, General Carbide engineers have studied tungsten carbide's reaction to other metals to determine how to enhance tooling performance and extend tool life. These findings have led to the use of advanced metallurgy in the development of carbide tooling for the most demanding applications.

Advanced proprietary grades of tungsten carbide incorporate these alloying agents to deliver exceptional performance:

- **Tantalum Carbide** for its anti-friction properties
- **Chromium Carbide** for its corrosion resistance properties

The combination of proprietary crystalline structure, Tantalum Carbide and Chromium Carbide provides the highest impact grades while also extending the production life.



Tungsten Carbide Macrocrystalline Technology

Beginning with our tungsten carbide powder, the crystalline structure is designed to

be free of uncombined carbon while providing a well-defined internal microstructure. The result is a higher fracture toughness.

By developing grades ranging from sub-micron-grained to coarse (4 μ -6 μ), we are able to develop tooling for every application. Sub-micron grades provide high hardness and wear resistance while coarser grades offer strength and toughness.



The combination of grain size with tantalum carbide and chromium carbide provides the highest impact grades while extending the production life.

Protecting Your Investment

Combining chromium carbide (Cr₃C₂) at specific concentrations in the powder protects tooling from cobalt leaching that leads to surface pitting and corrosion when tooling is exposed to water-based lubricants and electrolytic attack.

Chromium carbide at specific concentrations in the powder protects tooling from cobalt leaching, surface pitting and corrosion caused by exposure to water-based lubricants and electrolytic attack

Putting it All Together From Powder to Polish

These metallurgical advancements combine to create a line of products that use grain size and macro-crystalline technology, along with tantalum carbide and chromium carbide, to produce specialty grades that provide maximum fracture toughness and extended production life.