

TUNGSTEN CARBIDE HC STARCK CS (Cutting Solution)

Description of Product HC STARCK Cutting Solution grades are designed for fine grained hard metal cutting tools, dies, end mills and drills. HC STARCK CS grades provide a world class lot to lot consistency in terms of application properties which makes them the first choice for customers manufacturing high volumes of precision tools.

Grades Available*

Product Designation

CS50, CS60, CS80, CS100, CS150, CS200

*: other grades on request, all grades can be delivered including grain growth inhibitors

Chemical Characteristics

(Mass fraction in % [cg/g]; ppm [$\mu\text{g/g}$])

	Limit		
$C_{\text{total}}^{(1)}$	6.10	–	6.15 %
$C_{\text{free}}^{(2)}$	max.		0.05 %
Al	max.	15	ppm
Ca	max.	15	ppm
Co	max.	25	ppm
Cr	max.	50	ppm
Cu	max.	10	ppm
Fe	max.	150	ppm
Mo	max.	25	ppm
Na	max.	10	ppm
Ni	max.	70	ppm
Si	max.	20	ppm
S	max.	10	ppm

Physical Characteristics & Oxygen content

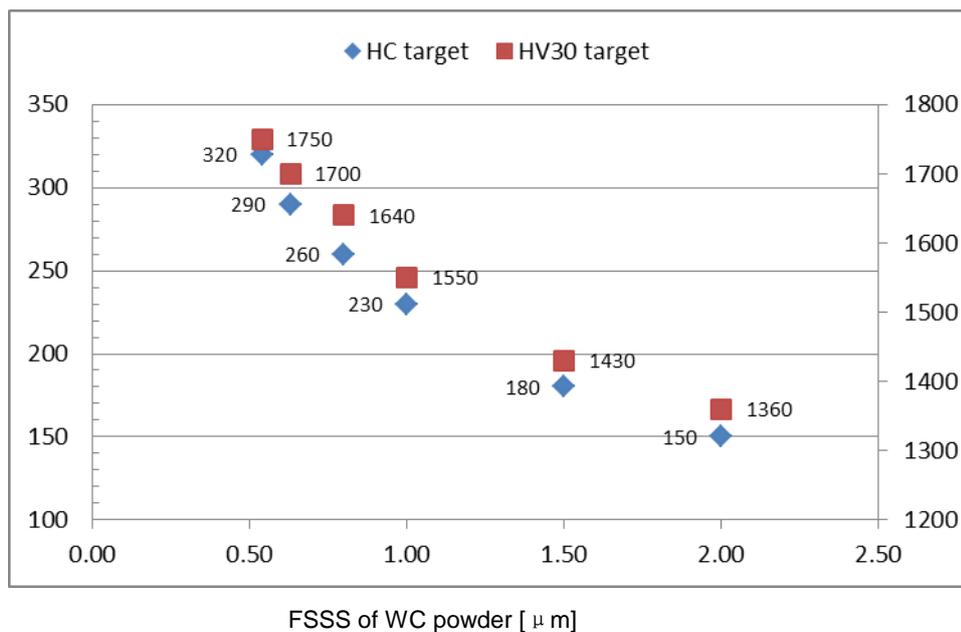
Grades	Fisher Number (as supplied) [μm]			Oxygen
	Average	Min.	Max.	Max. [%]
HC STARCK CS50	0.54	0.50	0.58	0.40
HC STARCK CS60	0.63	0.58	0.68	0.40
HC STARCK CS80	0.80	0.75	0.85	0.25
HC STARCK CS100	1.00	0.90	1.10	0.25
HC STARCK CS150	1.50	1.40	1.60	0.12
HC STARCK CS200	2.00	1.80	2.20	0.12

Hard Metal Characteristics (target data, for reference only)**

**: Test conditions WC-10%Co, doping 0-1% Cr₃C₂

2-3h attritor milling (balls:material = 7:1), pressing 200MPa, sintering 45 minutes, 1380°C, vacuum
Magnetic Saturation target 75-85%

Grades	Coercive Force, HC		Hardness	
	HC target	unit	HV30 target	unit
HC STARCK CS50	320	Oe	1750	HV30
HC STARCK CS60	290	Oe	1700	HV30
HC STARCK CS80	260	Oe	1640	HV30
HC STARCK CS100	230	Oe	1550	HV30
HC STARCK CS150	180	Oe	1430	HV30
HC STARCK CS200	150	Oe	1360	HV30



- (1) For doped material total carbon is increased corresponding to the amount of grain growth inhibitors
- (2) Determination of free carbon for Cr₃C₃ doped materials not possible with high accuracy

Packaging	- 50 kg in 16 l steel drums with PE-bags Packaging unit = 1000 kg in 20 drums on CP1 pallet. Other kinds of packaging are available on request.
Storage and Handling	The user must observe all the appropriate safety regulations in force in the country of use. Store in a closed container.
Documentation	An inspection document in accordance with EN 10204 is supplied with every shipment.

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