

TUNGSTEN CARBIDE DS

Description of Product DS Grades are fine, deagglomerated powders showing a narrow grain size distribution. DS grades are generally recommended for fine-grained cutting tools, dies, end mill inserts and drills. Standard DS Grades are WC DS 40, 50, 60, 70, 80, 90, 100, 120, 130, 150, 180, 200, 250. All grades can be customized to include grain growth inhibitors (TaC, Cr₃C₂, VC, NbC). WC DS 40 to WC DS 80 are preferentially doped with VC and/or Cr₃C₂.

Grades Available	Product Designation
	DS 40, DS 50, DS 60, DS 70, DS 80, DS 90, DS 100,
	DS 120, DS 130, DS 150, DS 180, DS 200, DS 250

Chemical / Physical Characteristics

(Mass fraction in % [cg/g]; ppm [μ g/g])

C _{total} ¹⁾	6.13 ±0.05	%
Al	max. 20	ppm
Ca	max. 25	ppm
Co	max. 100	ppm
Cr ²⁾	max. 50	ppm
Cu	max. 10	ppm
Fe	max. 150	ppm
Mo	max. 100	ppm
Na	max. 20	ppm
Ni	max. 70	ppm
S	max. 30	ppm
Si	max. 40	ppm

Grades	Fisher number (as supplied)	Spec. surface area BET ⁴⁾	max. O	max. C _{free} ³⁾
DS 40		2.3 - 2.7 m ² /g	0.50 %	0.10 %
DS 50	0.50 - 0.60 μ m	(2.0 - 2.3) m ² /g	0.40 %	0.08 %
DS 60	0.60 - 0.70 μ m		0.40 %	0.08 %
DS 70	0.70 - 0.80 μ m		0.30 %	0.06 %
DS 80	0.80 - 0.90 μ m		0.25 %	0.06 %
DS 90	0.90 - 1.00 μ m		0.25 %	0.06 %
DS 100	1.00 - 1.20 μ m		0.25 %	0.06 %
DS 120	1.10 - 1.30 μ m		0.12 %	0.06 %
DS 130	1.20 - 1.40 μ m		0.12 %	0.06 %
DS 150	1.40 - 1.60 μ m		0.12 %	0.06 %
DS 180	1.70 - 1.90 μ m		0.12 %	0.06 %
DS 200	1.90 - 2.10 μ m		0.12 %	0.06 %
DS 250	2.30 - 2.70 μ m		0.10 %	0.06 %

1) For doped material total carbon is increased corresponding to the amount of grain growth inhibitors, 2) For Cr₃C₂-doped carbides not valid, 3) Determination for Cr₃C₂-doped carbides not possible, 4) Surface area BET per ASTM D3663, for WC DS 50 for information only.

Packaging

- 50 kg in 18 l steel drums with PE-bags
Packaging unit = 400 kg in 8 drums on CP1 pallet.
- 100 kg in 30 l steel drums with PE-bags
Packaging unit = 800 kg in 8 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.

Hazards identification in Advertising (REGULATION (EC) No 1272/2008 Article 48)
None.

REACH Registration acc. REGULATION (EC) No 1907/2006 dated December 18, 2006

H.C. Starck is taking all necessary actions under REACH in order to continue the supply of its products. All components of the HCST products are registered, pre-registered or exempted from registration. You will find the REACH Registration No. (if already assigned) in section 3 of our EU Safety Data Sheet.

Hazardous Chemicals

According to H.C. Starck's (the Company) environmental policy, to the best of the Company's knowledge, from the Company's level of awareness at date and with respect to the directives listed herein (in the **currently valid and last amended version** - which have been reviewed after its publication by Company with regard to its relevance for the Company's aforementioned product), the Company assumes that the substances regulated by said directives are not contained in the product in amounts which exceed the applicable limits. The Company does not analyse the final product with regard to these substances, before the product is sent to the customer.

- * REACH Regulation (EC) No 1907/2006 dated December 18, 2006
- * REACH Regulation (EC) No 1907/2006, List of Candidates and Appendix XIV
- * GHS/CLP Regulation (EC) No 1272/2008 dated December 16, 2008
- * Directive 2011/65/EU of the European Parliament and the Council dated June 8, 2011 in respect of the restriction of the application of certain dangerous substances in Electrical and Electronic equipment (RoHS)
- * Directive 94/62/EC of the European Parliament and the Council dated December 20, 1994 in respect of packaging and packaging waste

Conflict Free Smelter status

H.C. Starck is following the conflict free smelter program, status see <http://www.conflictreesourcing.org>
see also the H.C. Starck Group Raw Material Procurement Statement <http://www.hcstarck.com>

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