

SDC-i

Introduction:

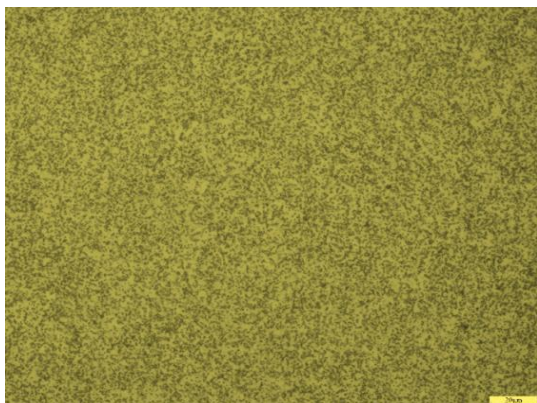
SDC-i is a hot-work tool steel containing chromium, molybdenum and vanadium, It belongs to the 1.2367 category in the NADCA standard. Compared with MDC-i, it has a higher molybdenum content. During high-temperature tempering, secondary carbides precipitate, enhances it higher high-temperature strength and better resistance to temper softening.

- Excellent high-temperature resistance
- Excellent erosion resistance
- Excellent the thermal fatigue resistance
- Excellent nitriding and oxidation performance
- Excellent dimensional stability and hardness uniformity after heat treatment
- Excellent high-temperature dimensional stability

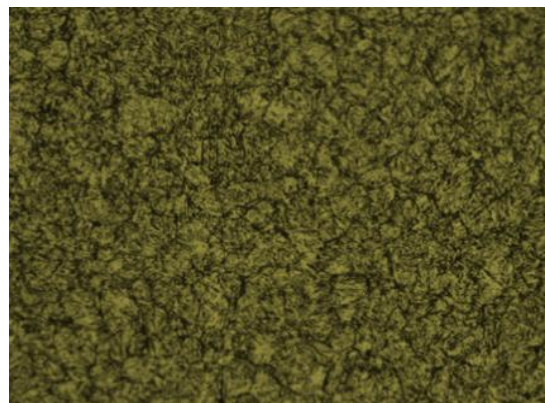
Chemical Composition:

Typical analysis (wt%)	C	Mn	Si	S	P	Cr	Mo	V
SDC-i	0.36	0.62	0.30	0.001	0.005	5.20	3.00	0.70
1.2367 Modified	0.32~0.40	0.10~1.20	0.10~0.50	0.003max	0.020Max	4.70~5.85	2.00~3.30	0.40~0.70

Spheroidized Annealing Structure



Tempered Martensitic Structure



Cleanliness:

Rated according to ASTM E45 standard, non-metallic inclusions A, B, C, and D are all ≤ 1.0 level.

A		B		C		D	
thin	heavy	thin	heavy	thin	heavy	thin	heavy
0.5	0	0.5	0.5	0	0	0.5	0

Applications:

SDC-i is suitable for small die-casting molds and for gate areas that require high erosion resistance. It works especially admirably when combined with nitriding surface treatment or PVD coating.

Typical Applications:

Molds with simple shapes and die-cast products with a wall thickness greater than 10mm. It's also used for inserts in areas prone to gate erosion or interfacial reactions and areas where heat is concentrated.

Physical Properties Room Temperature

Temperature	200°C	400°C	600°C
Density Kg/m ³	7830	7780	7710
Elastic Modulus MPa	2.15 X 10 ⁵	1.95 X 10 ⁵	1.70 X 10 ⁵
Thermal Expansion Coefficient (°C ⁻¹)	11.7 X 10 ⁻⁶	12.2 X 10 ⁻⁶	12.8 X 10 ⁻⁶
Thermal conductivity W/m°C	29.3	30.3	31.2

Mechanical Properties:

Hardness	44HRC	46HRC	48HRC
Tensile Strength MPa	1510	1600	1690
0.2% Yield Strength (MPa)	1200	1320	1450
Elongation (%)	13	12.8	12.5
Reduction of Area (%)	59	58	55

Heat Treatment:

Quenching + Tempering

Normally vacuum quenching + 3 tempering cycles; for molds with a single-piece thickness ≥ 300 mm, tempering 4 times.

Stress-Relief Tempering:

Recommended after finishing machining and before trial molding. Suggested stress-relief tempering temperature: 500–540 °C, with protective atmosphere to avoid oxidation.

Nitriding& oxidation:

Recommended after the mold passes trial molding and before mass production.

Nitriding produces surface compressive stress, with post-nitriding surface hardness of about 1000–1200 HV0.2, offering excellent wear resistance and anti-adhesion properties, significantly extending mold life.