



钢铁之家

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全球钢号百科!

Global Steel Grade Encyclopedia



涵盖的行业或国家与地区类别



美国材料与试验协会

GJB

国家军用标准



动力机械工程师协会

EU

前欧洲标准化

AISI

美国钢铁学会



德国工业标准

AMS

航空航天材料规范



国际标准

JASO

日本汽车标准组织

EN

欧洲标准

JB

中国机械行业标准

UNS

统一编号系统

UNI

意大利标准



美国机械工程师协会

SS

瑞典标准



国家标准



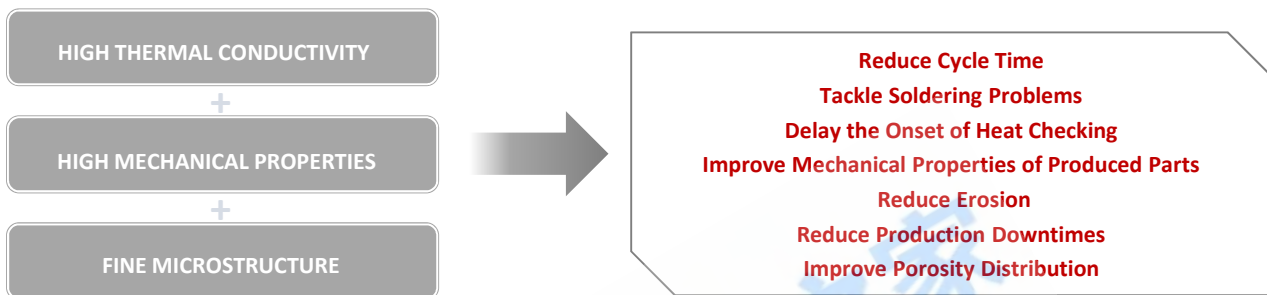
日本工业标准

HTCS[®] -130 DC

HTCS[®]-130DC presents a very high thermal conductivity combined with the typical mechanical properties of a high quality hot work tool steel. As a member of the DC family and due to the novel manufacturing techniques employed, HTCS[®]-130DC features extreme purity, micro-cleanliness and a very fine homogeneous microstructure.

Reduction of Manufacturing Costs

HTCS[®]-130DC is used in applications requiring very high thermal conductivity. In die casting, HTCS[®]-130DC is mainly used as die material for applications that require high productivity, inserts and dies with complex geometries that tend to have soldering or hot spot problems, dies and inserts with an insufficient cooling performance if made from conventional hot work tool steels, shot pads, pin cores, dies for producing high quality components, as well as other applications that require lower cycle times. HTCS[®]-130DC is also used in dies and inserts of plastic injection moulding to reduce cooling times and resolve problems related to an insufficient temperature distribution with conventional hot work tool steels, such as warpage, blisters welding lines etc.. HTCS[®]-130DC is particularly advantageous for plastic injection moulds that require very high levels of polishability and high productivity.



Purest Grades

HTCS[®]-DC grades are the family of the purest and cleanest grades of very high thermal conductivity tool steels for hot work applications in the market. This outstanding result has been achieved by combining the profound knowledge obtained during several years of extensive study of the behavior of HTCS[®] tool steels in die casting applications, together with several decades of experience in high quality tool steel manufacturing along with the newest tool steel production technology of this century.

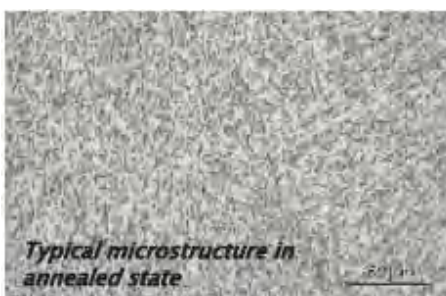
Typical Purity Levels

P (w.%)	S (w.%)	Ni+Cu+Al+...(w%)	H ₂ (ppm)	N (ppm)	O (ppm)
< 0.001	0.0001	0.03	0.5	15	2

Typical Micro-cleanliness Levels

Inclusion Type	A	B	C	D
Heavy	0	0	0	0
Thin	0	0	0	0 – 0.5

Typical Grain Size: ASTM 10-12



Heat Treatment

Like most tool and other specialty steel grades High Thermal Conductivity Steels HTCS® obtain their optimized mechanical and physical properties through a corresponding heat treatment of the material prior to final machining.

It is recommended to directly contact ROVALMA, S.A. regarding the optimized heat treatment for a given application. If the tool steel is to be employed in an application, in which thermal fatigue is the main failure mechanism, including but not limited to die casting, extrusion or forging, if users are located in Europe, we recommend that the heat treatment is performed by ROVALMA, S.A. For overseas users, we recommend that the heat treatment is performed by authorized local heat treatment shops, which have been specifically homologated to this purpose.

Note that ROVALMA, S.A. explicitly excludes all liabilities for the results and quality of heat treatments performed by third companies or other entities, including homologated heat treatment shops, which are independent contractors.

Welding

HTCS®-130DC can be welded like other hot work tool steels. It is generally recommendable to use HTCS® welding consumables for zones, which require high thermal conductivity in the welded area. For further details, please refer to our Welding Guidelines for HTCS® materials.

Physical and Mechanical Properties

Properties	300 K	725 K	Unit
Mechanical Resistance	1343	1009	MPa
Yield Strength 0.2 %	1328	966	MPa
Strain	13	18	%
Density	8.06	7.92	g/cm ³
Elastic Modulus	210		GPa

The values given in the table are typical values (neither maximum nor minimum values), for properly heat treated materials at a hardness level of 44 HRc.

Thermal Properties

Properties	300 K	475 K	Unit
Linear Thermal Expansion Coefficient		12.2	$\times 10^{-6}/K$
Thermal Diffusivity	16.2	12.8	mm ² /s
Thermal Conductivity	60	53	W/m·K
Specific Heat Capacity	0.47	0.51	J/g·K

The values given in the table are typical values (neither maximum nor minimum values), for properly heat treated materials at a hardness level of 44 HRc.

Thermal conductivity values are calculated on the basis of thermal diffusivity values measured by laser flash.

Tool Steel Grade General Comparison

