

ROVALMA

THE STEEL INNOVATOR



HTCS[®]-130 DC

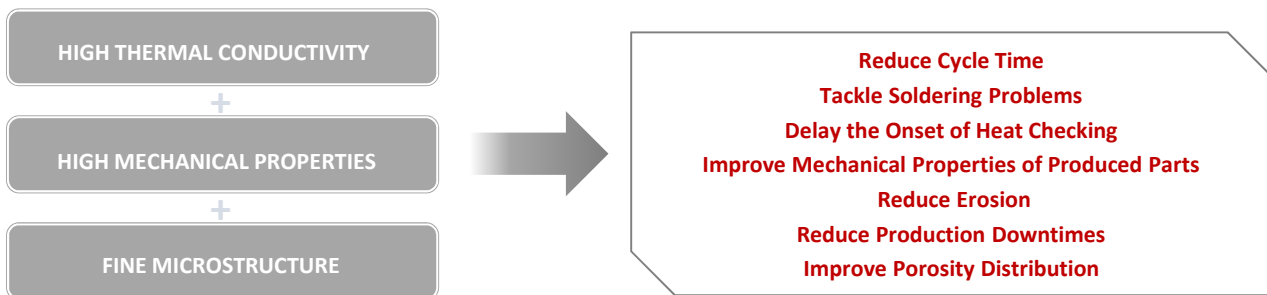
The New Quality Standard for Die Casting Applications

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.

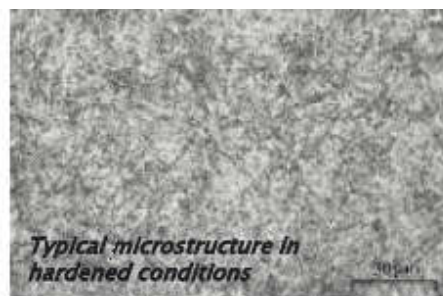
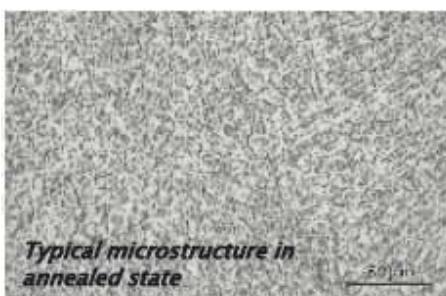
Typical Purity Levels

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.

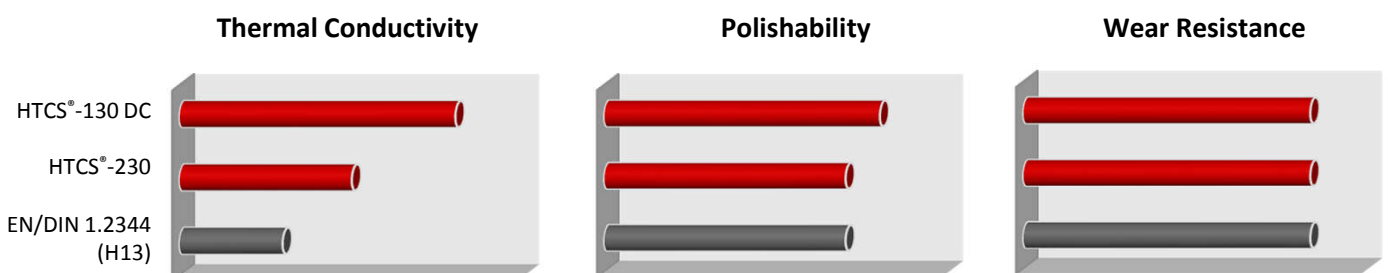
Thermal Properties

Properties	300 K	475 K	Unit
Linear Thermal Expansion Coefficient		12.2	x10 ⁻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



Designer & Provider of First-Class Tool Materials

ROVALMA, S.A. provides innovation in tool materials. Thanks to comprehensive research, innovative design and development, most recent production techniques as well as in depth quality control, we have achieved significant advances in the knowledge about material forming processes and generated important know-how regarding the production and optimal usage of our materials for a specific application. As a result, we can provide you with **first-class tool steels** for cold and hot work material forming processes and outstanding technical assistance.

We are proud to make our High Performance Tool Steels available to you for your specific applications. Do not hesitate to contact us for the latest information.

Application Engineering Service

In order to fully exploit the advantages and the potentials of ROVALMA's High Performance Tool Steels, we offer our customers the support of our Application Engineering Service. Our highly qualified and dedicated engineers can assist you in selecting the optimized grade for your application and provide you with the corresponding technical recommendations. It is our mission to increase the competitive-advantage of our customers and support them in achieving the highest possible cost-effectiveness.

You can access our service directly by sending an email to: ae-fast@rovalma.com.



ROVALMA, S.A. carries out ongoing research for many applications regarding the usage of the materials here presented. This research often brings along significant advances in the knowledge of a given process and thus important information regarding the best possible usage of the materials for a specific application. We strongly recommend to get in contact with ROVALMA, S.A. for the latest information regarding a specific application.

Rovalma S.A.
HT
C/ Apol·lo, 51
08228 Terrassa (Barcelona)
SPAIN
Tel. (+34) 935 862 949
Fax (+34) 935 881 860

Rovalma S.A.
Head Office
C/ Collita, 1-3
08191 Rubí (Barcelona)
SPAIN
Tel. (+34) 935 862 949
Fax (+34) 935 881 860

Rovalma GmbH
German Office
Geibelstraße 5
12205 Berlin
GERMANY
Tel. +49 (0)30 810 59 717
Fax +49 (0)30 810 59 715

www.rovalma.com

© ROVALMA, S.A. 2017. All rights reserved. This brochure may not be, entirely or partially, reproduced, copied, distributed or modified, without the explicit authorization by ROVALMA, S.A. In particular, it is prohibited to alter the contents and/or use, any information provided herein, out of context. **NOTICE:** All information provided herein is for general information purposes only. The optimal choice of a tool steel depends on many factors, including, but not limited to individual process parameters, allowable tolerances and other production process factors, work conditions and preferences. **DISCLAIMER:** All information provided in this datasheet is provided "AS IS" and "As available" and without warranty, express or implied, of any kind regarding completeness, faultlessness, accuracy, up-to-dateness, individual interpretations, merchantability or fitness for any purpose and no representation contained in this datasheet shall be binding upon ROVALMA, S.A. All information shall be provided and accepted at Reader's / Receiver's risk.