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2025版



世界知名的工模具材料供应商及解决方案提供者

A WORLD LEADING TOOL AND DIE MATERIAL SUPPLIER AND SOLUTION PROVIDER

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CULTURE OF HEYE

企业文化

公司使命 MISSION

制造高性价比工模具材料，推动行业进步。

Manufacturing cost-effective products and push the industrial technology forwards.

公司愿景 PERSPECTIVE

世界知名的工模具材料供应商及解决方案提供者。

A world leading tool and die material supplier and solution provider.

公司定位 ORIENTATION

以科技创新为引领，成为工模具材料开发与应用的典范。

A model for the development and application of tooling materials guided by scientific and technological innovation.

企业精神 SPIRIT

天道酬勤 Diligence makes good achievement

业道酬精 Perfection makes good skill

人道酬善 Kindness makes good humanity

德道酬俭 Thrift makes good virtue

商道酬信 Honesty makes good business

核心价值观 CORE VALUES

聚焦客户 Focus on customers

共创共享 Creat and share together



PROFILE OF HEYE

公司简介

河冶科技股份有限公司（简称“河冶科技”）是中国新材料领域的龙头企业—安泰科技股份有限公司（股票代码000969）控股的国有股份制企业，主要股东有安泰科技股份有限公司、中国钢研科技集团有限公司，是研发和生产相结合的先进金属材料及制品生产企业，是中国机床工具工业协会和中国模具工业协会会员，国家专精特新小巨人企业和国家级绿色工厂，工信部制造业单项冠军企业，省级科技创新型企业，获河北省政府质量奖，并设有CNAS国家重点实验室和博士后科研工作站。

河冶科技产品按照应用类别分为刀具材料、模具材料、关键零部件材料三大系列；按制备工艺分类有传统工艺、粉末冶金和喷射成形三种；按产品品种分为棒材、银亮材、锻材、异型材、线材、丝材、预硬棒材、带材、板材、锻件、锻坯、刀具共十二个系列上千种规格，可根据客户要求定制焊接刀柄、缩柄丝锥毛坯、轧辊坯、空芯拉刀毛坯、预加工盾构滚环等延伸产品。河冶科技产品广泛应用于工具、模具、量具、汽车、航空、船舶、冶金、机械、轨道交通、汽轮机等诸多工业领域；产品销往国内二十六个省市、自治区、直辖市，并远销欧美、东南亚等十余个国家和地区。

河冶科技秉承“聚焦客户、共创共享”的核心价值观，倡导并奉行“天道酬勤、人道酬善、商道酬信、业道酬精、德道酬俭”的企业精神，以“实事求是、不尚空谈、立即行动、持之以恒”为行为准则，持续不断提高研发创新能力与技术装备水平，不断完善销售模式和提高服务质量，努力成为世界知名的工模具材料供应商及解决方案提供者。



2023' (第六届) 中国高速钢应用技术论坛



Heye Special Steel Co., Ltd. (HEYE) is a state-owned joint-stock enterprise controlled by Advanced Technology & Materials Co., Ltd. (AT&M, stock code: 000969), the flagship enterprise in China's new materials sector. Its main shareholders are AT&M and China Iron & Steel Research Institute Group. HEYE is a specialized high speed tool steel enterprise combined research R&D with production. As a member of China Machine Tool & Tool Builders' Association (CMTBA) and the China Die & Mould Industry Association (CDMIA), HEYE has earned multiple prestigious recognitions, such as National "Little Giant" Enterprise, National Green Factory, National Manufacturing Single Champion Enterprise recognized by the Ministry of Industry and Information Technology (MIIT) and Provincial Technology Innovation Pioneer Enterprise. The company has been honored with the Hebei Provincial Government Quality Award for outstanding quality management. Its R&D capabilities are further strengthened by a CNAS-accredited National Key Laboratory and a Postdoctoral Research Workstation.

Our products are mainly in 3 categories according to grades, which are HSS, die material and key component material. According to the preparation process, there are three types: traditional process, powder metallurgy and spray forming. The products could be categorized into 12 series and nearly 1000 sizes, such as forged bars, forged billet, hot rolled round bar, prehardened bar, square bar, flat bar, coil, cold drawn materials, peeled materials, ground materials, sheet steel, hot rolled strip and cold rolled steel, bit tool, etc. Extended products such as welding tool holder, shrinkage handle tap blank, roll blank, hollow broach blank and pre-processed shield roll ring can be customized according to customer requirements. The products are widely applied in tools, moulds, measuring tools, automobiles, aviation, ships, metallurgy, machinery, rail transit, steam turbines and many other industrial fields, and sold to 26 provinces, autonomous regions and directly governed cities. They are exported to more than 10 countries and regions in Europe, America and South-east Asia.

HEYE Technology upholds "Customer Focus, Shared Success" as its core values, embracing the corporate ethos that "Diligence rewards under Heaven, Kindness rewards humanity, Integrity rewards commerce, Excellence rewards craft, and Frugality rewards virtue." Guided by the code of conduct—"Seek truth from facts, reject empty talk; act decisively, persevere relentlessly"—it continuously advances R&D innovation and technical capabilities while refining sales models and service quality, striving to become a world-renowned supplier and solutions provider of tool and die materials.

HISTORY OF COMPANY

公司大事记

2022年06月 河冶科技“河北省高品质工模具材料重点实验室”获批建设
2013年09月 设立河冶科技股份有限公司博士后科研工作站
2012年06月 成功制备 ϕ 500 (3.6吨)喷射成形钢锭
2011年03月 河冶科技新区试生产
2009年11月 建成河北省高速工具钢工程技术研究中心(河北省高速工具钢技术创新中心)
2007年03月 与安泰联合开发粉末冶金高速钢
2006年12月 住友商事成为河冶科技第二大股东
2005年11月 成立“先进钢铁材料技术国家工程研究中心河冶工模具钢研究中心”
2003年10月 安泰科技股份有限公司成为控股股东
2000年08月 河冶科技股份有限公司成立
1986年07月 规模化生产高速工具钢
1977年10月 生产高速工具钢热轧钢带
1974年05月 河北省冶金研究所成立并开始试生产W18Cr4V高速钢方坯

2022.06 Hebei Provincial Key Laboratory of High Quality Tooling Materials was approved for establishment.
2013.09 The post-doctoral scientific research workstation of Heye Special Steel Co., Ltd. was established.
2012.06 The spray forming billet with diameter of ϕ 500mm and weight of 3.6 ton was prepared successfully.
2011.03 HEYE new plant started production.
2009.11 Hebei High-speed Tool Steel Engineering Technology Research Center (the former Hebei Engineering and Research Center for HSS Technology) was established.
2007.03 PM HSS was developed with the association of AT&M.
2006.12 Sumitomo Corporation became the second biggest shareholder.
2005.11 HEYE Tool and Die Steel Research Center of NERCAST was founded.
2003.10 AT&M became the new dominant shareholder of HEYE.
2000.08 Heye Special Steel Co., Ltd. was founded.
1986.07 High Speed Tool Steel was put into large-scale production.
1977.10 HSS hot-rolled strip was produced in miniature.
1974.05 Hebei Metallurgy Research Institute was founded and started trial production of HSS-W18Cr4V billet.



HONORS

公司荣誉



2024年03月 河冶科技被工信部认定为制造业单项冠军企业
2022年12月 河冶科技被认定为河北省单项冠军企业
2022年12月 河冶科技被认定为河北省科技领军企业
2022年07月 河冶科技被认定为国家级专精特新“小巨人”企业
2021年12月 河冶科技被认定为河北省“专精特新”示范企业
2021年07月 河冶科技赵勇荣获“全国技术能手”称号
2020年12月 河冶科技被工信部评定为“绿色工厂”
2018年11月 荣获“河北省诚信企业”称号, 总经理米永旺获“河北省企业诚信建设优秀工作者”
2016年01月 “锻制高合金钢冷轧辊辊坯制备技术开发”获河北省科技进步三等奖
2016年01月 荣获2015年河北省政府质量奖
2013年01月 通过GB/T 24001-2004环境管理体系和GB/T 28001-2011职业健康安全管理体系认证
2012年10月 研制开发高硬度高耐磨粉末冶金高速钢, 获河北省科技进步三等奖
2010年12月 高韧高耐磨冷作模具钢HYC3获河北省技术发明三等奖
2010年07月 河冶科技被认定为高新技术企业
2000年08月 河冶科技当选中国特钢行业高速钢专业组组长单位
1988年12月 研制开发W4Mo3Cr4VSi (D606) 低合金高性能高速钢, 获河北省科技进步三等奖
1981年09月 研制开发W9通用高速工具钢, 获冶金部发明一等奖

2024.03 HEYE had been recognized by MIIT as a Manufacturing Single Champion Enterprise
2022.12 HEYE was recognized as Hebei monomial champion enterprise.
2022.12 HEYE was recognized as Hebei leading enterprise of science and technology.
2022.07 HEYE was recognized as a national specialized "little giant" firm
2021.12 HEYE was recognized as the "Hebei specialized and special new" demonstration enterprise
2021.07 Mr. Zhao Yong won the title of "National Technical Expert"
2020.12 HEYE is rated as "Green Factory" by the Ministry of Industry and Information Technology
2018.11 "Hebei Honest Enterprise" and Mr. Miyongwang (GM) "Hebei excellent workers in the integrity construction of enterprises"
2016.01 "The Third Award for Science and Technology in Hebei Province" for invention of preparation technology development for cold Roller billet of forged high alloy steel
2016.01 The company won the Government Award for Quality of Hebei Province
2013.01 GB/T 24001-2004 Environmental Management System and GB/T 28001-2011 OHSMS Certification
2012.10 "The Third Award of Hebei Science and Technology Progress" for invention of high hardness and high wear-resistant HSS-PM
2010.12 "The Third Award of Hebei Science and Technology Progress" for HYC3 invention
2010.07 High Technology Enterprise was titled.
2000.08 "The leader unit of HSS Specialty Group"
1988.12 "The Third Award of Hebei Science and Technology Progress" for Invention of W4Mo3Cr4VSi (D606)
1981.09 "The Top Award" by China Ministry of Metallurgy for general purpose HSS-W9 invention

QUALITY ASSURANCE

质量保证

QUALITY ORIENTATION

公司质量方针

- | | |
|--------|-------------------------------------|
| 聚焦高端产品 | Focus on high-end products |
| 提供优质服务 | Providing high quality services |
| 优化体系运行 | Optimization of system operation |
| 持续提升绩效 | Continuous promotion of performance |



质量体系认证证书
GB/T 19001-2008 Quality Management System Certification

FOCUS ON CUSTOMERS

顾客为关注焦点

河冶科技股份有限公司愿与广大顾客共创名牌产品，让河冶产品包含在顾客的名牌产品之中。
Heye Special Steel Co., Ltd. is willing to create Top Brand with customers. Let HEYE for Top Brands, In Top Brands and be Top Brand.

PROCESS CONTROLLED

过程控制“四精一严”

精心设计、精心配料、精心制造、精诚服务、严格检验
Full design, fine batching, precision manufacturing, sincere service and perfect checkout.



1. 直读光谱分析仪
Direct-reading optical spectrum analyzer
2. 气体分析仪
Gas analyzer
3. 碳硫分析仪
Carbon-sulfur analyzer
4. X-射线荧光分析仪
X-ray fluorescence analyzer



1. 电液伺服万能试验机
Elector-hydraulic servo universal testing machine
2. 光学显微镜
Optical microscopy
3. 扫描电镜
Scanning electronic microscopy
4. 冲击试验机
Impact Testing Machine

R&D 研究开发

公司设有博士后科研工作站、先进钢铁材料技术国家工程研究中心—河冶工模具钢研究中心并承建河北省高速工具钢技术创新中心、河北省高品质工模具材料重点实验室、河北省企业技术中心、河北省工程研究中心，聘请国内知名学者和学科带头人担任专家委员会成员。致力于新钢种和新工艺研发，包括高速钢、模具钢、合金工具钢、不锈钢、特殊要求的合金、粉末冶金、喷射成形产品及工艺研究和开发。与国内钢铁研究总院、成都工具研究所、北京科技大学、河北工业大学、河北科技大学、上海大学、重庆大学等院校单位有着长期的良好合作，与国际先进企业ERASTEEL、NACHI、INTECO有着广泛交流与合作。

先后开发成功W9Mo3Cr4V、W4Mo3Cr4V (D606)、HYC3、HY605等新钢种，主导修订GB/T9943-2008《高速工具钢》、GB/T 34564.1-2017《冷作模具钢 第1部分：高韧性高耐磨性钢》等标准；承担科技部863“大截面高速工具钢开发”项目及“大截面高速工具钢材碳化物组织改善技术”、“喷射成形大截面高速钢制备技术”等省市课题，参与科技部支撑计划项目“粉末冶金高速钢现代工业制备技术的开发”及“汽车航空航天发电设备用高效精密数控刀具高可靠性设计制造与切削性能评价”、“工具热处理金相图谱标准修订”等国家、行业研究项目。

HEYE operates a National Post-doctoral Scientific Research Station and the Advanced Steel Materials Technology National Engineering Research Center—HEYE Tool and Die Steel Research Center (NERCAST). Our company also undertakes the construction and operation of the Hebei High-Speed Tool Steel Technology Innovation Center, the Hebei Key Laboratory of High-Quality Tool & Die Materials, the Hebei Provincial Enterprise Technology Center, and the Hebei Provincial Engineering Research Center. Renowned domestic scholars and leading academics have been invited to serve on its expert committee. HEYE is dedicated to the research and development of new steel grades and processes. This includes high-speed steel, die steel, alloy tool steel, stainless steel, specialty alloys, powder metallurgy, and spray forming products and processes. HEYE maintains long-term, productive collaborations with domestic institutions such as the Central Iron & Steel Research Institute (CISRI), the Chengdu Tool Research Institute, University of Science and Technology Beijing, Hebei University of Technology, Hebei University of Science and Technology, Shanghai University, and Chongqing University. It also engages in extensive exchanges and cooperation with leading international enterprises including ERASTEEL, NACHI, and INTECO.

HEYE has successfully developed W9Mo3Cr4V, W4Mo3Cr4V (D606), HYC3, HY605 and other new grades. It is the dominant redactor of GB/T 9943-2008 High-speed Tool Steel, GB/T 34564.1-2017 Cold-work die steel Part 1: High toughness and wear-resistance cold-work die steels etc.. Now it takes the national project The Development Project of Large Dia. HSS and the provincial projects The Optimization of Carbide Structure and Distribution for Large Dia. HSS Forged Bar, and The Manufacturing of Spray Forming for Large Dia. HSS Forged Bar. It takes part in the national or industrial concerned research projects, such as the Technological Development of Modern Industrial Preparation for Powder Metallurgy HSS supported by China Ministry of Science and Technology, High-reliability Design, Manufacture and Evaluation of Machinability for High-efficiency and High Precision Number Control Cutters Applied in Automobile, Aerospace and Power Generation Equipment and Revision of Standard Specification of Metallographic Map for Heat Treatment of Tool and so on.

APPLICATION AREA

应用领域



1

刀具材料
Tool Material

普通 (HSS) HYM2 HYTM2 HYW18 HYM7 HYM32
高性能 (HSS-E) HYM42 HYM35 HYM2A1 HYM3 HYTV3 HYM4
低合金 (HSS-L) HYW4 HYW3 HYM50 HYW3V2
喷射成形 (HSS-SF) HSF620 HSF640 HSF680 HSF835 HSF825K HSF8610
粉末冶金 (HSS-PM) HOPT15 HOPT15M HOP2030 HOP2060 HOPT42

2

模具材料
Die Material

冷作 (DS-C) HYD2 HYRD2Co HYC1 HYC2 HYC3 HITC118 HY608A
热作 (DS-H) HITH13 HYRH12 HITU2 H11 HITH13E HITH418 HITH419
喷射成形 (DS-SF) HSF210 HSF1255
粉末冶金 (DS-PM) HOP10V
部分刀具材料 (Part of tool Material) HYM2 etc.

3

关键零部件材料
Key Component Material

不锈钢材料 (Stainless Tool Material) 9Cr18Mo 11Cr17
不锈钢材料 (Stainless Heat-resistant Material) 2Cr12NiMo1W1V X18CrMoNbVN11-1
喷射成形耐磨材料 (Corrosion and Wear resistant SF Material) HSF330
粉末冶金耐磨材料 (Corrosion and Wear resistant PM Material) HOP340

河冶科技产品广泛应用于工具、模具、量具、汽车、航空、船舶、冶金等领域

HEYE material products are widely applied in tool, die, automobile, aviation, shipping, metallurgy and so on

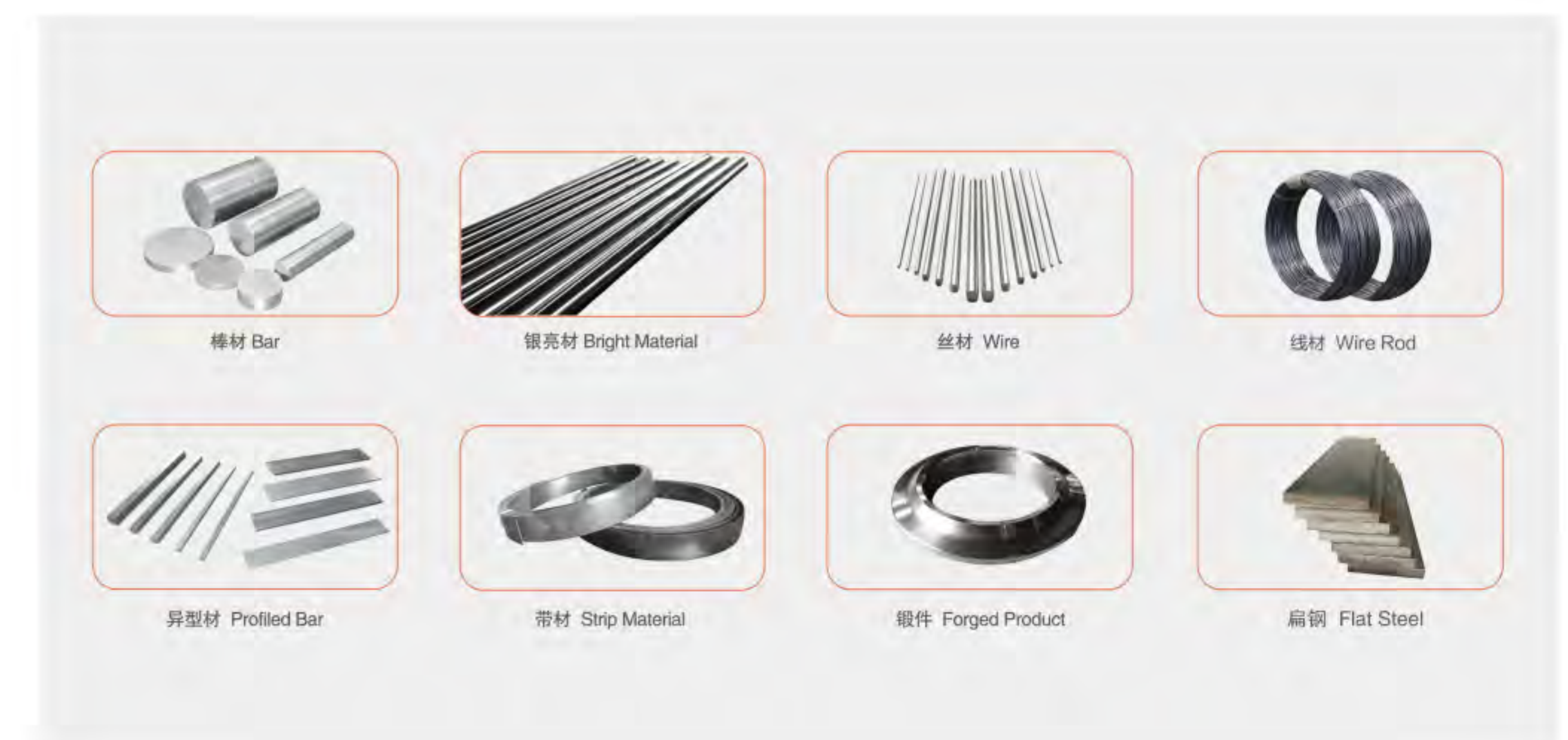


PRODUCTS SERIES

品种系列

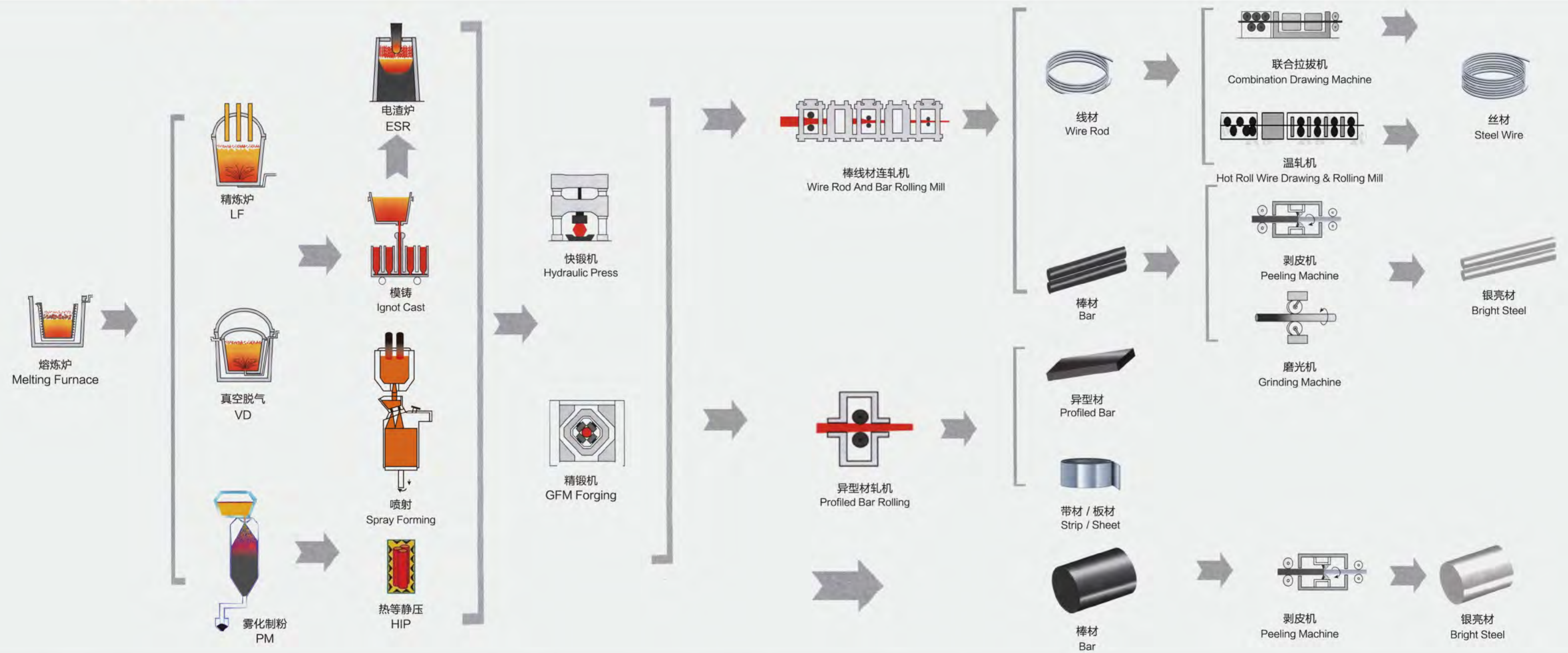
品种	规格 (mm)	表面状态
棒材 Bar	Φ12-30	黑皮
	Φ30-410	扒皮/黑皮
银亮材 Bright Material	Φ5.0-14.5	磨光
	Φ12-410	剥皮
异型材 Profiled Bar	7.2X7.2-27X27	黑皮
	(3.5-40)X(13-100)	黑皮/抛丸
	(20-200)X(40-400)	黑皮/铣削
线材 Wire Rod	Φ5.5-17	黑皮/磨光
丝材 Wire	Φ0.8-14	黑皮/磨光
预硬棒材 Prehardened Bar	Φ1-15	黑皮
带材 Strip Material	(33-65)X(1.5-3)	黑皮
	(25-55)X(0.65-1.80)	抛光
板材 Sheet Material	(1-10)X(500-850)	黑皮
锻件 Forged Product	圆形 Φ(50-350)X(10-300)	黑皮/预加工
	矩形 (20-200)X(5-80)	

可根据顾客要求定制焊接刀坯、缩柄丝锥毛坯、轧辊坯、空芯拉刀毛坯、预加工盾构滚环等延伸产品



PROCESS & TECHNIQUE

工艺流程



真空脱气
VD



电渣炉
ESR



快锻机
Hydraulic Press



精锻机
GFM forging



棒线材连轧机
Wire Rod And Bar Rolling Mill



大盘重盘条生产线
Coil weight of wire rod



CPM-075剥皮机
Peeling Machine CPM-075



BPC-5000剥皮机
Peeling Machine BPC-5000

TOOL MATERIAL

刀具材料



河冶科技刀具材料采用电渣重熔（ESR）或LF+VD精炼，历经30余年改善提高，材料种类日趋齐全，实物质量已达到国际先进水平。材料类别覆盖高性能、普通和低合金三大系列，以高性能、喷射成形和粉末冶金刀具材料为发展重点，并可根据顾客实际应用开发新材料。产品形态覆盖棒材、带材、线材、银亮材等各大系列，根据顾客需要，还可提供轧辊坯、锻制刀具/模具毛坯和焊接刀具毛坯，为顾客提高材料利用率、减少材料占用提供了条件。品质管理紧密与顾客要求和实际应用相结合，控制化学成分、碳化物形貌、表面脱碳和尺寸精度等质量特性，尤以合金度、碳饱和度、成分离散度、纯净度为重点，保障了顾客产品的可靠性和一致性。

HEYE tool material is produced with electro-slag re-melting (ESR) or ladle furnace (LF) + vacuum degassing (VD) refine technology. During 30 years' continuous improvement, AT&T-HEYE has been developing a complete range of material grade and variety, and the quality has reached an international level. There are three types of AT&T-HEYE tool material including HSS-E, HSS and HSS-L. The HSS-E, SF-HSS and PM HSS have been developed on emphasis. New kind of tool material can be developed according to the customers' practical application. Our product cover several serials such as bar, strip, wire, bright material etc. According to customers' demand, roller billet, forged billet for cutter and die, welded billed for cutter can be offered, which can help the utilization and the cost reduction of material for the customers. With totally controlling the quality properties such as chemical composition, carbide shape, surface decarburization, size precision, especially alloy content, carbon saturation, composition dispersion coefficient and purity, we put our quality management into a tight combination with customers' demand and practical application to offer a guarantee to customers in the reliability and identity of heat treatment performance and utilization property.

GRADES

牌号

类别 Steel Type	河冶牌号 HEYE Grade	相近牌号 Similar Grade				
		GB	ISO/EN	JIS	AISI	DIN
高性能 HSS-E	HYM42	W2Mo9Cr4VCo8	HS2-9-1-8	SKH59	M42	1.3247
	含钴 ≥4.5%Co	HYM35	W6Mo5Cr4V2Co5	HS6-5-2-5	SKH55	1.3243
		HYT15	W12Cr4V5Co5	HS12-1-5-5	SKH10	1.3202
		HYT42	W10Mo4Cr4V3Co10	HS10-4-3-10	SKH57	1.3207
	含铝1%Al	HYM2Al	W6Mo5Cr4V2Al			
	高钒 > 2.5%V	HYM3	W6Mo5Cr4V3	HS6-5-3	SKH53	M3-2
普通型 HSS		HYTV3				
		HYM4	W6Mo5Cr4V4	HS6-5-4	SKH54	M4
		HYM2	W6Mo5Cr4V2	HS6-5-2	SKH51	M2
		HYTM2	W6Mo5Cr4V2			1.3343
		HYM32				
		HYW9	W9Mo3Cr4V			
低合金 HSS-L		HYM7	W2Mo9Cr4V2	HS2-9-2	SKH58	M7
		HYW18	W18Cr4V	HS1-4-2	SKH2	T1
		HYW3V2		HS3-3-2		
		HYW3				
		HYW4	W4Mo3Cr4VSi			
	HYM50		HS0-4-1		M50	

注：可根据用户要求开发其他牌号产品。
Note: Other grade can be developed according to customers' demand.

RECOMMENDATION OF GRADES

材料选择推荐

应用 Application	耐用等级 / 切削强度 Durability/Cutting Strength			备注 Remark
	一般 Normal	较高 Higher	高 Top high	
钻头 Drill	M2、W9 HYW4	M35、M42	HOP2030、HOPT42	五金钻头宜 (DIY Drills) HYW4， 大规格锥钻宜 (Big Size Taper Shank Drills) HYW6-A
立铣刀 End Mill	M2、W9	M42、M2Al	HOPT42、HOP2060	
丝锥 Tap	M2、TM2	M35、HYTV3	HOP2030、HOPT15M	HYTV3是3V级易磨削丝锥专用钢
齿轮刀具 Gear Cutter	M2	M35、HSF825K	HOPT15M	剃齿刀 (Gear Shaver) HSF825K、HOPM4
拉刀 Broach	M2	M32、M42、HSF620	HOPT15	
车刀 Tool Bit	W9	M2Al、T42	HOPT15M	
冲压模 Press Mould	M2	M35	HOP940	

TARGET HARDNESS AND RECOMMENDATION OF GRAIN SIZE FOR NORMAL TOOLS

常用工具目标硬度及参考晶粒度推荐范围

应用 Application		目标硬度 Target Hardness HRC	参考晶粒度 Grain Size		回火程度 合格级别 Tempering Degree
名称 Name	规格 (mm) Specification		W-Mo系	W系	
直柄钻头 Straight Shank Drill	≤Φ4 > Φ4	62 - 64 64 - 66	10.5 ~ 12 10 ~ 11	不推荐 (Not recommend)	≤1.5级 (Grade 1.5)
锥柄钻头 Tape Shank Drill	≤Φ30 > Φ30	63 - 65 64 - 66	10 ~ 11 9.5 ~ 11	不推荐 (Not recommend)	
中心钻 Center Drill		63 - 65	10 ~ 11.5	不推荐 (Not recommend)	
铣、铰刀类 Miller and Reamer		普通HSS 64 - 66 高性能HSS-E 65.5-67	10 ~ 11	不推荐 (Not recommend)	
锯片铣刀 Metal Saw	厚度(Thickness)≤1mm 厚度(Thickness) > 1mm	62.5 - 64.5 63.5 - 65.5	10.5 ~ 12 10 ~ 11.5	9.5 ~ 11	1级 (Grade 1)
车刀 Tool Bit		普通HSS 65 - 66 高性能HSS-E67-69	9 ~ 10.5	8 ~ 10	
齿轮刀具 Gear Cutter		普通HSS 64-65.5 M35 64.5-66 M42 66-67 PM 66-68	10 ~ 11	不推荐 (Not recommend)	
拉刀 Broach		普通HSS 63.5 - 65 高性能HSS-E 65.5-67	10 ~ 11	直径(Size)≤60mm 10 ~ 11 直径(Size) > 60mm 不推荐 (Not recommend)	
丝锥 Tap		一般 Standard 63-65 管 Pipe63-64 梯形 Acme62-64	10.5 ~ 11.5	不推荐 (Not recommend)	
板牙 Tapping Die		细 Fine 61-63 粗 Coarse 63-65 梯形 Acme 60-62	10.5 ~ 11.5	不推荐 (Not recommend)	
滚丝轮 Thread Rolling Die		普通 Standard 61-63 高强度 Hard 63-65	10.5 ~ 11.5	不推荐 (Not recommend)	
搓丝板 Screw Plate		61-63	10.5 ~ 11.5	不推荐 (Not recommend)	

DIE AND KEY COMPONENT MATERIAL

模具及关键零部件材料



河冶科技与先进钢铁材料技术国家工程研究中心合作，建有河冶工模具钢研究中心，采用IF、LF、VD冶炼，ESR、SF(喷射成形)、PM(粉末冶金)特殊制备工艺，设计、开发和生产高档冷作、热作模具材料，旨在替代进口，解决高端顾客模具选材问题。开发成功的3V级高韧高耐磨冷作模具材料HYC3具有优良的综合性能，克服了D2、M2、LD等传统材料的弱点，在各种高档冷作模具中得到很好的应用，性价比高。采用SF、PM特殊制备工艺可开发出组织均匀细密的少偏析或无偏析新型高合金模具材料，解决传统方法无法解决的模具材料问题。

Supported by AT&T-HEYE Tool and Die Steel Research Center of NERCAST, HEYE aims to design, develop and produce high performance die materials by IF, LF, VD melting process and ESR, SF(spray forming), PM(powder metallurgy) producing process, to replace imported die and resolve problems of die materials selection. High toughness and high wear resistant cold work die material HYC3 has been developed successfully, possessing good comprehensive performance, tackling the weakness of traditional D2, M2, LD etc., being well applied in various high performance cold work die, and has high cost performance. Using SF, PM special producing process, the new high alloy die materials with fine structure and less or no segregation can be developed and produced, solving the problems in die material produced by traditional process.

GRADES

牌号

类别 Type	河冶 牌号 Grade	相近牌号 Similar Grade					主要成分 wt.% Main Chemical Composition					
	HEYE	GB	ISO	AISI	JIS	DIN	C	Cr	Mo	V	W	Si
冷作模具 材料 Cold-work Die Material	HYD2	Cr12Mo1V1	X153CrMoV12	D2	SKD10		1.55	12.0	0.85	0.8	-	-
	HYRD2Co						1.47	12	0.90	0.9	-	0.4Co
	HYC1						1.0	8	2.0	0.4	0.4	1.0
	HYC2						0.75	7.0	2.0	1.85	0.4	1.0
	HYC3						1.03	8.0	1.6	(未公开)		1.0
	HITC118						0.76	5.0	2.3	0.6	-	0.4
热作模具 材料 Hot-work Die Material	HY608A						0.85	6.50	1.25	0.50	2.55	1.0
	HITH13	4Cr5MoSiV1	X40CrMoV5-1	H13	SKD61	1.2344	0.38	5.0	1.3	0.9	-	1.0
	HITH418						0.35	5.0	2.1	0.65	-	0.3
	HITU2						0.57	4.2	2.9	0.85	-	0.3
	HYRH12						0.53	5.2	1.3	0.5	1.3	1.0
关键零部 件材料 Key Component Material	11Cr17	11Cr17	X105CrMo17		SUS440C		1.04	17.0	-	-	-	-
	9Cr18Mo	9Cr18Mo	X105CrMo17	440C	SUS440C	1.4125	1.0	17.0	0.5	-	-	-
	HSF330						(未公开)					

注：HIT系列为高等向模具材料，HY系列为传统模具材料

PROPERTIES AND APPLICATION

特性及应用

类别 Type	河冶 牌号 HEYE Grade	退火 硬度 Annealed Hardness HBS	材料特性 Property of Material	主要用途 Main Purpose
冷作 模具 材料 Cold-work Die Material	HYD2	255	耐磨、耐冲压、高韧性 Wear-resistance, High Toughness and long punching life	冲裁模、冷作成型模、冷拉模、冲头、高档冷轧工作辊 Blanking die, Cold working form die, Cold Drawn, Mould, punch High quality cold rolling mill
	HYRD2Co	255	耐磨、耐冲压、高韧性 Wear-resistance, High Toughness and long punching life	高档冷轧工作辊 High quality cold rolling mill
	HITC118	225	极佳的延展性和韧性，有效抵抗裂纹的产生和扩展，优良的淬透性、抗回火软化性能、耐磨性，容易抛光 Excellent ductility and toughness, effective against crack forming and extension, Excellent hardenability, anti-temper-softening ability and wear resistance, polishability	冷成型模具、螺杆、造币压印工作模、汽车高强度板成型模、热固性塑料成型模 Tools for cold forging, screw, working dies for mint industry, car body dies forming high strength plate, Thermosetting plastic forming die
	HYC3	235	3V级高韧性、高耐磨、高耐冲压、冷加工性好、高温回火适用于多种手段的后续处理 3V grade High Toughness, wear-resistance, Good Cold-Working Performance and long punching life. Suitable for kinds of after-tempering treatments.	承受重载荷大冲击耐磨切边模、精密冷冲压模、高档冲头、高档冷轧工作辊 Heavy load trimming die and precision cold punching mould, Precision cold punch die, high quality punch, High quality cold rolling mill
热作 模具 材料 Hot-work Die Material	HITH418	235	高等向性，优良的抗热疲劳性能、高温强度、淬透性和热处理尺寸稳定性 High isotropic, Excellent thermal fatigue resistance, hot strength, hardenability and heat treatment size stability	镁、铝合金压铸模、挤出模，精密锻模 Al, Mg die-casting and extrusion dies Precision forging die
	HITU2	220	高等向性，高强度、高韧性、高抗回火软化性，可用于冷作模具、热作模具。 High isotropic, high strength, high toughness, high anti-temper-softening ability, suitable for cold working dies and hot working dies	热挤压冲头，热挤压凹模，热/冷冲模，精锻模，热锻锻模，冷锻模 Hot extrusion punch, hot extrusion die, Hot/cold stamping die, precision forging die, hot upset forging die, cold upsetting die
	HITH13	235	高淬透淬硬性,高坚韧,耐磨, ≤590℃工作导热佳,抗冷热疲劳、抗磨损性好 High quenching hardness, strong toughness, wear-resistance, good heat conduction, fatigue-resistance, anti-melting under working condition ≤590℃	铝镁合金压铸模成形零件常用材料 Casting die in aluminum magnesium alloy
	HYRH12	235	高淬透淬硬性、高强度、高韧性、耐磨、耐冲击 High quenching hardness, strong toughness, wear-resistance, impact-resistance	高档冷轧工作辊、中间辊 High quality cold rolling mill, middle roller
关键 零部 件材 料 Key Component Material	11Cr17	245	马氏体型不锈钢材料，高硬度、高耐磨、耐腐蚀 Martensitic stainless material, high hardness, high wear-resistance, anti-corrosion	空调滑片 Air conditioning sliding vane
	9Cr18Mo	245	马氏体型不锈钢材料，高硬度、高耐磨、抗回火稳定性好、耐腐蚀性好 Martensitic stainless material, high hardness, high wear-resistance, high anti-tempering strength and good anti-corrosion.	不锈钢刀具、耐磨耐蚀件 Stainless Knife, Anti-corrosion parts
	HSF330	300	粉末冶金或喷射成形工艺制备的高品质模具材料，组织均匀，各向同性，具备极佳的耐蚀耐磨性能 High quality die material with homogeneous and isotropic structure, excellent corrosion and wear resistance, prepared by powder metallurgy or spray forming process	挤塑机和注塑机螺杆、零部件耐蚀耐磨零部件 Screws and components on extruding machine and injection moulding machine, other corrosion resistant and wearable parts.

POWDER METALLURGY MATERIAL

粉末冶金工模具材料



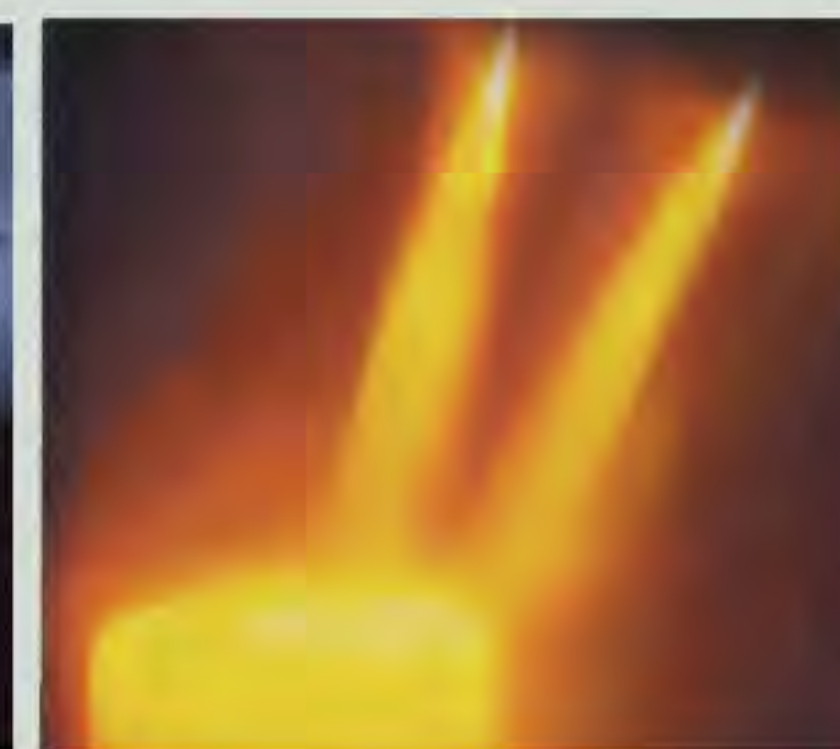
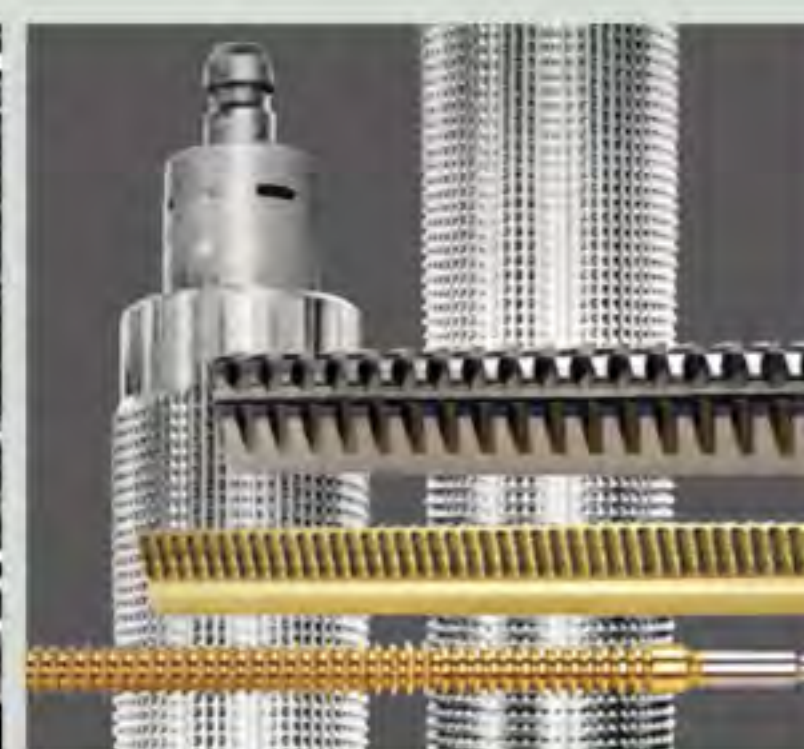
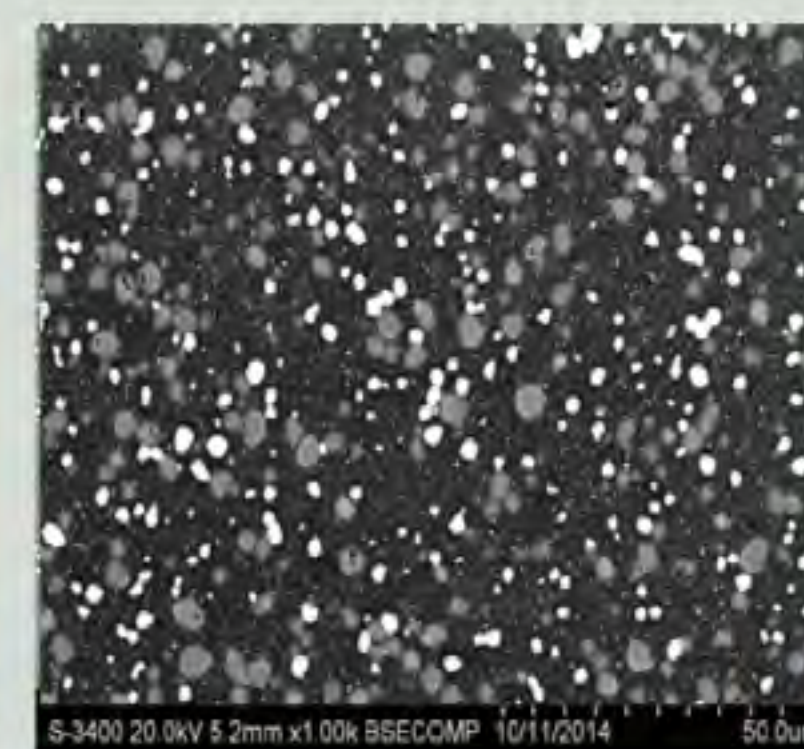
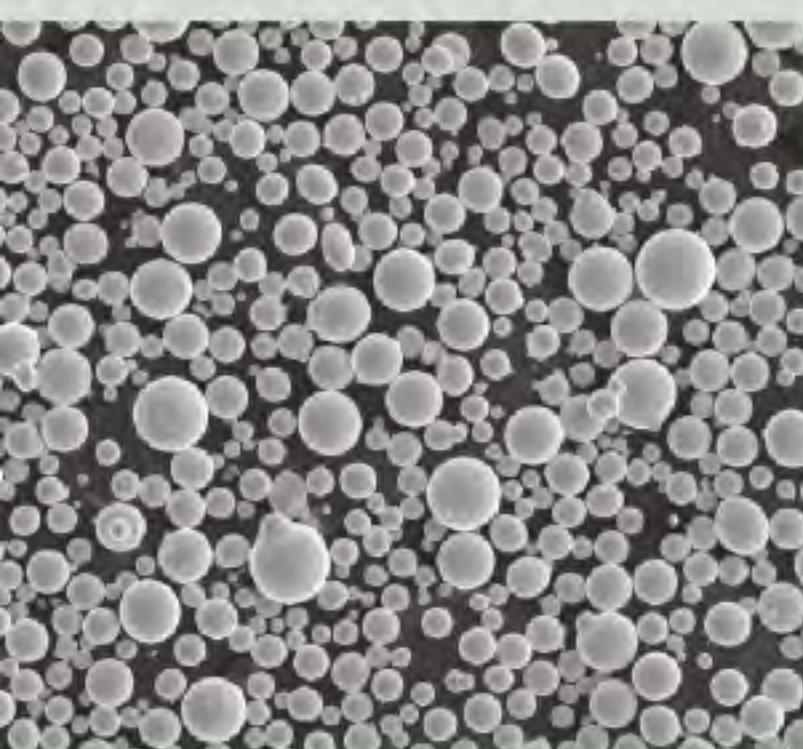
河冶科技粉末冶金工模具材料采用气雾化制粉，热等静压成型，并经过精确变形加工而成。由于快速凝固，获得显微组织非常细致均匀且无方向性，使得粉末冶金工模具材料韧性和抗疲劳性明显提升，并具有以下优点：持续稳定的热处理结果，热处理尺寸稳定，优异的可磨削性，加工性能优良，电火花加工效率高，耐磨性改善。

HEYE PM tool and die material is based on hot isostatic pressing and consolidation of intergas atomized powders, normally followed by accurate deformation and machining. The microstructure of PM tool and die material is very homogeneous and has no directionality because of the fast solidification, which helps PM tool and die material to get obvious improvement for the properties of toughness and fatigue-resistance along with the following advantages: stable heat treatment performance, high heat treatment dimension stability, excellent grinding ability, good machinability, high EDM efficiency and wear-resistance.

GRADES

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河冶牌号 HEYE Grade	相近牌号 Similar Grade				主要成分 Composition%					
	ISO/EN	AISI	JIS	DIN	C	W	Mo	Cr	V	Co
HOP M3	HS 6-5-3C	M3 Cl.2	SKH53	1.3344	1.3	6.2	5	4	3	-
HOP T15	HS 12-1-5-5	T15	SKH10	1.3202	1.55	12	-	4	5	5
HOP T15M	HS 10-2-5-8				1.6	10	2.2	4.7	4.8	8
HOP 2030	HS 6-5-3-8		SKH40	1.3244	1.3	6.5	4.9	4	2.9	8.3
HOP T42					1.26	9.5	3.5	4	3.2	9.8
HOP 2060	HS 7-7-7-11				2.3	6.5	7.0	4.2	6.5	10.5
HOP 10V		A11			2.45	-	1.3	5.25	9.75	-



SPRAY FORMING MATERIAL

喷射成形工模具材料



河冶科技开发的喷射成形工模具材料，开创了国产喷射成形工模具材料之先河。喷射成形技术将液态金属雾化和雾化液滴的沉积自然地结合起来，一步完成冶金成形，减少了传统粉末冶金成形工序，大大缩短了制造周期。由于采用惰性气体雾化及液滴快速凝固沉积，使得沉积坯料氧含量低、整体致密度高、无宏观偏析、组织均匀细小，力学性能与热加工性能较传统刀具材料得以改善，大截面材料不均匀度改善尤其显著。

The Spray forming tool and die material developed by HEYE is the pioneer in the field of domestic SF tool and die material. The technology of spray forming is based on the liquid metal atomization and the deposit of atomized droplets in a single step, which removes of HIP process of the powder metallurgy forming and greatly shortens the manufacturing cycle. Because of using inert gas atomization and droplet deposition of rapid solidification, the SF tool and die material has a low oxygen content, high density, no macro segregation and uniformly fine microstructure, improving the mechanical properties and hot workability compared with the conventional tool and die material. Especially the eutectic carbide distribution of forged bar has been greatly improved.

GRADES

牌号

河冶牌号 HEYE Grade	相近牌号 Similar Grade		主要成分 Composition%					
	ISO/EN	ASTM	C	W	Mo	Cr	V	Co
HSF620	HS 6-5-2	M2	0.90	5.80	5.35	4.40	2.10	-
HSF640	HS 6-5-4	M4	1.35	5.50	5.00	4.40	4.10	-
HSF680			2.50	4.20	3.15	4.25	8.00	-
HSF825K			(未公开)					
HSF835			1.30	(未公开)		4.40	3.00	4.80
HSF8610	HS 6-7-6-10		2.30	6.40	7.00	4.25	6.50	10.50
HSF210	X153CrMoV12	D2	1.55	-	1.00	12.0	1.00	-
HSF330			(未公开)					

不同工艺Φ200棒材热处理后冲击韧性对比

