



携手奋进·共赢未来
Overview of the global win-win future



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ZHEJIANG HUANGYAN WEIHAO DIE STEEL CO., LTD.

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目录

CONTENTS

◎ 企业简介	01/02
◎ 企业荣誉	03/04
◎ 企业风采	05/06
◎ 工艺流程	07/08
◎ 生产车间	09/12
◎ 真空热处理	13/14
◎ 品质保障	15
◎ 钨磨料验收标准	16
◎ 产品介绍	
NAK80 时效镜面塑料模具钢	17/18
H13 精炼优质热作模具钢	19
H13 电渣高级热作模具钢	20
H13 超细化精品级长寿命热作模具钢	21
1.2316 电渣预硬塑胶模具钢	22
S136 电渣耐腐蚀超镜面塑料模具钢	23
4Cr13 塑胶模具钢	24
718H 预硬塑胶模具钢	25
P20H 预硬塑胶模具钢	26

STEP BY STEP TO WIN

步步为赢





COMPANY

INTRODUCTION

企业简介

浙江黄岩威豪模钢有限公司创建于1990年，坐落在中国模具之都—台州黄岩，专业经营国内外中高端优质模具钢批发、零售，精密机械加工，模架制造，热处理等一条龙综合性服务型企业。多年来随着企业不断发展壮大，于2012年成立了浙江博星模料有限公司。

公司占地面积约25000平方米，员工200多人，模料年销售额达3亿多元，模架年产量1亿多元，拥有现代化的办公生产环境，根据行业特点量身定做规划、设计，建设的高效益生产线，全天候24小时服务的生产团队。经过几十年的不懈努力，公司已全面采用ERP系统管理，今天的威豪已是台州市金属投资股份有限公司的副董事长单位，宝钢股份模具钢直供用户，沙钢台州地区模具钢独家总代理，连续5年被评为“浙江省钢贸百强企业”和“台州市金属行业十佳优秀企业”。

公司常年拥有充足的货源，健全的加工体系，规范的财务管理制度和科学先进的营销管理模式，娴熟的运输物流体系，建立了强大的营销阵容，开辟了广阔的市场空间。

公司以“立足台州，面向全国，服务全球，裂变发展为己任”，以“您的满意是我最大的心愿”为服务宗旨，不断地提高自己，完善自己，超越自己，更以满足市场需求为根本，向更高的目标进军。我们充满信心与希望，坚持以“用户第一，质量第一，服务第一，信誉第一”为信念，期待与您最真诚的合作！

Zhejiang Huangyan Weihao Die Steel Co. Ltd. was founded in 1990, is located in the Chinese die – Taizhou Huangyan, professional operation of the domestic high-end high-quality mold steel wholesale, retail, precision machining, mold manufacturing, heat treatment and other comprehensive one-stop service enterprises. With the continuous development and expansion of enterprises for many years, Zhejiang PERSHING Molding Co., Ltd. was established in 2012. The company covers an area of about 25000 square meters, more than 200 employees, annual sales of 300 million yuan mold material, mold annual output 100 million yuan, the office has a modern production environment, according to the characteristics of the industry planning, tailored design, high efficiency production line construction, all-weather 24 hours of service production. After several years of unremitting efforts, the company has adopted a comprehensive ERP management system, this is the Taizhou City Weihao metal investment Limited by Share Ltd, vice chairman of the unit, Baosteel steel direct users, Taizhou Shagang steel exclusive general agent, for 5 consecutive years was named "Zhejiang steel trade enterprises" and "Taizhou metal industry top ten enterprises". The company has ample supply sources, sound processing system, standardized financial management system and scientific and advanced marketing management mode, skilled transportation and logistics system, and has established a strong marketing line-up and opened up a broad market space. The company based in Taizhou, facing the country, global services, fission development mission, "your satisfaction is my greatest wish" for the purpose of service, constantly improve themselves, improve themselves, beyond their own, more to meet the market demand as the fundamental, to a higher goal in the army. We are full of confidence and hope, adhere to the "user first, quality first, service first, reputation first" as the belief, looking forward to the most sincere cooperation with you!

DONGSHIZHANG ZIC 董事长致辞 >>

三十载风雨兼程，三十载岁月如歌。

昨日的种种辉煌，打造了浑身钢筋铁骨；今日的华丽蜕变，成就了万分壮志雄心。威豪模钢作为一家集生产、销售、加工、模架、服务于一体的综合性服务型企业，实现了从量变、质变到裂变的自我突破，公司的发展开创了一个全新的时代。

威豪模钢，承载了三十年拼搏的风雨历程，承载了数百名员工的工作激情，承载了“威豪人”勇于探索敢于创新的梦想，我们深知任重而道远。时代在前进，市场在变化，企业在发展，抓住用好这发展机遇，和着时代的节拍，我们撸起袖子加油干，每天进步一点点，紧随时代步伐，引领行业尖端。

服务始终是我们永不变更的承诺；您的满意是我最大的心愿，将是我们永远追求的方向；威豪的品牌战略，将使我们走的更高更远。我们期待与您合作与共赢，请相信，威豪模钢不仅是您首选的合作伙伴，更是您永远最值得信赖的朋友！

浙江黄岩威豪模钢有限公司董事长



Thirty years of trials and hardships, thirty years like a song. All sorts of brilliant yesterday, to create a gorgeous transformation today was a body strong as iron; the great ambition, achievement. Wellhope die steel as a comprehensive service enterprises in production, sales, processing, mold and service in one, realized from qualitative to quantitative, fission self breakthrough, the development of the company ushered in a new era. Wellhope mould steel, bearing thirty years of struggle, carrying hundreds of staff working enthusiasm, bearing the "people Weihao" dares to explore the innovation of the dream, we know that go15. In the era of progress, changes in the market, enterprises in the development, grasp the development opportunities, and the rhythm of the times, we roll up your sleeves and go, a little bit of progress every day, keep pace with the times, leading the industry tip. The service is always our invariable promise; your satisfaction is our biggest wish, we always will be the direction of the pursuit; Weihao brand strategy will enable us to go farther and higher. We look forward to your cooperation and win-win, please believe that, Weihao die steel is not only your preferred partner, it is your most trusted friend forever! The chairman of Zhejiang Huangyan westcomb Die Steel Co. Ltd.

There is no perfect person, the only good team.

only think of a way for the success, not failure to find reasons. Unity, pragmatic, efficient, determined, enterprising and innovative. Based on the new starting point, create a new situation. Today to pay tomorrow's returns. Details determine success or failure of efforts to create the future.





公司荣誉

Company Honor

威豪的明天更辉煌!



务实 创新 精益求精

OPEN DREAM UP YOUR

浙江黄岩威豪模钢有限公司
ZHEJIANG HUANGYAN WEIHAO DIE STEEL CO. LTD.

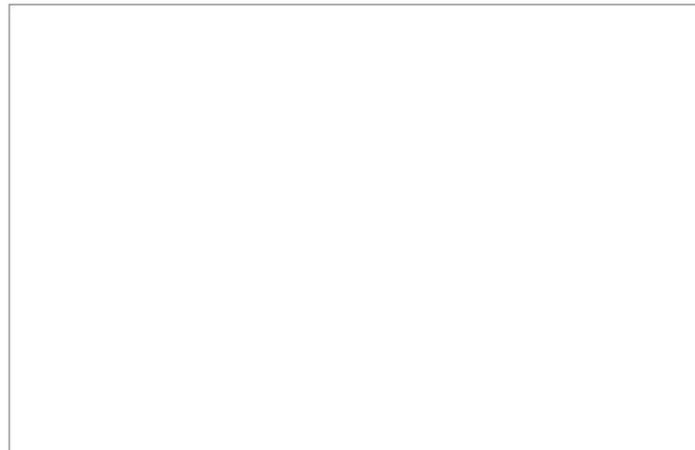


ENTERPRISE FACE 企业风采

发展中不忘稳健，稳健中谋求发展！
In developing does not forget
the steady, healthy
development!

没有完美的个人，只有完美的团队，团队就是我，我就是团队！
No one is perfect, just only perfect team. The team is me, I am the team.

走进威豪



项目讨论



演习合影



项目讨论



样品展示



TECHNOLOGICAL PROCESS 工艺流程

每一道工艺，都要求精益求精！
Every process is keeping improving!

4 大锯床开条 Cutting strip for big sawing machine



5 锯床 Sawing machine



6 铣床 Milling machine



7 真空热处理 Vacuum heat treatment



3 入库 Storage



2 检测 Inspection



1 采购 Purchase



8 磨床 Grinding machine



9 精料加工 Machining



10 精光板成品 Finished product





Production workshop

生产车间

弘扬工匠精神，打造行业标杆！
Carry forward the spirit of the craftsman and build the industry pole!





Production workshop

生产车间

工欲善其事，必先利其器！
Sharp tools make good work!



VSHEAT TREATMENT WORKSHOP 热处理车间

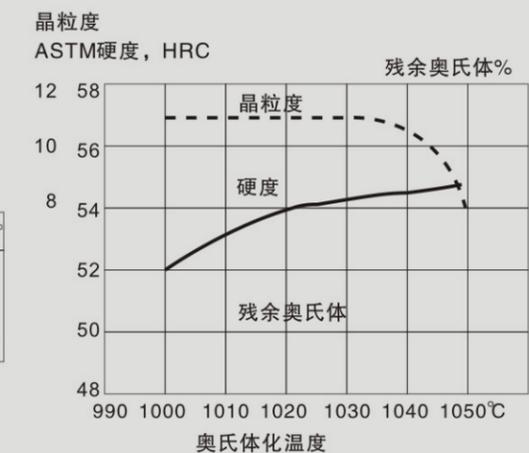
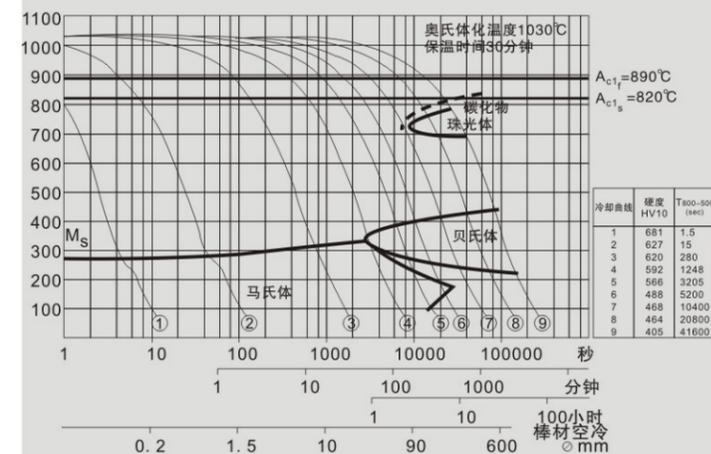
公司拥有经验丰富的热处理高级工程师及团队，配置先进的真空热处理设备，多台双室真空淬火炉、预抽真空回火炉及超声波清洗机。严格执行工艺流程，确保热处理工件的产品质量。

The company has a rich experienced senior engineers and team for heat treatment, configured with advanced vacuum heat treatment equipments, many sets of double chamber vacuum quenching furnaces and for vacuum tempering furnaces and ultrasonic cleaning machines etc. Strictly carries out the process to ensure quality of heat treatment products.

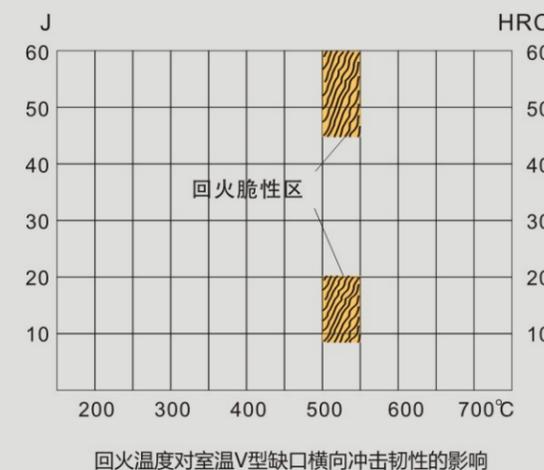
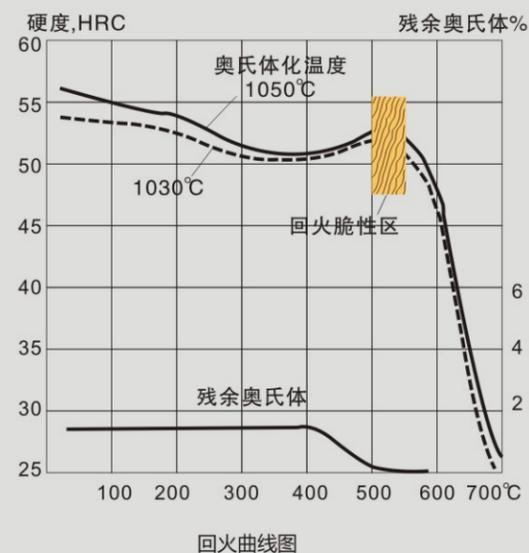


高品质模具钢与先进的真空热处理相符合，得到的是模具的长寿命。
The combination of high quality die steel and vacuum heat treatment guarantees long life of the moulds.

CCT转变曲线 / Inversion curve



回火曲线 / Tempering curve



QUALITY ASSURANCE

品质保障

公司始终坚持“高质量产品，专业化服务”的质量方针，严格遵照ISO9001管理体系程序要求进行管理和控制，规范经营管理，在全员参与的基础上，切实提高产品质量。全面推行7S管理，各种高精度检测设备对进货材料的品质进行严格检测和控制，完备的代客订购、加工、运输体系，确保公司生产效率和产品质量。

We always uphold the quality principle of “high quality product, professional service”, strictly comply with ISO9001 in management and control to standardize operating management; and improve the quality of products on the basis of total involvement. we comprehensively carry out 7S supervision. Various of high precision checking devices strictly inspect and control the material quality; while complete ordering system, processing and transport system ensure us high production efficiency and good product quality.



半自动显微硬度测量仪



超声波探伤仪



金相抛光机



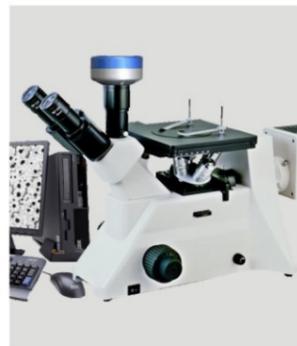
金相切割机



金相镶嵌机



三目体视显微镜



金相分析显微镜



手持式光谱仪



数显布氏硬度计

ACCEPTANCE CRITERIA

钨磨料验收标准



项目	尺寸公差		角度公差		粗糙度公差	
	长度公差	厚度公差	曲尺度	垂差度	正面及背面	侧面
图示						
类别						
粗料	已留余量 -1~+3mm	-1~+3mm	0.5/100mm	0.3/100mm	无	无
	L/W ≤ 400mm+3~+6mm	+3~+6mm				
	400 < L/W ≤ 800mm+3~+6mm	+4~+7mm				
	L/W > 800mm+5~+10mm	+5~+10mm				
光料	+1.0~+1.6mm	+0.2~+0.5mm	0.1/100mm	0.3/100mm	Rz ≤ 12.5um	Rz ≤ 25um
精料	① 20mm ≤ L/W ≤ 400mm 且 20mm ≤ H < 100mm	+0.1~+0.3mm	0.01/100mm	0.01/100mm	Rz ≤ 6.3um	Rz ≤ 6.3um
	0~+0.03mm					
	② L/W > 400mm 且 20mm ≤ H < 250mm	+0.1~+0.3mm				
	0~+0.1mm					
	③ 100mm ≤ H ≤ 250mm ④ H < 20mm					
	0~+0.1mm					
长/宽 > 700mm 的另议						

注：如客户有特殊要求的，则按客户要求加工。



NAK 80 时效镜面塑料模具钢

产品用途 Product use

对表面抛光或蚀纹要求很高的汽车注塑模，如车灯、镀铬饰条、格栅、中控面板、后视镜等，汽车电子等功能零件精密注塑模具。对表面质量要求很高的IT、家电、办公用品、及日用品等模具，如电脑、冰箱、洗衣机、平板电脑等外观类模具、塑料透明件模具。其它中小型精密注塑模、量产长寿命注塑模；塑料片材挤出模具等。

For the automotive part moulds that have high requirements for polishing and texturing like car lamp,chroming panel ,gril, central dashboard, rearview mirror etc;or precision injection moulds like automotive electronics;
For the moulds having high demands for surface quality like IT items,household appliances,office supplies,commodity items , as well as moulds has high requirements for out-looking like computer ,refrigerator,washing maching,flat-panel TV and clear parts;
For other precision moulds in small in small and medium size ; injection mould with large production volume;plastic sheet extrusion moulds rtc.

产品性能 Product performance

该钢镜面抛光性佳，高硬度高耐磨性，性价比卓越。

- 冶炼精细、材质纯净均匀、金相组织细腻、无偏析
- 硬度高且均一性佳，厚度500mm以内保证表里如一
- 材料镜面抛光性能优越，同时具备优良的蚀纹性能
- 内应力小、机加工变形小，粗加工后无需去应力处理
- 耐磨性佳、模具使用寿命长，是制作中小型高抛光塑料模具的首选用材

This steel has good mirror polishing performance ,high hardness and high-wearing feature ,and excellent cost performance.

- Fine smelt,pure and well-proportioned texture,fine and smooth metalgraphic structure,segregation-free
- High hardness and optimal uniformity;full uniformity can be guaranteed in the case of steel thickness is within in 500mm
- Excellent mirror polishing performance and good texturing performance
- Small internal stress,small machining transformation,stress relief treatment is unnecessary after tough tooling
- Good abrasive resistance ensure longer mould life;the preferred material for small and medium sized mould with high polishing requirements

热处理工艺 Heat Treatment Process

项目 Item	加热温度(°C) Heating temperature	冷却方式 Cooling Method	硬度 Hardness
固溶 Solids solution	850	空冷	32~33HRC
时效 Aging	520~540	空冷	39~41HRC

物理性能 Physical performance

热膨胀系数 10 ⁻⁶ m/(m*k)	20-100°C	20-200°C	20-300°C	导热性 W/m*k	20°C	200°C	300°C
	11.2	12.5	13.2		41.0	42.0	42.5

冶炼方法 Smelting method : 电弧炉+VD+电渣重熔时效处理

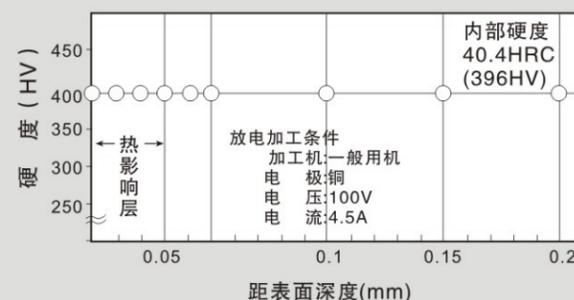
热处理参数

锻造温度	退火温度	奥氏体化温度	时效温度
850-1100°C	650-670°C	890-930°C	~550°C

化学成分对比 (WT%) Chemical composition(%)

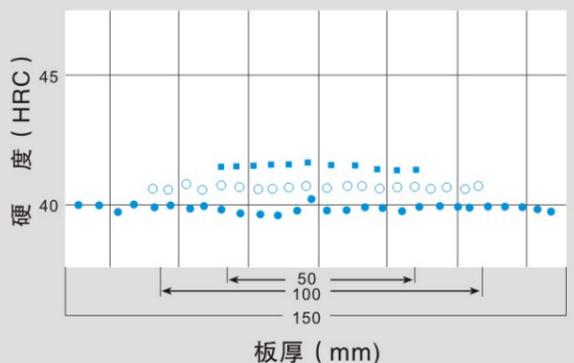
NAK80	C	Si	Mn	Ni	Al	P	S	Cu
	0.06-0.16	0.20-0.40	1.45-1.70	2.75-2.90	0.80-1.00	≤0.03	≤0.008	0.81-1.00
标准对照	日本大同NAK80							
出厂状态	锻材或轧材供货；固溶时效处理至HRC38-42							

放电加工部硬度



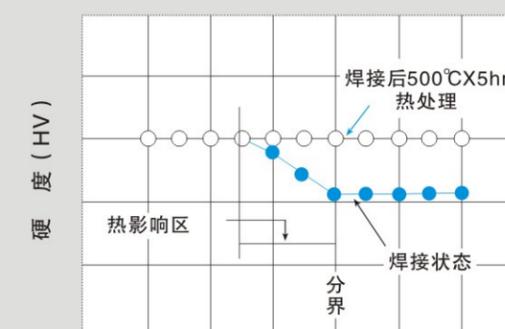
放电加工面不出现硬度升高,较易精密。

断面硬度



由于是时效强化钢,所以从表面到中心的硬度均匀。

焊接部硬度



焊接条件

焊接法: TIG焊接 (氩气保护)
予热: 200~300°C
电流: 150~170A
焊条: 同质合金

焊接部的硬度没有升高,焊后施行时效处理的话,不会出现蚀花不均。
(请注意预热、后热条件)





H13 精炼优质热作模具钢

■ 产品用途 Product use

适合制造铝镁锌合金挤压模、压铸模、部分高寿命高耐压塑料模具。
It is suitable for aluminum and magnesium alloy extrusion mold, die-casting mould, some high high wear-resistant plastic mold service life.

■ 产品性能 Product performance

好的韧性、塑性、高等向性； Good Toughness, Good Plasticity, high Tropicism,
好的耐热冲击性、高纯净度。 Heat Shock, high Purity.
良好的加工和抛光性。 Good Processing And Polishing.

■ 牌号对照表 Grades comparison

H13精炼	美国 (ASTM)	日本 (JIS)	德国 (DIN)	瑞典 (ASSAB)
	H13	SKD61	1.2344	8407

■ 化学成分对比 (WT%) Chemical composition(%)

H13精炼	C	S	Si	P	Mn	Cr	V	Mo
	0.50-0.60	≤0.025	0.80-1.20	≤0.025	0.20-0.50	4.75-5.50	0.80-1.20	1.20-1.50

■ 冶炼方法 Smelting method: 电弧炉+VD

■ 供货硬度 Hardness of supply: 退火状态: ≤HB229

■ 热处理工艺 Heat Treatment Process

项目 Item	加热温度 (°C) Heating temperature	冷却方式 Cooling Method	硬度 Hardness
退火 Annealing	750-800	≤20°C/h慢冷至500°C空冷	≤229HB
淬火 Quenching	1020-1050	油冷或空冷或盐浴	56-58HRC
回火 Tempering	530-600	空冷	45-50HRC



H13 电渣高级热作模具钢

■ 产品用途 Product use

通常用于制造铝铸件用的压铸模、热挤压模，穿孔用的工具、芯棒、压机锻模、塑料膜，还广泛应用于铝铜及合金压铸模具。
Usually used in the manufacture of die casting, aluminum casting with the hot extrusion die, punch tools, mandrel press forging die, plastic mold, etc, are widely used in aluminum and copper and its alloy die-casting mould.

■ 产品性能 Product performance

优良的韧性、塑性、高等向性； Good Toughness And Plasticity, High Tropicism, High Heat;
优良的耐热冲击性、高纯净度； Resistant To Impact, High Purity;
良好的加工和抛光性。 Good Processing And Polishing.

■ 牌号对照表 Grades comparison

H13电渣	美国 (ASTM)	日本 (JIS)	德国 (DIN)	瑞典 (ASSAB)
	H13	SKD61	1.2344	8407

■ 化学成分对比 (WT%) Chemical composition(%)

H13电渣	C	S	Si	P	Mn	Cr	V	Mo
	0.50-0.60	≤0.015	0.80-1.20	≤0.025	0.20-0.50	4.75-5.50	0.80-1.20	1.20-1.50

■ 冶炼方法 Smelting method: 电弧炉+VD+电渣重熔

■ 供货硬度 Hardness of supply: 退火状态: ≤HB229

■ 热处理工艺 Heat Treatment Process

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淬火 Quenching	1020-1050	油冷或空冷或盐浴	56-58HRC
回火 Tempering	530-600	空冷	45-50HRC





H13 超细化精品级长寿命热作模具钢

■ 产品用途 Product use

适用于长寿命设计的铝、镁、铜等有色金属压铸、挤压模具，以及长寿命设计、高要求的精锻模、温锻模热锻模。

Suitable for long life design of aluminum, magnesium, copper and other non-ferrous metal die-casting, extrusion dies, and long life, high requirement of fine forging die design, die temperature, hot forging die.

■ 产品性能 Product performance

产品质量符合新国标GB/T24594—2009及北美压铸协会 (NADCA) #207标准所有要求高纯净度；

提高模具疲劳寿命优异的韧性、塑性、高等向性、高纯净度、大幅度提高模具的疲劳寿命；

优异的耐热冲击性，减少模具在使用过程中的开裂；

良好的热处理尺寸稳定性、加工性和抛光性；

相比H13电渣钢韧性更好，寿命高一倍左右。

Product quality in line with the new national standard GB/T 24594.2009 and north American die casting association

(NADCA)# 207 all require high purity standards, improve the fatigue life of the die

Excellent toughness and plasticity, high tropism, high purity, greatly improve the fatirgue life of the mould

Excellent heat resistant to impact, reduce the cracking in the process of mould in use

Good dimensional stability, heat treatment, machining and polishing

■ 工艺流程 The process flow

电炉熔炼→真空精炼→模铸→保护气氛电渣→高温均质化→多向锻造→超细化处理→超声波探伤→表面机加工→成品

Avacuum refining furnace smelting a molded a prectective atmosphere electroslag its high homogenization a multidir-ecctional forging shearing section.at refining processing, ultrasonic testing surface machined to a finished product

■ 工艺特性 Process characteristic

真空精炼+电渣工艺；

Vacuum+electroslag refining process;

特殊的多向锻造工艺；

Special multidirectional forging process;

高温均质和超细化热处理技术。

High temperatures are surveyed and quenching technology.

■ 牌号对照表 Grades comparison

H13超细化	美国 (ASTM)	日本 (JIS)	德国 (DIN)	瑞典 (ASSAB)
	H13	SKD61	1.2344	8407

■ 化学成分对比 (WT%) Chemical composition(%)

H13超细化	C	Si	Mn	Cr	V	Mo
	0.32-0.45	0.80-1.20	0.20-0.50	4.75-5.50	0.80-1.20	1.25-1.75



1.2316 电渣预硬塑胶模具钢

■ 产品用途 Product use

用于制造PVC等腐蚀性较强的塑胶模具，透明塑胶模及抛光要求较高的塑胶模。

Used in the manufacture of PVC and other corrosive strong plastic moulds, plastic mold. piastic mold of the required high polishing.

■ 产品性能 Product performance

属于中碳高铬型耐腐蚀模具材料，淬回火有较高硬度，耐腐蚀性和抛光性。

Belongs to the type of high carbon chromium corrosion resistant die materials, quenching tempering has high hardness, corrosion resistance and polishing.

■ 牌号对照表 Grades comparison

1.2316	美国 (ASTM)	日本 (JIS)	德国 (DIN)
	420	SUS420	1.2316

■ 化学成分对比 (WT%) Chemical composition(%)

1.2316	C	Si	Mn	Cr	P	Ni	S	Mo
	0.33-0.43	≤1.00	≤1.00	15.00-17.00	≤0.03	≤1.00	≤0.03	1.00-1.30

■ 冶炼方法 Smelting method: 电弧炉+VD+电渣重熔

■ 热处理工艺 Heat Treatment Process

项目 Item	加热温度 (°C) Heating temperature	冷却方式 Cooling Method	硬度 Hardness
退火 Annealing	780-800	炉冷	≤255HB
淬火 Quenching	1020-1050	油冷	49HRC
回火 Tempering	180-200	空冷	48HRC





S136 电渣耐腐蚀超镜面塑料模具钢

■ 产品用途 Product use

有腐蚀性气体的含氟塑料或添加阻燃剂(含氯)塑料模具。
Plastic mould in corrosion contain F and combustion-resisting matter(contain CL.)

■ 产品性能 Product performance

铬13型不锈钢耐腐蚀钢, 淬回火后硬度高, 有超镜面加工性, 并免除热处理, 永不变形。
Cr13 stainless steel corrosion resisting, Hardening-Tempering Hardness super mirror-like production, deformation effected by hardered could off.

■ 牌号对照表 Grades comparison

S136	美国 (ASTM)	日本 (JIS)	日本 (大同)	德国 (DIN)	瑞典 (ASSAB)
	420	SUS420C	S-STAR	1.2083	S136

■ 化学成分对比 (WT%) Chemical composition(%)

S136	C	Si	Mn	Cr	V	Mo
	0.36-0.45	≤0.60	≤0.80	12.00-14.00	0.15-0.25	0.15-0.25

■ 冶炼方法 Smelting method: 电弧炉+VD+电渣重熔

■ 供货硬度 Hardness of supply: 退火状态: ≤HB235 欲硬HRC30-36

■ 热处理工艺 Heat Treatment Process

项目 Item	加热温度 (°C) Heating temperature
退火 Annealing	800°C缓冷
淬火 Quenching	1020-1100°C油冷经500°C-800°C二次预热
回火 Tempering	200-300°C空冷HRC50-52



4Cr13 塑胶模具钢

■ 产品用途 Product use

适宜制造承受高负荷、高耐磨在腐蚀介质作用下的塑料模具、透明塑料制品模具等。
IS suitable for manufacturing plastic dies and transparent plastic product dies which can bear high load. High abrasion resistance and under the effect of corrosive medias.

■ 产品性能 Product performance

该钢属马氏体类型不锈钢, 机械加工性能好, 经淬回火后, 具有优良的耐磨耐腐蚀性能、抛光性能、较高的强度和耐磨性。
It is martensitic stainless steel with good mechanical properties. It has excellent corrosion resistance polishing performance, higher strength and abrasion resistance.

■ 牌号对照表 Grades comparison

4Cr13	美国 (ASTM)	日本 (大同)	德国 (DIN)	瑞典 (ASSAB)
	420	S-STAR	1.2083	S136

■ 化学成分对比 (WT%) Chemical composition(%)

4Cr13	C	Si	Mn	Cr
	0.36-0.45	≤0.60	≤0.50	12.00-14.00

■ 冶炼方法 Smelting method: 电弧炉+VD

■ 热处理工艺 Heat Treatment Process

项目 Item	加热温度 (°C) Heating temperature	冷却方式 Cooling Method	硬度 Hardness
退火 Annealing	750-800	炉冷	≤235HB
淬火 Quenching	1050-1100	油冷	≥50HRC
回火 Tempering	200-300	空冷	≥50HRC





718H 预硬塑胶模具钢

■ 产品用途 Product use

家电及办公塑料制品模具。如:电视机外壳、洗衣机缸体、复印机等
汽车内饰件塑胶模具。如:保险杠、仪表板、内饰门板、车灯等

Home appliance and office plastic mould . such as TV shell washing machine cylinder block, photocopiers, etc
Plastic infection mold,car inner decoration. such as: bumper.instrument panel.interior doors.lights.etc

■ 718H成型锻造比较常规模块锻造的优点

心部硬度和表面硬度更加均匀一致;	Heart of hardness and surface hardness of more uniform;
热处理组织转变比较单一金相组织更加细腻均匀;	Organization transformation is more single, heat treatment microstructure is more fine and uniform;
材料使用大锻造比生产, 心部组织致密;	Materials used in large forging ratio production, heart tissue density;
材料心部韧性和表面韧性偏差极小;	Toughness of material is the core and surface toughness minimal deviation;
模具加工周期缩短, 成本降低。	Mould processing cycle is shortened,the cost reduced.

■ 牌号对照表 Grades comparison

718H	美国 (ASTM)	日本 (大同)	德国 (DIN)	瑞典 (ASSAB)
	P20+Ni	PX5	1.2738	718

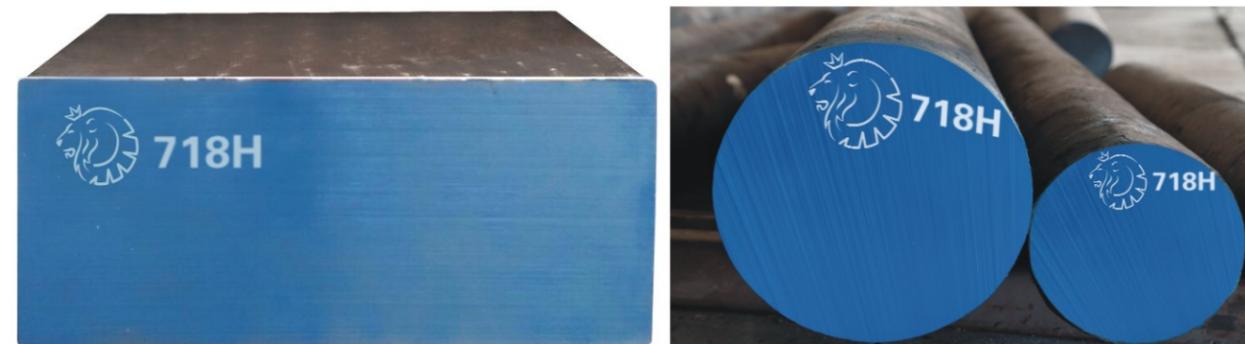
■ 化学成分对比 (WT%) Chemical composition(%)

718H	C	Si	Mn	Cr	Ni	Mo
	0.32-0.40	0.20-0.40	1.10-1.50	1.70-2.00	0.85-1.15	0.15-0.30

■ 冶炼方法 Smelting method: 电弧炉+VD

■ 热处理工艺 Heat Treatment Process

项目 Item	加热温度 (°C) Heating temperature	冷却方式 Cooling Method	硬度 Hardness
退火 Annealing	690-710	炉冷	≤220HB
淬火 Quenching	830-870	油冷或空冷	48-52HRC
回火 Tempering	580-650	空冷	30-35HRC



P20/2311 预硬塑胶模具钢

■ 产品用途 Product use

适宜制造大、中型的和精密的塑料模具以及低熔点锡、锌、铅合金用的压铸模等。
It is suitable for meduim and large size precision moulds and die casting moulds.

■ 牌号对照表 Grades comparison

P20/2311	美国 (ASTM)	德国 (DIN)	瑞典 (ASSAB)
	P20	1.2311	618

■ 化学成分对比 (WT%) Chemical composition(%)

P20/2311	C	Si	Mn	Cr	Mo	S	P
	0.35-0.45	0.20-0.40	1.20-1.80	1.10-2.10	0.15-0.25	≤0.03	≤0.03

■ 使用技术 Use of technology

钢种/加工工艺	铣削加工 高速钢	焊接	改锻
P20/2311	粗铣: 切削速度 15-30m/min 切削深度3-4mm 精铣: 切削速度35-50mm/min 切削深度1-2mm	预热400-500°C 焊后 500-550°C 回火2-4小时	按照P20工艺、锻后空冷 至300°C后缓冷。再加热 至500~550°C回火, 仍然 保持交货硬度。

■ 冶炼方法 Smelting method: 电弧炉+VD

■ 热处理工艺 Heat Treatment Process

项目 Item	加热温度 (°C) Heating temperature	冷却方式 Cooling Method	硬度 Hardness
退火 Annealing	710-740	炉冷	≤220HB
淬火 Quenching	850-880	油冷	52-55HRC
回火 Tempering	580-630	空冷	30-35HRC

