**《耐磨黄铜棒》国家标准**

**（送审稿）编制说明**

1. **任务来源**

根据国标委综合〔2015〕59号，计划编号20152293-T-610《耐磨黄铜棒》国家标准，由宁波金田铜业（集团）股份有限公司，浙江海亮股份有限公司、安徽鑫科新材料股份有限公司、武汉泛洲中越合金有限公司、宁波长振铜业有限公司、宁波正元铜合金有限公司负责起草，完成年限为2018年。

1. **工作简况**

**1、立项目的和意义**

近年来随着装备工业的发展，各种零部件使用环境日趋恶化、可靠性要求不断提高，因此对材料的要求也越来越高。黄铜是最重要的铜合金品种，以低成本、良好的加工性能和耐腐蚀性能著称，广泛应用于国民经济的各个领域，伴随着科技的进步，简单黄铜、铝黄铜、锰黄铜已不能满足一些特殊的使用要求，尤其是航空、汽车、液压等工业领域对材料耐磨、耐冲击、高强度等要求。

随着人们对黄铜的深入研究，发现通过加入少量的不同合金元素、通过工艺控制合金组织，能使材料具有许多优良的新特性。新产品、新技术的实用化使黄铜合金的品种越来越多，应用领域越分越细，性能要求也越来越高，许多品种已成为某一领域的专用牌号，其中就有以β相为基础的新型复杂黄铜合金，该类材料不但合金基体强度高、韧性强，而且要求在基体上均匀分布有高硬度的耐磨相，与硬度相对较低的基体间形成优良的耐磨机制，从而在摩擦时建立稳定的润滑层，使材料在高速、重载的恶劣工况下，能有效地抵抗载荷的冲击及剧烈的磨损作用，具有良好的高强、耐磨特性。

耐磨黄铜材料，自问世以来迅速普及，用于高强度、高耐磨性的重载高速液压转子、轴承、汽车同步器齿环及各种精密耐磨零部件的制造，并随着近年来我国加工制造业的蓬勃发展，市场需求量不断扩大。

目前生产耐磨黄铜棒的厂家很多，市场上供应的产品种类繁多，牌号各异，除少数牌号列入EN 12164-2016《铜及铜合金 易切削用棒材》等标准外，大部分都是厂家自主命名的，由于国内外均没有针对耐磨零部件用黄铜棒的专业标准，因此迫切需要制定一项标准来统一、规范市场。

**2、国内外情况说明**

国外对耐磨黄铜材料的研究起步较早，自20世纪六、七十年代就开始研究耐磨复杂黄铜。八十年代初，日本专利局先后公布了2个有关耐磨黄铜的专利：1）耐磨韧性铜合金，专利号：特开昭56-127741，合金成分为Cu：54-66%，Al：1-5%，Mn：1-5%，Si：0.2-1.5%，Ni：0.5-4%，Fe：0.1-2%，Sn：0.2-2%，余量为Zn。2）耐磨韧性铜合金，专利号：特开昭56-133443，合金成分为Cu：54-60%，Al：1-5%，Mn：1-5%，Si：0.2-1.5%，Ni：0.5-4%，Fe：0.1-2%，Sn：0.2-2%，余量为Zn；中国对耐磨复杂黄铜也展开了研究，如专利号：89105212.7，《多元耐磨铜合金》中公布的化学成分为Cu：50-70%，Zn：15-35%，Al：2-8%，Si：1-4%，Mn：4-15%，Sn：2-6%，Co：0.3-0.5%，Be：0.2-1%，Re：0.05-0.2%。

通过查阅相关资料发现，目前国内外没有专门针对耐磨黄铜棒的专用标准。

（1）欧盟相关标准EN 12164-2016《铜及铜合金 易切削用棒材》，适用于所有的易切削用铜合金棒材，范围较窄，专业性不强。

（2）国家标准GB/T 4423-2007《铜及铜合金拉制棒》、YS/T 649-2007《铜及铜合金挤制棒》没有相关的牌号，标准不适用。

**3、项目编制组成员**

根据任务落实会会议精神，本项目的编制组由宁波金田铜业（集团）股份有限公司、浙江海亮股份有限公司、安徽鑫科新材料股份有限公司、武汉泛洲中越合金有限公司、宁波长振铜业有限公司、宁波正元铜合金有限公司等单位组成。

**4、主编单位的技术基础**

本标准的负责主编起草单位宁波金田铜业（集团）股份有限公司始建于1986年10月，目前已成为中国铜加工行业的龙头企业，产业涉足铜加工、高新材料、加工贸易等领域，主要产品有标准阴极铜、无氧铜线、各类铜及铜合金线、棒、板、带、管、漆包线、阀门、水表、磁性材料等，产品产量均居行业前列，公司先后承担国家863项目1项，国家“十二五”科技支撑计划项目3项，国家火炬计划项目10项，市级重大科技攻关项目4项，主持参与国家/行业标准制订24项，拥有授权发明专利66项，获省级以上科技进步奖10项。

宁波金田铜业长期致力于耐磨黄铜棒材的研发和生产，现已广泛应用于多个工业领域，市场占有率居行业前列。申请的一项发明专利（一种高强高韧耐磨复杂黄铜及其制造方法，专利号ZL201110214083.0）已得到授权，并完成产品的技术鉴定，成果获中国有色金属科技进步三等奖。承担了2013年宁波市重大科技专项《重大基础装备专用多元高强耐磨铜合金产品产业化开发》项目，并通过验收。具备了起草本国家标准的技术基础。

**5、主要工作过程**

标准制订计划任务正式下达后，宁波金田铜业（集团）股份有限公司立即成立了标准修订编制小组，并落实起草任务，确定标准的主要起草人，拟定该标准的工作计划。研究整理了本企业产品的技术要求及产品使用现状，并会同营销人员对耐磨黄铜棒生产及应用两方面进行调研，全面、准确地了解了市场不同客户的需求及国内目前耐磨黄铜棒生产整体水平和现状。依据大量技术资料，于2016年10月形成了标准征求意见稿，完成全国有色金属标准化技术委员会初次会议讨论, 与会专家对标准的《征求意见稿》进行了热烈的讨论，对产品力学性能、显微组织等提出了宝贵意见和建议。根据讨论结果，标准起草小组对标准内容进行了修改与完善，并根据会议要求，于2017年4月19日到宁波博威合金有限公司，协同博威合金、正元铜合金的技术人员对标准内容进行沟通交流，达成一致意见后于2017年5月形成标准预审稿，经会议讨论，完善，于2017年8月形成标准送审稿。

1. **标准编制原则**

本标准起草单位自接受起草任务后，成立了本系列标准编制工作组，负责收集生产统计、检验数据、市场需求及客户要求等信息。初步确定了《耐磨黄铜棒》标准起草所遵循的基本原则和编制依据：

1）查阅相关标准和国内外客户的相关技术要求；

2）根据国内外铜及铜合金线材企业具体情况，力求做到标准的合理性与实用性；

3）根据技术发展水平及测试数据确定技术指标取值范围；

4）完全按照GB/T 1.1和有色加工产品标准和国家行业标准编写示例的要求格式和结构进行编写。

1. **确定标准主要技术指标的依据**

**1、 牌号的确定**

本标准根据目前耐磨黄铜棒产品的生产实际和市场应用情况，经过市场调研、数据收集和资料分析，确定了锰黄铜、铝黄铜和硅黄铜三种合金体系为本标准牌号的主要构成，收入国内外标准牌号14个，并将国外牌号按照GB/T 29091-2012《铜及铜合金牌号和代号表示方法》标准进行命名转化，最终确定本标准的牌号为：HMn57-2-2-1、HMn57-3-1、HMn58-2-1-0.5、HMn58-3-1-1、HMn59-2-2-0.5、HMn59-3-2-0.8、HMn60-2-1-0.5、HMn60-3-1-0.75、HMn61-2-1-1、HMn62-3-3-1、HAl61-4-3-1、HAl66-6-3-2、HSi68-1、Hsi75-3。各牌号及出处见表1。

表1 牌号出处

|  |  |  |  |
| --- | --- | --- | --- |
| 序号 | 牌号 | 对应牌号出处 | 对应牌号 |
| 1 | HMn57-2-2-1 | 金田 | / |
| 2 | HMn57-3-1 | GB/T 5231 | / |
| 3 | HMn58-2-1-0.5 | JIS | C6782 |
| 4 | HMn58-3-1-1 | ASTM | C67400 |
| 5 | HMn59-2-2-0.5 | EN | CW713R |
| 6 | HMn59-3-2-0.8 | PSA（泛洲中越） | CuZn36Mn3 |
| 7 | HMn60-2-1-0.5 | 金田 | / |
| 8 | HMn60-3-1-0.75 | ASTM | C67300 |
| 9 | HMn61-2-1-1 | 金田 | / |
| 10 | HMn62-3-3-1 | GB/T 5231（泛洲中越） | / |
| 11 | HAl61-4-3-1 | GB/T 5231 | / |
| 12 | HAl66-6-3-2 | GB/T 5231 | / |
| 13 | HSi68-1 | 海亮 | / |
| 14 | HSi75-3 | GB/T 5231（海亮） | / |

**2、供应状态的确定**

针对用户使用的产品需求，结合GB/T 29094-2012《铜及铜合金状态表示方法》，确定了本标准规定的耐磨黄铜棒材的主要状态为M30（热挤压）、HR50（拉拔+应力消除）、M07（连续铸造）。

**3、规格范围**

本标准根据市场上用户对耐磨黄铜棒的使用要求，以及实际生产控制水平，确定本标准规定的耐磨黄铜棒的直径（对边距）为：M07状态12-150mm，M30状态为5-150mm，HR50状态为5-80mm，长度为：500-6000mm。

**4、化学成分**

本标准牌号取自GB/T 5231、ASTM、EN 12164，JIS H 3250，以及各起草单位自主研发的牌号。

（1）HMn58-2-1-0.5、HMn58-3-1-1、HMn59-2-2-0.5、HMn60-3-1-0.75等牌号直接引用EN、ASTM、JIS等国外标准的成熟牌号，并且，因国外标准牌号对于杂质的要求一般是在规定单个元素杂质上限后，再对其他杂质元素的总和进行要求。为达到标准统一，该类牌号的杂质要求遵循国外牌号的编写方式，以“注a”形式，对表中不列入“杂质总和”范围内的元素进行标注。

（2）HMn57-3-1、HMn62-3-3-1、HAl61-4-3-1、HAl66-6-3-2、Hsi75-3牌号取自GB/T 5231标准。

(3) HMn57-2-2-1、HMn59-3-2-0.8、HMn60-2-1-0.5、HMn61-2-1-1、HSi68-1牌号为各起草单位自主研发的牌号。

**5、外形尺寸及允许偏差的确定**

本标准外形尺寸及允许偏差根据耐磨黄铜棒生产实际，分为M07（连铸）、HR50（拉拔+应力消除）和M30（热挤压）3种状态，其中每种状态又根据产品形状分为圆形和正方形（及矩形、六角形）两种，经对不同牌号、状态、规格、形状产品的检测分析，并参照GB/T 4423-2007《铜及铜合金拉制棒》、YS/T 649-2007《铜及铜合金挤制棒》等现有成熟标准指标，结合本标准产品的特殊要求及客户需求，在实际数据的下限基础上再降低一点，确定了本标准产品尺寸偏差，基本都能满足目前用户的使用要求，指标等同或高于国内标准。

棒材直径及允许偏差数据分析与确定如表2，直径及允许偏差具体检测数据见附表1-附表3。

表2 本标准外形尺寸及允许偏差的确定依据

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 状态 | 直径（或对边距） | 圆形 | | | | | 正方形、矩形、正六角形 | | | | |
| 数据检测范围 | 现有标准指标 | | 确定本标准指标 | | 数据检测范围 | 现有标准指标 | | 确定本标准指标 | |
| 高精级 | 普通级 | 高精级 | 普通级 | 高精级 | 普通级 | 高精级 | 普通级 |
| M07 | ≥12～18 | -0.11～0.13 | / | / | ±0.10 | ±0.15 | -0.14～0.15 | / | / | ±0.10 | ±0.15 |
| ＞18～30 | -0.19～0.17 | / | / | ±0.15 | ±0.20 | -0.22～0.25 | / | / | ±0.20 | ±0.25 |
| ＞30～50 | -0.32～0.37 | / | / | ±0.30 | ±0.40 | -0.46～0.45 | / | / | ±0.40 | ±0.50 |
| ＞50～80 | -0.47～0.48 | / | / | ±0.40 | ±0.50 | -0.54～0.45 | / | / | ±0.50 | ±0.70 |
| ＞80～150 | -0.87～0.98 | / | / | ±0.80 | ±1.00 | -1.12～0.97 | / | / | ±1.00 | ±1.20 |
| HR50 | ≥5～12 | -0.05～0.05 | ±0.03 | ±0.05 | ±0.03 | ±0.05 | -0.08～0.08 | ±0.08 | ±0.10 | ±0.04 | ±0.08 |
| ＞12～18 | -0.06～0.05 | ±0.04 | ±0.06 | ±0.04 | ±0.06 | -0.08～0.08 | ±0.11 | ±0.14 | ±0.06 | ±0.10 |
| ＞18～30 | -0.07～0.07 | ±0.04 | ±0.07 | ±0.04 | ±0.07 | -0.08～0.08 | ±0.18 | ±0.21 | ±0.06 | ±0.10 |
| ＞30～50 | -0.10～0.09 | ±0.08 | ±0.10 | ±0.08 | ±0.10 | -0.13～0.11 | ±0.25 | ±0.30 | ±0.10 | ±0.13 |
| ＞50～80 | -0.11～0.10 | ±0.10 | ±0.12 | ±0.10 | ±0.12 | -0.2～0.16 | ±0.30 | ±0.30 | ±0.15 | ±0.24 |
| M30 | ≥5～18 | -0.19～0.26 | ±1.5直径或对边距 | ±1.2直径或对边距 | ±0.25 | ±0.30 | -0.35～0.37 | ±1.5直径或对边距 | ±1.2直径或对边距 | ±0.35 | ±0.40 |
| ＞18～30 | -0.28～0.37 | ±0.30 | ±0.40 | -0.35～0.49 | ±0.40 | ±0.50 |
| ＞30～50 | -0.59～0.55 | ±0.50 | ±0.60 | -0.54～0.68 | ±0.60 | ±0.70 |
| ＞50～80 | -0.60～0.69 | ±0.60 | ±0.70 | -0.59～0.78 | ±0.70 | ±0.80 |
| ＞80～150 | -0.69～0.89 | ±0.80 | ±1.0 | -0.91～1.17 | ±1.0 | ±1.20 |

**6、力学性能**

本标准力学性能是根据目前耐磨黄铜棒产品的市场应用情况，以及金田、海亮、泛州中越的实际生产情况，参考EN 12164、JIS H3250等标准规范制定。根据实际生产控制水平和目前用户使用要求，抗拉强度标准及延伸率标准都是按实际数据的下限再降低一点。

表3、表4分别为海亮和泛州中越的棒材力学性能要求，表5为金田力学性能检测数据（具体检测数据明细见附表4）。

表3 海亮力学性能要求

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 牌号 | 规格 | 硬度 | 抗拉强度 | 延伸率 |
| HSi68-1 | Φ24 | 74HRB | 436 | 5 |
| HSi68-1 | Φ22 | 65HRB | 461 | 12 |
| HSi68-1 | Φ8.5 | 75HRB | 510 | 9 |
| HSi68-1 | Φ10 | 70HRB | 630 | 6 |
| HSi68-1 | S11 | 72HRB | 624 | 15 |
| HSi68-1 | Φ12.5 | 75HRB | 482 | 8 |
| HSi68-1 | Φ17.5 | 60HRB | 492 | 9 |
| HSi68-1 | S22 | 58HRB | 495 | 5 |
| HSi68-1 | Φ23.8 | 58HRB | 495 | 5 |
| HSi68-1 | Φ24 | 62HRB | 567 | 15 |
| HSi68-1 | Φ24 | 58HRB | 523 | 20 |

表4 泛州中越力学性能要求

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 牌号 | 形状 | 状态 | 直径（或对边距）范围/mm | 抗拉强度  范围/MPa | 布氏硬度  范围/HB | 断后伸长率范围/% |
| HMn59-3-2-0.8 | 圆棒 | H50 | Φ10～Φ20 | ≥650 | ≥180 | ≥6 |
| HMn59-3-2-0.8 | 圆棒 | HR50 | Φ10～Φ20 | ≥600 | ≥165 | ≥15 |
| HMn62-3-3-1 | 圆棒 | M30 | Φ12～Φ120 | ≥535 | ≥165 | ≥12 |
| HMn62-3-3-1 | 圆棒 | H50、HR50 | Φ20～Φ40 | ≥590 | ≥170 | ≥8 |

表5 金田力学性能检测数据

| 牌号 | 状态 | 直径（或对边距）范围/mm | 抗拉强度  范围 | 断后伸长率  范围 | 布氏硬度范围 |
| --- | --- | --- | --- | --- | --- |
| HMn57-2-2-1 | HR50 | 5-25 | 517-565 | 15-24 | 138.2-162.3 |
| HMn57-2-2-1 | HR50 | 25-50 | 495-554 | 16-24 | 136.4-176.0 |
| HMn57-2-2-1 | HR50 | 50-80 | 472-503 | 13-18 | 135.2-159.8 |
| HMn57-2-2-1 | M30 | 5-25 | 472-528 | 11-21 | 131.5-179.5 |
| HMn57-2-2-1 | M30 | 25-50 | 453-515 | 12.5-21 | 126.5-171.9 |
| HMn57-2-2-1 | M30 | 50-80 | 452-487 | 20-27 | 125.9-154.1 |
| HMn57-2-2-1 | M30 | ＞80 | — | — | 125.4-130.7 |
| HMn57-3-1 | HR50 | 5-25 | 572-610 | 8.5-15 | 170.1-202.1 |
| HMn57-3-1 | HR50 | 25-50 | 553-597 | 12-19 | 160.5-240.0 |
| HMn57-3-1 | M30 | 5-25 | 452-501 | 22-28 | 132.8-169.9 |
| HMn57-3-1 | M30 | 25-50 | 452-505 | 21-28 | 130.8-170.5 |
| HMn57-3-1 | M30 | 50-80 | 432-482 | 20.5-27 | 125.7-175.2 |
| HMn57-3-1 | M30 | ＞80 | — | — | 125.4-150.1 |
| HMn58-2-1-0.5 | M07 | 5-50 | 464-507 | 21-25 | 126.1-151.1 |
| HMn58-2-1-0.5 | M07 | ＞50 | 463-509 | 21-28 | 125.6-163.4 |
| HMn58-2-1-0.5 | HR50 | 5-50 | 493-533 | 5.5-11 | 136.9-167.2 |
| HMn58-2-1-0.5 | HR50 | 50-80 | 491-536 | 15-22 | 132.5-163.9 |
| HMn58-2-1-0.5 | M30 | 5-50 | 462-504 | 21-26 | 127.4-164.2 |
| HMn58-2-1-0.5 | M30 | ＞50 | 412-459 | 21-29 | 114.1-135.6 |
| HMn58-3-1-1 | HR50 | 5-25 | 621-664 | 7-13 | 184.2-224.9 |
| HMn58-3-1-1 | HR50 | 25-50 | 605-662 | 8.5-17 | 176.8-236.5 |
| HMn58-3-1-1 | M30 | 5-25 | 542-578 | 10.5-16 | 168.2-214.7 |
| HMn58-3-1-1 | M30 | 25-50 | 524-561 | 13-17 | 157.5-201.3 |
| HMn58-3-1-1 | M30 | 50-80 | 506-541 | 15-22 | 151.2-201.3 |
| HMn59-2-2-0.5 | M07 | 5-25 | 542-574 | 6.5-12 | 142-177.6 |
| HMn59-2-2-0.5 | M07 | 25-80 | 524-551 | 8.5-14 | 132.5-165.8 |
| HMn59-2-2-0.5 | M07 | ＞80 | — | — | 131.5-179.0 |
| HMn59-2-2-0.5 | HR50 | 5-15 | 621-668 | 8.5-15 | 160.3-216.7 |
| HMn59-2-2-0.5 | HR50 | 15-60 | 591-641 | 12-19 | 161.2-214.7 |
| HMn59-2-2-0.5 | M30 | 5-15 | 550-594 | 15-21 | 162.3-211.9 |
| HMn59-2-2-0.5 | M30 | 15-60 | 530-568 | 16-20 | 154.5-190.5 |
| HMn59-2-2-0.5 | M30 | 60-80 | 510-532 | 15.5-18 | 142.6-182.0 |
| HMn59-3-2-0.8 | HR50 | 5-25 | 624-675 | 6.5-12 | 184.5-229.7 |
| HMn59-3-2-0.8 | HR50 | 25-50 | 605-655 | 8.5-17 | 178.2-221.3 |
| HMn59-3-2-0.8 | HR50 | 50-80 | — | — | 172.8-206.9 |
| HMn59-3-2-0.8 | M30 | 5-25 | 542-581 | 10-15 | 166.8-195.7 |
| HMn59-3-2-0.8 | M30 | 25-50 | 525-554 | 12.5-15 | 156.7-186.5 |
| HMn59-3-2-0.8 | M30 | 50-80 | 508-545 | 15-19 | 156.8-201.5 |
| HMn59-3-2-0.8 | M30 | ＞80 | — | — | 141.6-168.9 |
| HMn60-2-1-0.5 | M07 | 5-25 | 510-536 | 12.5-16 | 132.5-146.8 |
| HMn60-2-1-0.5 | M07 | 25-80 | 481-517 | 15-20 | 126.2-159.4 |
| HMn60-2-1-0.5 | M07 | ＞80 | — | — | 126.5-149.7 |
| HMn60-2-1-0.5 | HR50 | 5-25 | 593-628 | 10.5-15 | 161.7-185.3 |
| HMn60-2-1-0.5 | HR50 | 25-50 | 566-598 | 12-15 | 152.4-184.5 |
| HMn60-2-1-0.5 | M30 | 5-25 | 484-532 | 15.5-20 | 125.0-162.1 |
| HMn60-2-1-0.5 | M30 | 25-80 | 454-495 | 21-25 | 112.6-150.7 |
| HMn60-2-1-0.5 | M30 | ＞80 | — | — | 115.2-139.5 |
| HMn60-3-1-0.75 | HR50 | 5-25 | 485-527 | 15-20 | 123.7-160.3 |
| HMn60-3-1-0.75 | HR50 | 25-50 | 444-489 | 15-21 | 110.3-150.4 |
| HMn60-3-1-0.75 | M30 | 5-25 | 407-438 | 18-24 | 98.7-130.1 |
| HMn60-3-1-0.75 | M30 | 25-80 | 384-418 | 21-32 | 97.6-120.3 |
| HMn60-3-1-0.75 | M30 | ＞80 | — | — | 96.8-124.6 |
| HMn61-2-1-1 | HR50 | 5-25 | 563-605 | 10.5-15.5 | 155.0-201.3 |
| HMn61-2-1-1 | HR50 | 25-50 | 521-567 | 12.5-18 | 143.2-170.2 |
| HMn61-2-1-1 | M30 | 50-80 | 461-501 | 15-21 | 123.7-162.4 |
| HMn62-3-3-1 | HR50 | 5-25 | 514-539 | 12.5-15 | 142.7-170.2 |
| HMn62-3-3-1 | HR50 | 25-50 | 484-520 | 14-19 | 137.6-171.5 |
| HMn62-3-3-1 | M30 | 5-25 | 405-448 | 18.5-27 | 114.2-156.7 |
| HMn62-3-3-1 | M30 | 25-80 | 381-428 | 21-28 | 104.3-140.0 |
| HMn62-3-3-1 | M30 | ＞80 | — | — | 96.2-116.8 |
| HAl61-4-3-1 | HR50 | 5-25 | 632-686 | 3-10 | 186.5-231.3 |
| HAl61-4-3-1 | HR50 | 25-50 | 606-641 | 4-9 | 189.2-239.9 |
| HAl61-4-3-1 | M30 | 5-25 | 608-659 | 3-11 | 185.6-212.3 |
| HAl61-4-3-1 | M30 | 25-80 | 580-642 | 5-14 | 184.7-638.6 |
| HAl61-4-3-1 | M30 | ＞80 | — | — | 178.5-194.5 |
| HAl66-6-3-2 | M07 | 5-25 | 638-672 | 5.5-11 | 181.3-222.4 |
| HAl66-6-3-2 | M07 | 25-80 | 594-642 | 7-15 | 178.6-225.7 |
| HAl66-6-3-2 | M07 | ＞80 | — | — | 168.2-195.5 |
| HSi68-1 | HR50 | ≥5-25 | 503-578 | 6.5-13 | 125.0-171.8 |
| HSi68-1 | HR50 | 25-50 | 451-514 | — | 117.5-163.9 |
| HSi68-1 | HR50 | 50-80 | 420-481 | 10-16 | 111.2-172.6 |
| HSi68-1 | M30 | ≥5-25 | 407-453 | 12-20 | 107.5-151.8 |
| HSi68-1 | M30 | 25-80 | 364-432 | 16-30 | 95.7-146.5 |
| HSi68-1 | M30 | >80 | — | — | 98.1-108.6 |
| HSi75-3 | HR50 | ≥5-25 | 181-528 | 12-21 | 145.7-178.5 |
| HSi75-3 | HR50 | 25-50 | 455-519 | 15-27 | 136.8-172.1 |
| HSi75-3 | M30 | ≥5-25 | 381-432 | 18-31 | 117.1-140.2 |
| HSi75-3 | M30 | 25-80 | 363-416 | 21-32 | 100.8-142.5 |
| HSi75-3 | M30 | >80 | — | — | 94.6-126.8 |

**7、关于材料耐磨性检测的说明**

本标准在研制过程中，项目组尝试通过摩擦磨损试验来表征材料耐磨特性。通过查阅国内外大量关于耐磨黄铜材料耐磨性能检测的文献得知，目前国内外并未有相关的标准和成熟方法。为此，项目组结合此前公司已有的摩擦磨损试验经验，参考武汉泛州中越提供的摩擦磨损试验方法，对部分试样送往中科院宁波材料所等检测机构进行检测。检测条件如下：

1）主要设备环-块摩擦磨损试验机

2）材料制备—试验材料制成10mm×10mm×10mm块状销试样，选用GCr15作为盘试样材料。

3）主要条件—载荷为50N，时间为15min，速度为800r/min（2.10m/s），68#液压油，试验温度为18℃。

从实际情况测试来看，采用摩擦系数和磨损量也无法准确表征材料的耐磨性能，如典型的耐磨黄铜HMn62-3-3-1与铅黄铜HPb59-1，在压力50N，转速1000r/min，选择直径10mm，摩擦副GCr15，68#液压油的测试条件下，摩擦系数分别为0.919和0.921，磨损深度分别为150um和148um。从测试结果上看，两者耐磨性能基本相当，而在实际工况中，HMn62-3-3-1的耐磨性能远远好于HPb59-1，测试结果与实际情况不符合。

另外，采用摩擦磨损试验机测试时，其试验参数与实际工况差距甚远。如液压泵中实际转速达到2800r/min，用于涡轮增压器中的轴承实际转速可高达5000r/min以上，而试验设备转速最高不能超过1200r/min；实际工况中耐磨黄铜与摩擦副之间存在的油膜，具有一定的压力，而试验设备中该油膜不存在压力；

因此，项目组在内部讨论与分析研究后，确定本标准在表征产品耐磨性能方面时，不采用摩擦磨损试验方法，改用其他方式。

**8、显微组织特征**

为了表征材料耐磨性能，我们选用微观组织作为必要条件。其原因在于：1）对于国内外耐磨件用黄铜进行了分析后，发现共同点为“软基体+硬质点的组织”；2）微观组织决定性能，通过比对各牌号典型金相组织，可以定性判定材料的耐磨性能。

各牌号显微组织特征，是通过YS/T 449《铜及铜合金铸造和加工制品显微组织检验法》进行检测，并参考《金属材料金相图谱》、《加工铜及铜合金金相图谱 》等文献确定。通过显微组织检测发现，同一牌号HR50态与M30态两种状态的显微特征相似，为此，为加强用户对显微组织特征的认识，选取各牌号M07和HR50两种状态的典型金相图片作为本标准资料性附录，供用户参考。

表6 显微组织特征要求

|  |  |  |
| --- | --- | --- |
| 牌号 | 状态 | 显微组织特征 |
| HMn58-2-1-0.5 | M07 | 基体β相+强化相+少量α相，α相呈条状和颗粒状，Fe-Mn强化相呈颗粒状 |
| HMn59-2-2-0.5 | M07 | 基体β相+Mn-Si强化相+少量α相+Pb相，α相呈针、条状和颗粒状，Mn-Si强化相呈颗粒状、条状，Pb相呈颗粒状 |
| HMn60-2-1-0.5 | M07 | 基体β相+强化相+α相，α相呈针条状、线状，Mn-Si-Fe强化相以条状、颗粒状、质点状分布 |
| HAl66-6-3-2 | M07 | 基体β相+γ相+富铁相，γ相呈星花状， Fe强化相呈质点状 |
| HMn57-2-2-1 | HR50 | 基体（α+β）双相+ Mn-Si强化相+pb相，Mn-Si强化相呈颗粒状、质点状，Pb相呈颗粒状 |
| HMn57-3-1 | HR50 | 基体β相+部分α相呈条状，Fe-Mn强化相呈颗粒状 |
| HMn58-2-1-0.5 | HR50 | 基体β相+Fe-Mn强化相+部分α相，α相呈条状和颗粒状，Fe-Mn强化相呈颗粒状、质点状 |
| HMn58-3-1-1 | HR50 | 基体β相+Mn-Si强化相+少量α相，α相呈针状和颗粒状，Mn-Si强化相呈颗粒状 |
| HMn59-2-2-0.5 | HR50 | 基体β相+Mn-Si强化相+少量α相+Pb相，α相呈针状和颗粒状，Mn-Si强化相呈颗粒状，Pb相呈颗粒状 |
| HMn59-3-2-0.8 | HR50 | 基体β相+Mn-Si强化相+少量α相+Pb相，α相呈针状和颗粒状，Mn-Si强化相呈颗粒状，Pb相呈颗粒状 |
| HMn60-2-1-0.5 | HR50 | 基体（α+β）双相+ Mn-Si强化相，Mn-Si强化相呈颗粒状、质点状 |
| HMn60-3-1-0.75 | HR50 | 基体α相+Mn-Si强化相+少量β相+Pb相，β相呈块状，Mn-Si强化相呈颗粒状，Pb相呈颗粒状 |
| HMn61-2-1-1 | HR50 | 基体α相+Mn-Si强化相+少量β相+Pb相，β相呈块状，Mn-Si强化相呈颗粒状，Pb相呈颗粒状 |
| HMn62-3-3-1 | HR50 | 基体α相+强化相+少量β相，β相呈块状，Mn-Si强化相、富Cr相呈颗粒状 |
| HAl61-4-3-1 | HR50 | 基体β相+强化相+少量α相，α相呈块状，Co-Ni-Fe-Si强化相呈颗粒状 |
| HSi68-1 | HR50 | 基体α相+Cu3P相+少量β相，β相呈块状，CU3P呈质点状 |
| HSi75-3 | HR50 | 基体α相+Cu3P相+少量β相，β相呈块状，CU3P呈质点状 |

**9、内部质量**

棒材的内部质量采用断口检验或涡流探伤检测，根据使用要求，棒材断口应致密，无缩尾。不允许有超出YS/T 336 中规定的气孔、夹杂和分层等缺陷。

**10、表面质量**

根据耐磨黄铜棒产品使用行业的要求，规定棒材表面应无夹杂、裂纹、气孔、冷隔等缺陷，允许有轻微的不使其尺寸超出允许偏差的纵向拉痕。

**11、本标准与国内外标准要求对比**

11.1 外形尺寸及允许偏差

本标准外形尺寸及允许偏差要求与国内外相关标准对比如表7至表9所示，本标准指标高于国内外相关标准。

表7 本标准与国标外形尺寸及其允许偏差对比

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 状态 | 直径（或对边距） | 圆形 | | | | | 正方形、矩形、正六角形 | | | | |
| 现有标准指标 | | 本标准指标 | | 本标准指标与国标对比情况 | 现有标准指标 | | 本标准指标 | | 本标准指标与国标对比情况 |
| 高精级 | 普通级 | 高精级 | 普通级 | 高精级 | 普通级 | 高精级 | 普通级 |
| M07 | ≥12～18 | / | / | ±0.10 | ±0.15 | / | / | / | ±0.10 | ±0.15 | / |
| ＞18～30 | / | / | ±0.15 | ±0.20 | / | / | / | ±0.20 | ±0.25 | / |
| ＞30～50 | / | / | ±0.30 | ±0.40 | / | / | / | ±0.40 | ±0.50 | / |
| ＞50～80 | / | / | ±0.40 | ±0.50 | / | / | / | ±0.50 | ±0.70 | / |
| ＞80～150 | / | / | ±0.80 | ±1.00 | / | / | / | ±1.00 | ±1.20 | / |
| HR50 | ≥5～12 | ±0.03 | ±0.05 | ±0.03 | ±0.05 | 等同 | ±0.08 | ±0.10 | ±0.04 | ±0.08 | 高于 |
| ＞12～18 | ±0.04 | ±0.06 | ±0.04 | ±0.06 | 等同 | ±0.11 | ±0.14 | ±0.06 | ±0.10 | 高于 |
| ＞18～30 | ±0.04 | ±0.07 | ±0.04 | ±0.07 | 等同 | ±0.18 | ±0.21 | ±0.06 | ±0.10 | 高于 |
| ＞30～50 | ±0.08 | ±0.10 | ±0.08 | ±0.10 | 等同 | ±0.25 | ±0.30 | ±0.10 | ±0.13 | 高于 |
| ＞50～80 | ±0.10 | ±0.12 | ±0.10 | ±0.12 | 等同 | ±0.30 | ±0.30 | ±0.15 | ±0.24 | 高于 |
| M30 | ≥5～18 | ±1.5直径或对边距 | ±1.2直径或对边距 | ±0.25 | ±0.30 | 高于 | ±1.5直径或对边距 | ±1.2直径或对边距 | ±0.35 | ±0.40 | 高于 |
| ＞18～30 | ±0.30 | ±0.40 | 高于 | ±0.40 | ±0.50 | 高于 |
| ＞30～50 | ±0.50 | ±0.60 | 高于 | ±0.60 | ±0.70 | 高于 |
| ＞50～80 | ±0.60 | ±0.70 | 高于 | ±0.70 | ±0.80 | 高于 |
| ＞80～150 | ±0.80 | ±1.0 | 高于 | ±1.0 | ±1.20 | 高于 |

表8 EN 12164 外形尺寸及其允许偏差

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 牌号 | 直径或对边距 | 直径允许偏差 | | | | 本标准指标与EN12164对比情况 |
| 圆形 | | | 规则多边形 |
| A级 | B级 | C级 |
| CW713R | 2～3 | 0-0.04 | 0-0.025 | 0-0.015 | 0-0.06 | 高于 |
| >3～6 | 0-0.05 | 0-0.030 | 0-0.020 | 0-0.08 | 高于 |
| >6～10 | 0-0.06 | 0-0.036 | 0-0.025 | 0-0.09 | 高于 |
| >10～18 | 0-0.07 | 0-0.043 |  | 0-0.11 | 高于 |
| >18～30 | 0-0.08 | 0-0.052 |  | 0-0.13 | 高于 |
| >30～50 | 0-0.16 |  |  | 0-0.16 | 高于 |
| >50～80 | 0-0.19 |  |  | 0-0.19 | 高于 |

表9 JIS H 3250外形尺寸及其允许偏差

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 牌号 | 直径或对边距 | 直径允许偏差 | | | 本标准指标与JIS H 3250对比情况 |
| 圆形 | | 规则多边形 |
| 特殊级 | 普通级 |  |
| C6782 | 2～3 | 0  -0.03 | ±0.03 | ±0.05 | 高于 |
| >3～6 | 0  -0.04 | ±0.04 | ±0.06 | 高于 |
| >6～10 | 0  -0.05 | ±0.04 | ±0.08 | 高于 |
| >10～20 | 0  -0.07 | ±0.06 | ±0.11 | 高于 |
| >20～35 | 0  0.08 | ±0.08 | ±0.18 | 高于 |
| >35～50 | 0  -0.11 | ±0.10 | ±0.26 | 高于 |
| >50 |  | ±0.3%直径或对边距 | ±0.6%直径或对边距 | 高于 |

11.2 直度

本标准直度要求与国内外相关标准对比如表10至表12所示，本标准指标高于国内外相关标准。

表10 本标准直度公差

|  |  |
| --- | --- |
| 内容 | 要求 |
| 直度 | 拉制棒材直度为每米不大于2mm；挤制或铸造棒材直度为每米不超过5mm |

表11 EN 12164直度公差

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 牌号 | 公称直径（或对边距） | 最大的直径偏差 | | 本标准指标与EN 12164对比情况 |
| 任一400mm长度 | 棒材全场L，m |
| CW713R | 圆形棒 | | |  |
| 10-50 | 0.8 | 2.0×L | 等同 |
| 规则多边形棒 | | |  |
| 10-50 | 1.2 | 3.0×L | 高于 |

表12 JIS H3250 直度公差

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 牌号及状态 | 公称直径（或对边距） | 部分长度/mm | 标准长度/mm | 最大偏差 | | 本标准指标与JIS 3250对比情况 |
| 圆形 | 规则多边形 |
| c6782，拉拔 | 8-50 | ≤1000 | 全场 | 2 | 4 | 高于 |
| 1000-2000 | 1000 | 2 | 4 |
| 2000-5000 | 2000 | 5 | 10 |

11.3 力学性能

本标准力学性能要求与国内外相关标准对比如表13至表15所示，本标准指标高于国内外相关标准。

表13 本标准力学性能要求

| 牌号 | 状态 | 直径（或对边距）mm | 硬度试验 | 拉伸试验 | |
| --- | --- | --- | --- | --- | --- |
| 布氏硬度HB | 抗拉强度Rm/  MPa | 断后伸长率A  % |
| HMn57-2-2-1 | HR50 | ≥5-25 | ≥135 | ≥510 | ≥15 |
| 25-50 | ≥130 | ≥490 | ≥15 |
| 50-80 | ≥130 | ≥470 | ≥12 |
| M30 | ≥5-25 | ≥130 | ≥470 | ≥10 |
| 25-50 | ≥125 | ≥450 | ≥12 |
| 50-80 | ≥125 | ≥450 | ≥20 |
| >80 | ≥125 | 实测值 | |
| HMn57-3-1 | HR50 | ≥5-25 | ≥170 | ≥570 | ≥8 |
| 25-50 | ≥160 | ≥550 | ≥12 |
| M30 | ≥5-25 | ≥130 | ≥450 | ≥20 |
| 25-50 | ≥130 | ≥450 | ≥20 |
| 50-80 | ≥125 | ≥430 | ≥20 |
| >80 | ≥125 | 实测值 | |
| HMn58-2-1-0.5 | M07 | ≥5-50 | ≥125 | ≥460 | ≥20 |
| >50 | ≥120 | ≥460 | ≥20 |
| HR50 | ≥5-50 | ≥135 | ≥490 | ≥5 |
| 50-80 | ≥130 | ≥490 | ≥15 |
| M30 | ≥5-50 | ≥125 | ≥460 | ≥20 |
| >50 | ≥110 | ≥410 | ≥20 |
| HMn58-3-1-1 | HR50 | ≥5-25 | ≥180 | ≥620 | ≥6 |
| 25-50 | ≥175 | ≥600 | ≥8 |
| M30 | ≥5-25 | ≥165 | ≥540 | ≥10 |
| 25-50 | ≥155 | ≥520 | ≥12 |
| 50-80 | ≥150 | ≥500 | ≥15 |
| HMn59-2-2-0.5 | M07 | ≥5-25 | ≥140 | ≥540 | ≥6 |
| 25-80 | ≥130 | ≥520 | ≥8 |
| >80 | ≥130 | 实测值 | |
| HR50 | ≥5-15 | ≥160 | ≥620 | ≥8 |
| 15-60 | ≥160 | ≥590 | ≥12 |
| M30 | ≥5-15 | ≥160 | ≥550 | ≥15 |
| 15-60 | ≥150 | ≥530 | ≥15 |
| 60-80 | ≥140 | ≥510 | ≥15 |
| HMn59-3-2-0.8 | HR50 | ≥5-25 | ≥180 | ≥620 | ≥6 |
| 25-50 | ≥175 | ≥600 | ≥8 |
| 50-80 | ≥170 | ≥580 | ≥8 |
| M30 | ≥5-25 | ≥165 | ≥540 | ≥10 |
| 25-50 | ≥155 | ≥520 | ≥12 |
| 50-80 | ≥150 | ≥500 | ≥15 |
| >80 | ≥140 | 实测值 | |
| HMn60-2-1-0.5 | M07 | ≥5-25 | ≥130 | ≥510 | ≥12 |
| 25-80 | ≥125 | ≥480 | ≥15 |
| >80 | ≥120 | 实测值 | |
| HR50 | ≥5-25 | ≥160 | ≥590 | ≥10 |
| 25-50 | ≥150 | ≥560 | ≥12 |
| M30 | ≥5-25 | ≥120 | ≥480 | ≥15 |
| 25-80 | ≥110 | ≥450 | ≥20 |
| >80 | ≥110 | 实测值 | |
| HMn60-3-1-0.75 | HR50 | ≥5-25 | ≥120 | ≥485 | ≥15 |
| 25-50 | ≥110 | ≥440 | ≥15 |
| M30 | ≥5-25 | ≥95 | ≥400 | ≥18 |
| 25-80 | ≥95 | ≥380 | ≥20 |
| >80 | ≥95 | 实测值 | |
| HMn61-2-1-1 | HR50 | ≥5-25 | ≥150 | ≥560 | ≥10 |
| 25-50 | ≥140 | ≥520 | ≥12 |
| M30 | 50-80 | ≥120 | ≥460 | ≥15 |
| HMn62-3-3-1 | HR50 | ≥5-25 | ≥140 | ≥510 | ≥12 |
| 25-50 | ≥130 | ≥480 | ≥14 |
| M30 | ≥5-25 | ≥110 | ≥400 | ≥18 |
| 25-80 | ≥100 | ≥380 | ≥20 |
| >80 | ≥95 | 实测值 | |
| HAl61-4-3-1 | HR50 | ≥5-25 | ≥185 | ≥630 | |
| 25-50 | ≥180 | ≥600 | |
| M30 | ≥5-25 | ≥180 | ≥600 | |
| 25-80 | ≥180 | ≥580 | |
| >80 | ≥170 | 实测值 | |
| HAl66-6-3-2 | M07 | ≥5-25 | ≥180 | ≥630 | ≥5 |
| 25-80 | ≥170 | ≥590 | ≥6 |
| >80 | ≥160 | 实测值 | |
| HSi68-1 | HR50 | ≥5-25 | ≥120 | ≥500 | ≥6 |
| 25-50 | ≥115 | ≥450 | ≥8 |
| 50-80 | ≥110 | ≥420 | ≥10 |
| M30 | ≥5-25 | ≥100 | ≥400 | ≥12 |
| 25-80 | ≥95 | ≥360 | ≥15 |
| >80 | ≥90 | 实测值 | |
| HSi75-3 | HR50 | ≥5-25 | ≥140 | ≥480 | ≥12 |
| 25-50 | ≥130 | ≥450 | ≥15 |
| M30 | ≥5-25 | ≥110 | ≥380 | ≥18 |
| 25-80 | ≥100 | ≥360 | ≥20 |
| >80 | ≥90 | 实测值 | |

表14 EN 12164标准力学性能要求

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 牌号 | 状态 | 直径/mm | 抗拉强度Rm/  MPa | 断后伸长率/A% | 布氏硬度/HB | 本标准指标与EN12164对比情况 |
| CW713R | R540 | 5-80 | ≥540 | 15 | — | 等同 |
| R590 | 5-80 | ≥590 | 10 | — | 等同 |
| H130 | 5-50 | — | — | 130-170 | 等同 |
| H150 | 5-40 | — | — | 150-220 | 等同 |

表15 JIS H 3250标准力学性能要求

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 牌号 | 状态 | 直径或对边距  mm | 抗拉强度/  MPa | 延伸率/  % | 本标准指标与JIS 3250对比情况 |
| C6782 | BE-F | ≥6-50 | 460 | 20 | 等同 |
| >50 | 400 | 20 | 高于 |
| BD-F | ≥2-6 | 490 | 5 | 等同 |
| ≥6-110 | 490 | 15 | 等同 |
| BF-F | >100 | 460 | 20 | 等同 |

1. **标准水平分析**

通过文献检索和网上查询，国内外没有关于耐磨黄铜棒的标准。本标准是根据我国实际生产使用情况制定的，从各项指标看，本标准对各项性能指标及要求进行了详细、明确的规定，能更好的对产品进行规范，满足产品的适用性，促进耐磨黄铜棒产业的发展。对比EN12164-2016、JIS H 3250等标准，本标准增加了显微组织特征的规定、部分牌号力学性能、产品尺寸公差高于国外先进标准，其余指标与国外先进标准相当，本标准的整体内容达到国际先进水平。

1. **与现行相关法律、法规、规章及相关标准，特别是强制性标准的协调性**

目前。我国没有《耐磨黄铜棒》国家标准及行业标准。本标准首次制订，与现行相关法律、法规、规章及相关强制推荐的标准没有冲突。

1. **重大分歧意见的处理经过和依据**

无。

1. **作为强制性国家标准的建议**

本标准建议不作为强制性标准，建议作为推荐性标准。

1. **贯彻标准的要求和措施建议**

本标准是以我国耐磨黄铜棒材的实际生产现状为基础，结合国内、外订货合同要求，同时参照EN12164标准进行制定的，标准全面覆盖了耐磨黄铜棒的一般要求，建议相关单位组织专项标准宣贯会进行系统学习。本标准发布后，各企业应积极宣传和贯彻，并立即采用新标准订货，以保证产品质量，满足国内、外市场及用户的需要。

1. **废止现行有关标准的建议**

无。

1. **其它应予说明的事项**

本标准根据目前国内耐磨黄铜棒的实际生产现状和订货合同情况，考虑随着新材料的开发使用和生产装备的更新，如果以后生产或订货合同中有其它合金或状态需求可在下一版中进行补充修订。

1. **预期效果**

本标准结合我国国情，在国内生产企业及国内外用户需求的基础上，参照国内外相关产品标准规范制定的，技术指标先进，具有普遍性、广泛性、适用性、科学性和先进性。加速中国标准和国外同类标准的对接,本标准发布后，将更好的规范我国耐磨黄铜棒产品的性能和技术要求，提高产品在国内、外市场上的竞争力，给生产企业带来较大的经济效益。

宁波金田铜业（集团）股份有限公司

2017-09-04

附表1 棒材规格尺寸检测数据（M07态）

| 序号 | 直径（或对边距）范围/mm | 牌号 | 状态 | 形状 | 抽样规格/  mm | 实测规格/  mm | 偏差范围/  mm |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 12-18 | HMn59-2-2-0.5 | M07 | 圆形 | 13.5 | 13.39 | -0.11 |
| 2 | 12-18 | HMn59-2-2-0.5 | M07 | 圆形 | 13.5 | 13.42 | -0.08 |
| 3 | 12-18 | HMn59-2-2-0.5 | M07 | 圆形 | 13.5 | 13.41 | -0.09 |
| 4 | 12-18 | HMn59-2-2-0.5 | M07 | 圆形 | 13.5 | 13.55 | 0.05 |
| 5 | 12-18 | HMn59-2-2-0.5 | M07 | 圆形 | 13.5 | 13.62 | 0.12 |
| 6 | 12-18 | HMn59-2-2-0.5 | M07 | 圆形 | 15.7 | 15.59 | -0.11 |
| 7 | 12-18 | HMn59-2-2-0.5 | M07 | 圆形 | 15.7 | 15.66 | -0.04 |
| 8 | 12-18 | HMn59-2-2-0.5 | M07 | 圆形 | 15.7 | 15.63 | -0.07 |
| 9 | 12-18 | HMn59-2-2-0.5 | M07 | 圆形 | 15.7 | 15.76 | 0.06 |
| 10 | 12-18 | HMn59-2-2-0.5 | M07 | 圆形 | 15.7 | 15.83 | 0.13 |
| 11 | 12-18 | HMn60-2-1-0.5 | M07 | 圆形 | 14.3 | 14.43 | 0.13 |
| 12 | 12-18 | HMn60-2-1-0.5 | M07 | 圆形 | 14.3 | 14.42 | 0.12 |
| 13 | 12-18 | HMn60-2-1-0.5 | M07 | 圆形 | 14.3 | 14.38 | 0.08 |
| 14 | 12-18 | HMn60-2-1-0.5 | M07 | 圆形 | 14.3 | 14.21 | -0.09 |
| 15 | 12-18 | HMn60-2-1-0.5 | M07 | 圆形 | 14.3 | 14.24 | -0.06 |
| 16 | 12-18 | HAl66-6-3-2 | M07 | 圆形 | 13.5 | 13.57 | 0.07 |
| 17 | 12-18 | HAl66-6-3-2 | M07 | 圆形 | 13.5 | 13.39 | -0.11 |
| 18 | 12-18 | HAl66-6-3-2 | M07 | 圆形 | 13.5 | 13.62 | 0.12 |
| 19 | 12-18 | HAl66-6-3-2 | M07 | 圆形 | 13.5 | 13.42 | -0.08 |
| 20 | 12-18 | HAl66-6-3-2 | M07 | 圆形 | 13.5 | 13.42 | -0.08 |
| 21 | 12-18 | HMn59-2-2-0.5 | M07 | 六角 | s15 | s15.15 | 0.15 |
| 22 | 12-18 | HMn59-2-2-0.5 | M07 | 六角 | s15 | s15.13 | 0.13 |
| 23 | 12-18 | HMn59-2-2-0.5 | M07 | 六角 | s15 | s14.89 | -0.11 |
| 24 | 12-18 | HMn59-2-2-0.5 | M07 | 六角 | s15 | s15.04 | 0.04 |
| 25 | 12-18 | HMn59-2-2-0.5 | M07 | 六角 | s15 | s14.93 | -0.07 |
| 26 | 12-18 | HMn59-2-2-0.5 | M07 | 六角 | s17.5 | s17.62 | 0.12 |
| 27 | 12-18 | HMn59-2-2-0.5 | M07 | 六角 | s17.5 | s17.61 | 0.11 |
| 28 | 12-18 | HMn59-2-2-0.5 | M07 | 六角 | s17.5 | s17.40 | -0.1 |
| 29 | 12-18 | HMn59-2-2-0.5 | M07 | 六角 | s17.5 | s17.44 | -0.06 |
| 30 | 12-18 | HMn59-2-2-0.5 | M07 | 六角 | s17.5 | s17.45 | -0.05 |
| 31 | 12-18 | HMn60-2-1-0.5 | M07 | 矩形 | 11.5\*15.5 | 11.43\*15.36 | -0.14 |
| 32 | 12-18 | HMn60-2-1-0.5 | M07 | 矩形 | 11.5\*15.5 | 11.58\*15.62 | 0.12 |
| 33 | 12-18 | HMn60-2-1-0.5 | M07 | 矩形 | 11.5\*15.5 | 11.44\*15.39 | -0.11 |
| 34 | 12-18 | HMn60-2-1-0.5 | M07 | 矩形 | 11.5\*15.5 | 11.55\*15.63 | 0.13 |
| 35 | 12-18 | HMn60-2-1-0.5 | M07 | 矩形 | 11.5\*15.5 | 11.45\*15.45 | -0.05 |
| 36 | 12-18 | HAl66-6-3-2 | M07 | 六角 | s16 | s15.93 | -0.07 |
| 37 | 12-18 | HAl66-6-3-2 | M07 | 六角 | s16 | s15.91 | -0.09 |
| 38 | 12-18 | HAl66-6-3-2 | M07 | 六角 | s16 | s16.14 | 0.14 |
| 39 | 12-18 | HAl66-6-3-2 | M07 | 六角 | s16 | s16.12 | 0.12 |
| 40 | 12-18 | HAl66-6-3-2 | M07 | 六角 | s16 | s15.96 | -0.04 |
| 41 | 18-30 | HMn59-2-2-0.5 | M07 | 圆形 | 25.0 | 24.95 | -0.05 |
| 42 | 18-30 | HMn59-2-2-0.5 | M07 | 圆形 | 25.0 | 24.86 | -0.14 |
| 43 | 18-30 | HMn59-2-2-0.5 | M07 | 圆形 | 25.0 | 25.07 | 0.07 |
| 44 | 18-30 | HMn59-2-2-0.5 | M07 | 圆形 | 25.0 | 25.16 | 0.16 |
| 45 | 18-30 | HMn59-2-2-0.5 | M07 | 圆形 | 25.0 | 25.13 | 0.13 |
| 46 | 18-30 | HMn60-2-1-0.5 | M07 | 圆形 | 20.0 | 20.15 | 0.15 |
| 47 | 18-30 | HMn60-2-1-0.5 | M07 | 圆形 | 20.0 | 19.91 | -0.09 |
| 48 | 18-30 | HMn60-2-1-0.5 | M07 | 圆形 | 20.0 | 19.88 | -0.12 |
| 49 | 18-30 | HMn60-2-1-0.5 | M07 | 圆形 | 20.0 | 20.16 | 0.16 |
| 50 | 18-30 | HMn60-2-1-0.5 | M07 | 圆形 | 20.0 | 20.08 | 0.08 |
| 51 | 18-30 | HAl66-6-3-2 | M07 | 圆形 | 25.0 | 24.89 | -0.11 |
| 52 | 18-30 | HAl66-6-3-2 | M07 | 圆形 | 25.0 | 25.13 | 0.13 |
| 53 | 18-30 | HAl66-6-3-2 | M07 | 圆形 | 25.0 | 24.81 | -0.19 |
| 54 | 18-30 | HAl66-6-3-2 | M07 | 圆形 | 25.0 | 25.17 | 0.17 |
| 55 | 18-30 | HAl66-6-3-2 | M07 | 圆形 | 25.0 | 25.07 | 0.07 |
| 56 | 18-30 | HMn58-2-1-0.5 | M07 | 六角 | s19 | s19.17 | 0.17 |
| 57 | 18-30 | HMn58-2-1-0.5 | M07 | 六角 | s19 | s18.84 | -0.16 |
| 58 | 18-30 | HMn58-2-1-0.5 | M07 | 六角 | s19 | s18.81 | -0.19 |
| 59 | 18-30 | HMn58-2-1-0.5 | M07 | 六角 | s19 | s19.07 | 0.07 |
| 60 | 18-30 | HMn58-2-1-0.5 | M07 | 六角 | s19 | s19.13 | 0.13 |
| 61 | 18-30 | HMn59-2-2-0.5 | M07 | 正方形 | a25 | a25.12 | 0.12 |
| 62 | 18-30 | HMn59-2-2-0.5 | M07 | 正方形 | a25 | a24.92 | -0.08 |
| 63 | 18-30 | HMn59-2-2-0.5 | M07 | 正方形 | a25 | a24.78 | -0.22 |
| 64 | 18-30 | HMn59-2-2-0.5 | M07 | 正方形 | a25 | a25.25 | 0.25 |
| 65 | 18-30 | HMn59-2-2-0.5 | M07 | 正方形 | a25 | a25.19 | 0.19 |
| 66 | 18-30 | HMn60-2-1-0.5 | M07 | 六角 | s21 | s20.83 | -0.17 |
| 67 | 18-30 | HMn60-2-1-0.5 | M07 | 六角 | s21 | s20.86 | -0.14 |
| 68 | 18-30 | HMn60-2-1-0.5 | M07 | 六角 | s21 | s20.89 | -0.18 |
| 69 | 18-30 | HMn60-2-1-0.5 | M07 | 六角 | s21 | s21.2 | 0.2 |
| 70 | 18-30 | HMn60-2-1-0.5 | M07 | 六角 | s21 | s21.07 | 0.07 |
| 71 | 18-30 | HAl66-6-3-2 | M07 | 矩形 | 19.0\*25.0 | 18.93\*24.97 | -0.09 |
| 72 | 18-30 | HAl66-6-3-2 | M07 | 矩形 | 19.0\*25.0 | 18.96\*24.95 | -0.05 |
| 73 | 18-30 | HAl66-6-3-2 | M07 | 矩形 | 19.0\*25.0 | 19.11\*25.19 | 0.19 |
| 74 | 18-30 | HAl66-6-3-2 | M07 | 矩形 | 19.0\*25.0 | 19.17\*25.20 | 0.2 |
| 75 | 18-30 | HAl66-6-3-2 | M07 | 矩形 | 19.0\*25.0 | 19.15\*25.22 | 0.22 |
| 76 | 30-50 | HMn58-2-1-0.5 | M07 | 圆形 | 37.0 | 37.21 | 0.21 |
| 77 | 30-50 | HMn58-2-1-0.5 | M07 | 圆形 | 37.0 | 37.33 | 0.33 |
| 78 | 30-50 | HMn58-2-1-0.5 | M07 | 圆形 | 37.0 | 37.08 | 0.08 |
| 79 | 30-50 | HMn58-2-1-0.5 | M07 | 圆形 | 37.0 | 36.82 | -0.18 |
| 80 | 30-50 | HMn58-2-1-0.5 | M07 | 圆形 | 37.0 | 36.68 | -0.32 |
| 81 | 30-50 | HMn59-2-2-0.5 | M07 | 圆形 | 48.5 | 48.38 | -0.12 |
| 82 | 30-50 | HMn59-2-2-0.5 | M07 | 圆形 | 48.5 | 48.25 | -0.25 |
| 83 | 30-50 | HMn59-2-2-0.5 | M07 | 圆形 | 48.5 | 48.86 | 0.36 |
| 84 | 30-50 | HMn59-2-2-0.5 | M07 | 圆形 | 48.5 | 48.69 | 0.19 |
| 85 | 30-50 | HMn59-2-2-0.5 | M07 | 圆形 | 48.5 | 48.22 | -0.28 |
| 86 | 30-50 | HMn59-2-2-0.5 | M07 | 圆形 | 36.0 | 35.76 | -0.24 |
| 87 | 30-50 | HMn59-2-2-0.5 | M07 | 圆形 | 36.0 | 36.23 | 0.23 |
| 88 | 30-50 | HMn59-2-2-0.5 | M07 | 圆形 | 36.0 | 36.08 | 0.08 |
| 89 | 30-50 | HMn59-2-2-0.5 | M07 | 圆形 | 36.0 | 35.75 | -0.25 |
| 90 | 30-50 | HMn59-2-2-0.5 | M07 | 圆形 | 36.0 | 35.85 | -0.15 |
| 91 | 30-50 | HMn59-2-2-0.5 | M07 | 圆形 | 39.0 | 39.37 | 0.37 |
| 92 | 30-50 | HMn59-2-2-0.5 | M07 | 圆形 | 39.0 | 39.33 | 0.33 |
| 93 | 30-50 | HMn59-2-2-0.5 | M07 | 圆形 | 39.0 | 38.79 | -0.21 |
| 94 | 30-50 | HMn59-2-2-0.5 | M07 | 圆形 | 39.0 | 38.72 | -0.28 |
| 95 | 30-50 | HMn59-2-2-0.5 | M07 | 圆形 | 39.0 | 39.16 | 0.16 |
| 96 | 30-50 | HMn58-2-1-0.5 | M07 | 矩形 | 27.5\*36.5 | 27.71\*36.85 | 0.35 |
| 97 | 30-50 | HMn58-2-1-0.5 | M07 | 矩形 | 27.5\*36.5 | 27.32\*36.26 | -0.24 |
| 98 | 30-50 | HMn58-2-1-0.5 | M07 | 矩形 | 27.5\*36.5 | 27.6\*36.67 | 0.17 |
| 99 | 30-50 | HMn58-2-1-0.5 | M07 | 矩形 | 27.5\*36.5 | 27.45\*36.41 | -0.09 |
| 100 | 30-50 | HMn58-2-1-0.5 | M07 | 矩形 | 27.5\*36.5 | 27.79\*36.93 | 0.43 |
| 101 | 30-50 | HMn59-2-2-0.5 | M07 | 六角 | s38 | s38.45 | 0.45 |
| 102 | 30-50 | HMn59-2-2-0.5 | M07 | 六角 | s38 | s37.63 | -0.37 |
| 103 | 30-50 | HMn59-2-2-0.5 | M07 | 六角 | s38 | s38.28 | 0.28 |
| 104 | 30-50 | HMn59-2-2-0.5 | M07 | 六角 | s38 | s38.06 | 0.06 |
| 105 | 30-50 | HMn59-2-2-0.5 | M07 | 六角 | s38 | s37.95 | -0.05 |
| 106 | 30-50 | HMn59-2-2-0.5 | M07 | 六角 | s40 | s40.18 | 0.18 |
| 107 | 30-50 | HMn59-2-2-0.5 | M07 | 六角 | s40 | s39.64 | -0.36 |
| 108 | 30-50 | HMn59-2-2-0.5 | M07 | 六角 | s40 | s39.58 | -0.42 |
| 109 | 30-50 | HMn59-2-2-0.5 | M07 | 六角 | s40 | s40.39 | 0.39 |
| 110 | 30-50 | HMn59-2-2-0.5 | M07 | 六角 | s40 | s40.42 | 0.42 |
| 111 | 30-50 | HMn60-2-1-0.5 | M07 | 正方形 | a47 | a47.18 | 0.18 |
| 112 | 30-50 | HMn60-2-1-0.5 | M07 | 正方形 | a47 | a47.29 | 0.29 |
| 113 | 30-50 | HMn60-2-1-0.5 | M07 | 正方形 | a47 | a47.11 | 0.11 |
| 114 | 30-50 | HMn60-2-1-0.5 | M07 | 正方形 | a47 | a46.54 | -0.46 |
| 115 | 30-50 | HMn60-2-1-0.5 | M07 | 正方形 | a47 | a46.67 | -0.33 |
| 116 | 50-80 | HMn58-2-1-0.5 | M07 | 圆形 | 65.0 | 64.89 | -0.11 |
| 117 | 50-80 | HMn58-2-1-0.5 | M07 | 圆形 | 65.0 | 65.35 | 0.35 |
| 118 | 50-80 | HMn58-2-1-0.5 | M07 | 圆形 | 65.0 | 65.41 | 0.41 |
| 119 | 50-80 | HMn58-2-1-0.5 | M07 | 圆形 | 65.0 | 64.63 | -0.37 |
| 120 | 50-80 | HMn58-2-1-0.5 | M07 | 圆形 | 65.0 | 65.24 | 0.24 |
| 121 | 50-80 | HMn59-2-2-0.5 | M07 | 圆形 | 60.0 | 60.29 | 0.29 |
| 122 | 50-80 | HMn59-2-2-0.5 | M07 | 圆形 | 60.0 | 59.65 | -0.35 |
| 123 | 50-80 | HMn59-2-2-0.5 | M07 | 圆形 | 60.0 | 59.91 | -0.09 |
| 124 | 50-80 | HMn59-2-2-0.5 | M07 | 圆形 | 60.0 | 60.48 | 0.48 |
| 125 | 50-80 | HMn59-2-2-0.5 | M07 | 圆形 | 60.0 | 60.42 | 0.42 |
| 126 | 50-80 | HMn59-2-2-0.5 | M07 | 圆形 | 50.0 | 50.15 | 0.15 |
| 127 | 50-80 | HMn59-2-2-0.5 | M07 | 圆形 | 50.0 | 50.34 | 0.34 |
| 128 | 50-80 | HMn59-2-2-0.5 | M07 | 圆形 | 50.0 | 49.82 | -0.18 |
| 129 | 50-80 | HMn59-2-2-0.5 | M07 | 圆形 | 50.0 | 50.29 | 0.29 |
| 130 | 50-80 | HMn59-2-2-0.5 | M07 | 圆形 | 50.0 | 50.47 | 0.47 |
| 131 | 50-80 | HMn59-2-2-0.5 | M07 | 圆形 | 80.0 | 80.41 | 0.41 |
| 132 | 50-80 | HMn59-2-2-0.5 | M07 | 圆形 | 80.0 | 80.23 | 0.23 |
| 133 | 50-80 | HMn59-2-2-0.5 | M07 | 圆形 | 80.0 | 79.64 | -0.36 |
| 134 | 50-80 | HMn59-2-2-0.5 | M07 | 圆形 | 80.0 | 80.45 | 0.45 |
| 135 | 50-80 | HMn59-2-2-0.5 | M07 | 圆形 | 80.0 | 79.81 | -0.19 |
| 136 | 50-80 | HMn60-2-1-0.5 | M07 | 圆形 | 80.0 | 80.44 | 0.44 |
| 137 | 50-80 | HMn60-2-1-0.5 | M07 | 圆形 | 80.0 | 79.69 | -0.31 |
| 138 | 50-80 | HMn60-2-1-0.5 | M07 | 圆形 | 80.0 | 79.53 | -0.47 |
| 139 | 50-80 | HMn60-2-1-0.5 | M07 | 圆形 | 80.0 | 79.8 | -0.2 |
| 140 | 50-80 | HMn60-2-1-0.5 | M07 | 圆形 | 80.0 | 79.82 | -0.18 |
| 141 | 50-80 | HMn59-2-2-0.5 | M07 | 六角 | s65.5 | s65.71 | 0.21 |
| 142 | 50-80 | HMn59-2-2-0.5 | M07 | 六角 | s65.5 | s65.05 | -0.45 |
| 143 | 50-80 | HMn59-2-2-0.5 | M07 | 六角 | s65.5 | s65.0 | -0.5 |
| 144 | 50-80 | HMn59-2-2-0.5 | M07 | 六角 | s65.5 | s65.95 | 0.45 |
| 145 | 50-80 | HMn59-2-2-0.5 | M07 | 六角 | s65.5 | s65.75 | 0.25 |
| 146 | 50-80 | HMn60-2-1-0.5 | M07 | 矩形 | 53.5\*66.0 | 53.02\*65.46 | -0.54 |
| 147 | 50-80 | HMn60-2-1-0.5 | M07 | 矩形 | 53.5\*66.0 | 53.17\*65.52 | -0.48 |
| 148 | 50-80 | HMn60-2-1-0.5 | M07 | 矩形 | 53.5\*66.0 | 53.83\*66.45 | 0.45 |
| 149 | 50-80 | HMn60-2-1-0.5 | M07 | 矩形 | 53.5\*66.0 | 53.19\*65.48 | -0.52 |
| 150 | 50-80 | HMn60-2-1-0.5 | M07 | 矩形 | 53.5\*66.0 | 53.41\*65.85 | -0.15 |
| 151 | 80-150 | HMn58-2-1-0.5 | M07 | 圆形 | 117.0 | 117.48 | 0.48 |
| 152 | 80-150 | HMn58-2-1-0.5 | M07 | 圆形 | 117.0 | 117.89 | 0.89 |
| 153 | 80-150 | HMn58-2-1-0.5 | M07 | 圆形 | 117.0 | 117.76 | 0.76 |
| 154 | 80-150 | HMn58-2-1-0.5 | M07 | 圆形 | 117.0 | 117.57 | 0.57 |
| 155 | 80-150 | HMn58-2-1-0.5 | M07 | 圆形 | 117.0 | 117.39 | 0.39 |
| 156 | 80-150 | HMn59-2-2-0.5 | M07 | 圆形 | 108.0 | 107.68 | -0.32 |
| 157 | 80-150 | HMn59-2-2-0.5 | M07 | 圆形 | 108.0 | 107.31 | -0.69 |
| 158 | 80-150 | HMn59-2-2-0.5 | M07 | 圆形 | 108.0 | 107.57 | -0.43 |
| 159 | 80-150 | HMn59-2-2-0.5 | M07 | 圆形 | 108.0 | 107.45 | -0.55 |
| 160 | 80-150 | HMn59-2-2-0.5 | M07 | 圆形 | 108.0 | 107.54 | -0.46 |
| 161 | 80-150 | HMn59-2-2-0.5 | M07 | 圆形 | 114.0 | 114.45 | 0.45 |
| 162 | 80-150 | HMn59-2-2-0.5 | M07 | 圆形 | 114.0 | 113.13 | -0.87 |
| 163 | 80-150 | HMn59-2-2-0.5 | M07 | 圆形 | 114.0 | 114.69 | 0.69 |
| 164 | 80-150 | HMn59-2-2-0.5 | M07 | 圆形 | 114.0 | 114.92 | 0.92 |
| 165 | 80-150 | HMn59-2-2-0.5 | M07 | 圆形 | 114.0 | 114.67 | 0.67 |
| 166 | 80-150 | HMn60-2-1-0.5 | M07 | 圆形 | 99.0 | 99.43 | 0.43 |
| 167 | 80-150 | HMn60-2-1-0.5 | M07 | 圆形 | 99.0 | 99.55 | 0.55 |
| 168 | 80-150 | HMn60-2-1-0.5 | M07 | 圆形 | 99.0 | 99.78 | 0.78 |
| 169 | 80-150 | HMn60-2-1-0.5 | M07 | 圆形 | 99.0 | 99.98 | 0.98 |
| 170 | 80-150 | HMn60-2-1-0.5 | M07 | 圆形 | 99.0 | 99.26 | 0.26 |
| 171 | 80-150 | HMn59-2-2-0.5 | M07 | 正方形 | a84 | a83.14 | -0.86 |
| 172 | 80-150 | HMn59-2-2-0.5 | M07 | 正方形 | a84 | a83.01 | -0.99 |
| 173 | 80-150 | HMn59-2-2-0.5 | M07 | 正方形 | a84 | a84.67 | 0.67 |
| 174 | 80-150 | HMn59-2-2-0.5 | M07 | 正方形 | a84 | a84.75 | 0.75 |
| 175 | 80-150 | HMn59-2-2-0.5 | M07 | 正方形 | a84 | a83.27 | -0.73 |
| 176 | 80-150 | HMn59-2-2-0.5 | M07 | 矩形 | 89.0\*115.0 | 88.27\*114.05 | -0.95 |
| 177 | 80-150 | HMn59-2-2-0.5 | M07 | 矩形 | 89.0\*115.0 | 88.53\*114.12 | -0.88 |
| 178 | 80-150 | HMn59-2-2-0.5 | M07 | 矩形 | 89.0\*115.0 | 89.29\*115.59 | 0.59 |
| 179 | 80-150 | HMn59-2-2-0.5 | M07 | 矩形 | 89.0\*115.0 | 89.76\*115.94 | 0.94 |
| 180 | 80-150 | HMn59-2-2-0.5 | M07 | 矩形 | 89.0\*115.0 | 89.78\*115.83 | 0.83 |
| 181 | 80-150 | HAl66-6-3-2 | M07 | 六角 | s95 | s94.64 | -0.36 |
| 182 | 80-150 | HAl66-6-3-2 | M07 | 六角 | s95 | s94.52 | -0.48 |
| 183 | 80-150 | HAl66-6-3-2 | M07 | 六角 | s95 | s95.97 | 0.97 |
| 184 | 80-150 | HAl66-6-3-2 | M07 | 六角 | s95 | s95.78 | 0.78 |
| 185 | 80-150 | HAl66-6-3-2 | M07 | 六角 | s95 | s93.88 | -1.12 |

附表2 棒材规格尺寸检测数据（HR50态）

| 序号 | 直径（或对边距）范/mm | 牌号 | 状态 | 形状 | 抽样规格/  mm | 实测规格 | 尺寸偏差范/  mm |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 5-12 | HMn57-2-2-1 | HR50 | 圆形 | 5.97 | 5.95 | -0.02 |
| 2 | 5-12 | HMn57-2-2-1 | HR50 | 圆形 | 5.97 | 5.95 | -0.02 |
| 3 | 5-12 | HMn57-2-2-1 | HR50 | 圆形 | 5.97 | 5.96 | -0.01 |
| 4 | 5-12 | HMn57-2-2-1 | HR50 | 圆形 | 5.97 | 5.98 | 0.01 |
| 5 | 5-12 | HMn57-2-2-1 | HR50 | 圆形 | 5.97 | 5.96 | -0.01 |
| 6 | 5-12 | HMn57-2-2-1 | HR50 | 圆形 | 9.3 | 9.28 | -0.02 |
| 7 | 5-12 | HMn57-2-2-1 | HR50 | 圆形 | 9.3 | 9.28 | -0.02 |
| 8 | 5-12 | HMn57-2-2-1 | HR50 | 圆形 | 9.3 | 9.33 | 0.03 |
| 9 | 5-12 | HMn57-2-2-1 | HR50 | 圆形 | 9.3 | 9.27 | -0.03 |
| 10 | 5-12 | HMn57-2-2-1 | HR50 | 圆形 | 9.3 | 9.27 | -0.03 |
| 11 | 5-12 | HMn57-3-1 | HR50 | 圆形 | 5.03 | 5 | -0.03 |
| 12 | 5-12 | HMn57-3-1 | HR50 | 圆形 | 5.03 | 5 | -0.03 |
| 13 | 5-12 | HMn57-3-1 | HR50 | 圆形 | 5.03 | 5.05 | 0.02 |
| 14 | 5-12 | HMn57-3-1 | HR50 | 圆形 | 5.03 | 5.04 | 0.01 |
| 15 | 5-12 | HMn57-3-1 | HR50 | 圆形 | 5.03 | 5 | -0.03 |
| 16 | 5-12 | HMn57-3-1 | HR50 | 圆形 | 8.7 | 8.67 | -0.03 |
| 17 | 5-12 | HMn57-3-1 | HR50 | 圆形 | 8.7 | 8.67 | -0.03 |
| 18 | 5-12 | HMn57-3-1 | HR50 | 圆形 | 8.7 | 8.71 | 0.01 |
| 19 | 5-12 | HMn57-3-1 | HR50 | 圆形 | 8.7 | 8.72 | 0.02 |
| 20 | 5-12 | HMn57-3-1 | HR50 | 圆形 | 8.7 | 8.73 | 0.03 |
| 21 | 5-12 | HMn57-3-1 | HR50 | 圆形 | 10.2 | 10.17 | -0.03 |
| 22 | 5-12 | HMn57-3-1 | HR50 | 圆形 | 10.2 | 10.17 | -0.03 |
| 23 | 5-12 | HMn57-3-1 | HR50 | 圆形 | 10.2 | 10.16 | -0.04 |
| 24 | 5-12 | HMn57-3-1 | HR50 | 圆形 | 10.2 | 10.24 | 0.04 |
| 25 | 5-12 | HMn57-3-1 | HR50 | 圆形 | 10.2 | 10.25 | 0.05 |
| 26 | 5-12 | HMn58-2-1-0.5 | HR50 | 圆形 | 6.2 | 6.21 | 0.01 |
| 27 | 5-12 | HMn58-2-1-0.5 | HR50 | 圆形 | 6.2 | 6.23 | 0.03 |
| 28 | 5-12 | HMn58-2-1-0.5 | HR50 | 圆形 | 6.2 | 6.19 | -0.01 |
| 29 | 5-12 | HMn58-2-1-0.5 | HR50 | 圆形 | 6.2 | 6.18 | -0.02 |
| 30 | 5-12 | HMn58-2-1-0.5 | HR50 | 圆形 | 6.2 | 6.18 | -0.02 |
| 31 | 5-12 | HMn58-2-1-0.5 | HR50 | 圆形 | 7.9 | 7.88 | -0.02 |
| 32 | 5-12 | HMn58-2-1-0.5 | HR50 | 圆形 | 7.9 | 7.88 | -0.02 |
| 33 | 5-12 | HMn58-2-1-0.5 | HR50 | 圆形 | 7.9 | 7.88 | -0.02 |
| 34 | 5-12 | HMn58-2-1-0.5 | HR50 | 圆形 | 7.9 | 7.91 | 0.01 |
| 35 | 5-12 | HMn58-2-1-0.5 | HR50 | 圆形 | 7.9 | 7.88 | -0.02 |
| 36 | 5-12 | HMn58-3-1-1 | HR50 | 圆形 | 10.1 | 10.05 | -0.05 |
| 37 | 5-12 | HMn58-3-1-1 | HR50 | 圆形 | 10.1 | 10.14 | 0.04 |
| 38 | 5-12 | HMn58-3-1-1 | HR50 | 圆形 | 10.1 | 10.14 | 0.04 |
| 39 | 5-12 | HMn58-3-1-1 | HR50 | 圆形 | 10.1 | 10.13 | 0.03 |
| 40 | 5-12 | HMn58-3-1-1 | HR50 | 圆形 | 10.1 | 10.07 | -0.03 |
| 41 | 5-12 | HMn58-3-1-1 | HR50 | 圆形 | 11.7 | 11.67 | -0.03 |
| 42 | 5-12 | HMn58-3-1-1 | HR50 | 圆形 | 11.7 | 11.72 | 0.02 |
| 43 | 5-12 | HMn58-3-1-1 | HR50 | 圆形 | 11.7 | 11.66 | -0.04 |
| 44 | 5-12 | HMn58-3-1-1 | HR50 | 圆形 | 11.7 | 11.66 | -0.04 |
| 45 | 5-12 | HMn58-3-1-1 | HR50 | 圆形 | 11.7 | 11.65 | -0.05 |
| 46 | 5-12 | HMn59-2-2-0.5 | HR50 | 圆形 | 5.97 | 6.0 | 0.03 |
| 47 | 5-12 | HMn59-2-2-0.5 | HR50 | 圆形 | 5.97 | 5.99 | 0.02 |
| 48 | 5-12 | HMn59-2-2-0.5 | HR50 | 圆形 | 5.97 | 5.98 | 0.01 |
| 49 | 5-12 | HMn59-2-2-0.5 | HR50 | 圆形 | 5.97 | 5.98 | 0.01 |
| 50 | 5-12 | HMn59-2-2-0.5 | HR50 | 圆形 | 5.97 | 5.98 | 0.01 |
| 51 | 5-12 | HMn59-2-2-0.5 | HR50 | 圆形 | 7.9 | 7.94 | 0.04 |
| 52 | 5-12 | HMn59-2-2-0.5 | HR50 | 圆形 | 7.9 | 7.92 | 0.02 |
| 53 | 5-12 | HMn59-2-2-0.5 | HR50 | 圆形 | 7.9 | 7.93 | 0.03 |
| 54 | 5-12 | HMn59-2-2-0.5 | HR50 | 圆形 | 7.9 | 7.86 | -0.04 |
| 55 | 5-12 | HMn59-2-2-0.5 | HR50 | 圆形 | 7.9 | 7.93 | 0.03 |
| 56 | 5-12 | HMn59-2-2-0.5 | HR50 | 圆形 | 11.7 | 11.66 | -0.04 |
| 57 | 5-12 | HMn59-2-2-0.5 | HR50 | 圆形 | 11.7 | 11.66 | -0.04 |
| 58 | 5-12 | HMn59-2-2-0.5 | HR50 | 圆形 | 11.7 | 11.73 | 0.03 |
| 59 | 5-12 | HMn59-2-2-0.5 | HR50 | 圆形 | 11.7 | 11.67 | -0.03 |
| 60 | 5-12 | HMn59-2-2-0.5 | HR50 | 圆形 | 11.7 | 11.73 | 0.03 |
| 61 | 5-12 | HMn59-3-2-0.8 | HR50 | 圆形 | 7.25 | 7.28 | 0.03 |
| 62 | 5-12 | HMn59-3-2-0.8 | HR50 | 圆形 | 7.25 | 7.29 | 0.04 |
| 63 | 5-12 | HMn59-3-2-0.8 | HR50 | 圆形 | 7.25 | 7.27 | 0.02 |
| 64 | 5-12 | HMn59-3-2-0.8 | HR50 | 圆形 | 7.25 | 7.28 | 0.03 |
| 65 | 5-12 | HMn59-3-2-0.8 | HR50 | 圆形 | 7.25 | 7.21 | -0.04 |
| 66 | 5-12 | HMn59-3-2-0.8 | HR50 | 圆形 | 8.7 | 8.73 | 0.03 |
| 67 | 5-12 | HMn59-3-2-0.8 | HR50 | 圆形 | 8.7 | 8.67 | -0.03 |
| 68 | 5-12 | HMn59-3-2-0.8 | HR50 | 圆形 | 8.7 | 8.68 | -0.02 |
| 69 | 5-12 | HMn59-3-2-0.8 | HR50 | 圆形 | 8.7 | 8.71 | 0.01 |
| 70 | 5-12 | HMn59-3-2-0.8 | HR50 | 圆形 | 8.7 | 8.71 | 0.01 |
| 71 | 5-12 | HMn60-2-1-0.5 | HR50 | 圆形 | 5.21 | 5.22 | 0.01 |
| 72 | 5-12 | HMn60-2-1-0.5 | HR50 | 圆形 | 5.21 | 5.22 | 0.01 |
| 73 | 5-12 | HMn60-2-1-0.5 | HR50 | 圆形 | 5.21 | 5.2 | -0.01 |
| 74 | 5-12 | HMn60-2-1-0.5 | HR50 | 圆形 | 5.21 | 5.2 | -0.01 |
| 75 | 5-12 | HMn60-2-1-0.5 | HR50 | 圆形 | 5.21 | 5.22 | 0.01 |
| 76 | 5-12 | HMn60-2-1-0.5 | HR50 | 圆形 | 10.7 | 10.73 | 0.03 |
| 77 | 5-12 | HMn60-2-1-0.5 | HR50 | 圆形 | 10.7 | 10.67 | -0.03 |
| 78 | 5-12 | HMn60-2-1-0.5 | HR50 | 圆形 | 10.7 | 10.67 | -0.03 |
| 79 | 5-12 | HMn60-2-1-0.5 | HR50 | 圆形 | 10.7 | 10.67 | -0.03 |
| 80 | 5-12 | HMn60-2-1-0.5 | HR50 | 圆形 | 10.7 | 10.73 | 0.03 |
| 81 | 5-12 | HMn60-3-1-0.75 | HR50 | 圆形 | 9.9 | 9.87 | -0.03 |
| 82 | 5-12 | HMn60-3-1-0.75 | HR50 | 圆形 | 9.9 | 9.86 | -0.04 |
| 83 | 5-12 | HMn60-3-1-0.75 | HR50 | 圆形 | 9.9 | 9.92 | 0.02 |
| 84 | 5-12 | HMn60-3-1-0.75 | HR50 | 圆形 | 9.9 | 9.93 | 0.03 |
| 85 | 5-12 | HMn60-3-1-0.75 | HR50 | 圆形 | 9.9 | 9.87 | -0.03 |
| 86 | 5-12 | HMn61-2-1-1 | HR50 | 圆形 | 7.1 | 7.11 | 0.01 |
| 87 | 5-12 | HMn61-2-1-1 | HR50 | 圆形 | 7.1 | 7.08 | -0.02 |
| 88 | 5-12 | HMn61-2-1-1 | HR50 | 圆形 | 7.1 | 7.13 | 0.03 |
| 89 | 5-12 | HMn61-2-1-1 | HR50 | 圆形 | 7.1 | 7.12 | 0.02 |
| 90 | 5-12 | HMn61-2-1-1 | HR50 | 圆形 | 7.1 | 7.11 | 0.01 |
| 91 | 5-12 | HMn61-2-1-1 | HR50 | 圆形 | 8.0 | 7.96 | -0.04 |
| 92 | 5-12 | HMn61-2-1-1 | HR50 | 圆形 | 8.0 | 7.99 | -0.01 |
| 93 | 5-12 | HMn61-2-1-1 | HR50 | 圆形 | 8.0 | 7.98 | -0.02 |
| 94 | 5-12 | HMn61-2-1-1 | HR50 | 圆形 | 8.0 | 8.03 | 0.03 |
| 95 | 5-12 | HMn61-2-1-1 | HR50 | 圆形 | 8.0 | 8.02 | 0.02 |
| 96 | 5-12 | HMn61-2-1-1 | HR50 | 圆形 | 11.3 | 11.26 | -0.04 |
| 97 | 5-12 | HMn61-2-1-1 | HR50 | 圆形 | 11.3 | 11.26 | -0.04 |
| 98 | 5-12 | HMn61-2-1-1 | HR50 | 圆形 | 11.3 | 11.34 | 0.04 |
| 99 | 5-12 | HMn61-2-1-1 | HR50 | 圆形 | 11.3 | 11.25 | -0.05 |
| 100 | 5-12 | HMn61-2-1-1 | HR50 | 圆形 | 11.3 | 11.25 | -0.05 |
| 101 | 5-12 | HAl61-4-3-1 | HR50 | 圆形 | 8.0 | 7.98 | -0.02 |
| 102 | 5-12 | HAl61-4-3-1 | HR50 | 圆形 | 8.0 | 8.03 | 0.03 |
| 103 | 5-12 | HAl61-4-3-1 | HR50 | 圆形 | 8.0 | 8.02 | 0.02 |
| 104 | 5-12 | HAl61-4-3-1 | HR50 | 圆形 | 8.0 | 7.96 | -0.04 |
| 105 | 5-12 | HAl61-4-3-1 | HR50 | 圆形 | 8.0 | 7.96 | -0.04 |
| 106 | 5-12 | HMn57-2-2-1 | HR50 | 六角 | S10 | S9.95 | -0.05 |
| 107 | 5-12 | HMn57-2-2-1 | HR50 | 六角 | S10 | S9.95 | -0.05 |
| 108 | 5-12 | HMn57-2-2-1 | HR50 | 六角 | S10 | S9.97 | -0.03 |
| 109 | 5-12 | HMn57-2-2-1 | HR50 | 六角 | S10 | S10.03 | 0.03 |
| 110 | 5-12 | HMn57-2-2-1 | HR50 | 六角 | S10 | S10.03 | 0.03 |
| 111 | 5-12 | HMn57-3-1 | HR50 | 矩形 | 3.99\*8.01 | 4.03\*8.07 | 0.06 |
| 112 | 5-12 | HMn57-3-1 | HR50 | 矩形 | 3.99\*8.01 | 4.03\*8.07 | 0.06 |
| 113 | 5-12 | HMn57-3-1 | HR50 | 矩形 | 3.99\*8.01 | 4.04\*8.06 | 0.05 |
| 114 | 5-12 | HMn57-3-1 | HR50 | 矩形 | 3.99\*8.01 | 3.98\*7.98 | -0.03 |
| 115 | 5-12 | HMn57-3-1 | HR50 | 矩形 | 3.99\*8.01 | 3.97\*7.96 | -0.05 |
| 116 | 5-12 | HMn58-2-1-0.5 | HR50 | 六角 | S11 | S10.96 | -0.04 |
| 117 | 5-12 | HMn58-2-1-0.5 | HR50 | 六角 | S11 | S11.04 | 0.04 |
| 118 | 5-12 | HMn58-2-1-0.5 | HR50 | 六角 | S11 | S11.04 | 0.04 |
| 119 | 5-12 | HMn58-2-1-0.5 | HR50 | 六角 | S11 | S10.96 | -0.04 |
| 120 | 5-12 | HMn58-2-1-0.5 | HR50 | 六角 | S11 | S10.98 | -0.02 |
| 121 | 5-12 | HMn58-3-1-1 | HR50 | 正方形 | a12.7 | a12.65 | -0.05 |
| 122 | 5-12 | HMn58-3-1-1 | HR50 | 正方形 | a12.7 | a12.67 | -0.03 |
| 123 | 5-12 | HMn58-3-1-1 | HR50 | 正方形 | a12.7 | a12.76 | 0.06 |
| 124 | 5-12 | HMn58-3-1-1 | HR50 | 正方形 | a12.7 | a12.76 | 0.06 |
| 125 | 5-12 | HMn58-3-1-1 | HR50 | 正方形 | a12.7 | a12.74 | 0.04 |
| 126 | 5-12 | HMn59-2-2-0.5 | HR50 | 六角 | S11 | S10.96 | -0.04 |
| 127 | 5-12 | HMn59-2-2-0.5 | HR50 | 六角 | S11 | S10.94 | -0.06 |
| 128 | 5-12 | HMn59-2-2-0.5 | HR50 | 六角 | S11 | S11.05 | 0.05 |
| 129 | 5-12 | HMn59-2-2-0.5 | HR50 | 六角 | S11 | S11.08 | 0.08 |
| 130 | 5-12 | HMn59-2-2-0.5 | HR50 | 六角 | S11 | S11.07 | 0.07 |
| 131 | 5-12 | HMn59-2-2-0.5 | HR50 | 正方形 | a10 | a9.92 | -0.08 |
| 132 | 5-12 | HMn59-2-2-0.5 | HR50 | 正方形 | a10 | a10.06 | 0.06 |
| 133 | 5-12 | HMn59-2-2-0.5 | HR50 | 正方形 | a10 | a10.06 | 0.06 |
| 134 | 5-12 | HMn59-2-2-0.5 | HR50 | 正方形 | a10 | a10.04 | 0.04 |
| 135 | 5-12 | HMn59-2-2-0.5 | HR50 | 正方形 | a10 | a10.03 | 0.03 |
| 136 | 5-12 | HMn59-3-2-0.8 | HR50 | 六角 | S10.5 | S10.54 | 0.04 |
| 137 | 5-12 | HMn59-3-2-0.8 | HR50 | 六角 | S10.5 | S10.54 | 0.04 |
| 138 | 5-12 | HMn59-3-2-0.8 | HR50 | 六角 | S10.5 | S10.56 | 0.06 |
| 139 | 5-12 | HMn59-3-2-0.8 | HR50 | 六角 | S10.5 | S10.43 | -0.07 |
| 140 | 5-12 | HMn59-3-2-0.8 | HR50 | 六角 | S10.5 | S10.45 | -0.05 |
| 141 | 5-12 | HMn59-3-2-0.8 | HR50 | 正方形 | a6.5 | a6.47 | -0.03 |
| 142 | 5-12 | HMn59-3-2-0.8 | HR50 | 正方形 | a6.5 | a6.47 | -0.03 |
| 143 | 5-12 | HMn59-3-2-0.8 | HR50 | 正方形 | a6.5 | a6.47 | -0.03 |
| 144 | 5-12 | HMn59-3-2-0.8 | HR50 | 正方形 | a6.5 | a6.54 | 0.04 |
| 145 | 5-12 | HMn59-3-2-0.8 | HR50 | 正方形 | a6.5 | a6.47 | -0.03 |
| 146 | 5-12 | HMn60-2-1-0.5 | HR50 | 矩形 | 6.5\*7.5 | 6.44\*7.42 | -0.08 |
| 147 | 5-12 | HMn60-2-1-0.5 | HR50 | 矩形 | 6.5\*7.5 | 6.44\*7.43 | -0.07 |
| 148 | 5-12 | HMn60-2-1-0.5 | HR50 | 矩形 | 6.5\*7.5 | 6.45\*7.45 | -0.05 |
| 149 | 5-12 | HMn60-2-1-0.5 | HR50 | 矩形 | 6.5\*7.5 | 6.53\*7.54 | 0.04 |
| 150 | 5-12 | HMn60-2-1-0.5 | HR50 | 矩形 | 6.5\*7.5 | 6.53\*7.55 | 0.05 |
| 151 | 5-12 | HMn60-2-1-0.5 | HR50 | 正方形 | a11.04 | a11.08 | 0.04 |
| 152 | 5-12 | HMn60-2-1-0.5 | HR50 | 正方形 | a11.04 | a11.09 | 0.05 |
| 153 | 5-12 | HMn60-2-1-0.5 | HR50 | 正方形 | a11.04 | a11.01 | -0.03 |
| 154 | 5-12 | HMn60-2-1-0.5 | HR50 | 正方形 | a11.04 | a11.01 | -0.03 |
| 155 | 5-12 | HMn60-2-1-0.5 | HR50 | 正方形 | a11.04 | a11.01 | -0.03 |
| 156 | 5-12 | HMn61-2-1-1 | HR50 | 六角 | S10 | S10.03 | 0.03 |
| 157 | 5-12 | HMn61-2-1-1 | HR50 | 六角 | S10 | S10.04 | 0.04 |
| 158 | 5-12 | HMn61-2-1-1 | HR50 | 六角 | S10 | S10.04 | 0.04 |
| 159 | 5-12 | HMn61-2-1-1 | HR50 | 六角 | S10 | S9.97 | -0.03 |
| 160 | 5-12 | HMn61-2-1-1 | HR50 | 六角 | S10 | S9.97 | -0.03 |
| 161 | 5-12 | HAl61-4-3-1 | HR50 | 矩形 | 5.8\*6.55 | 5.82\*6.59 | 0.04 |
| 162 | 5-12 | HAl61-4-3-1 | HR50 | 矩形 | 5.8\*6.55 | 5.78\*6.51 | -0.04 |
| 163 | 5-12 | HAl61-4-3-1 | HR50 | 矩形 | 5.8\*6.55 | 5.78\*6.53 | -0.02 |
| 164 | 5-12 | HAl61-4-3-1 | HR50 | 矩形 | 5.8\*6.55 | 5.76\*6.50 | -0.05 |
| 165 | 5-12 | HAl61-4-3-1 | HR50 | 矩形 | 5.8\*6.55 | 5.78\*6.52 | -0.03 |
| 166 | 12-18 | HMn57-2-2-1 | HR50 | 圆形 | 13.8 | 13.77 | -0.03 |
| 167 | 12-18 | HMn57-2-2-1 | HR50 | 圆形 | 13.8 | 13.77 | -0.03 |
| 168 | 12-18 | HMn57-2-2-1 | HR50 | 圆形 | 13.8 | 13.78 | -0.02 |
| 169 | 12-18 | HMn57-2-2-1 | HR50 | 圆形 | 13.8 | 13.82 | 0.02 |
| 170 | 12-18 | HMn57-2-2-1 | HR50 | 圆形 | 13.8 | 13.76 | -0.04 |
| 171 | 12-18 | HMn57-2-2-1 | HR50 | 圆形 | 15.6 | 15.57 | -0.03 |
| 172 | 12-18 | HMn57-2-2-1 | HR50 | 圆形 | 15.6 | 15.57 | -0.03 |
| 173 | 12-18 | HMn57-2-2-1 | HR50 | 圆形 | 15.6 | 15.64 | 0.04 |
| 174 | 12-18 | HMn57-2-2-1 | HR50 | 圆形 | 15.6 | 15.56 | -0.04 |
| 175 | 12-18 | HMn57-2-2-1 | HR50 | 圆形 | 15.6 | 15.56 | -0.04 |
| 176 | 12-18 | HMn57-3-1 | HR50 | 圆形 | 13.95 | 13.91 | -0.04 |
| 177 | 12-18 | HMn57-3-1 | HR50 | 圆形 | 13.95 | 13.91 | -0.04 |
| 178 | 12-18 | HMn57-3-1 | HR50 | 圆形 | 13.95 | 13.98 | 0.03 |
| 179 | 12-18 | HMn57-3-1 | HR50 | 圆形 | 13.95 | 13.97 | 0.02 |
| 180 | 12-18 | HMn57-3-1 | HR50 | 圆形 | 13.95 | 13.91 | -0.04 |
| 181 | 12-18 | HMn57-3-1 | HR50 | 圆形 | 14.55 | 14.51 | -0.04 |
| 182 | 12-18 | HMn57-3-1 | HR50 | 圆形 | 14.55 | 14.51 | -0.04 |
| 183 | 12-18 | HMn57-3-1 | HR50 | 圆形 | 14.55 | 14.57 | 0.02 |
| 184 | 12-18 | HMn57-3-1 | HR50 | 圆形 | 14.55 | 14.58 | 0.03 |
| 185 | 12-18 | HMn57-3-1 | HR50 | 圆形 | 14.55 | 14.59 | 0.04 |
| 186 | 12-18 | HMn58-2-1-0.5 | HR50 | 圆形 | 12.0 | 12.02 | 0.02 |
| 187 | 12-18 | HMn58-2-1-0.5 | HR50 | 圆形 | 12.0 | 12.04 | 0.04 |
| 188 | 12-18 | HMn58-2-1-0.5 | HR50 | 圆形 | 12.0 | 11.98 | -0.02 |
| 189 | 12-18 | HMn58-2-1-0.5 | HR50 | 圆形 | 12.0 | 11.97 | -0.03 |
| 190 | 12-18 | HMn58-2-1-0.5 | HR50 | 圆形 | 12.0 | 11.97 | -0.03 |
| 191 | 12-18 | HMn58-2-1-0.5 | HR50 | 圆形 | 15.0 | 14.97 | -0.03 |
| 192 | 12-18 | HMn58-2-1-0.5 | HR50 | 圆形 | 15.0 | 14.97 | -0.03 |
| 193 | 12-18 | HMn58-2-1-0.5 | HR50 | 圆形 | 15.0 | 14.97 | -0.03 |
| 194 | 12-18 | HMn58-2-1-0.5 | HR50 | 圆形 | 15.0 | 15.02 | 0.02 |
| 195 | 12-18 | HMn58-2-1-0.5 | HR50 | 圆形 | 15.0 | 14.97 | -0.03 |
| 196 | 12-18 | HMn58-3-1-1 | HR50 | 圆形 | 16.95 | 16.89 | -0.06 |
| 197 | 12-18 | HMn58-3-1-1 | HR50 | 圆形 | 16.95 | 17 | 0.05 |
| 198 | 12-18 | HMn58-3-1-1 | HR50 | 圆形 | 16.95 | 17 | 0.05 |
| 199 | 12-18 | HMn58-3-1-1 | HR50 | 圆形 | 16.95 | 16.99 | 0.04 |
| 200 | 12-18 | HMn58-3-1-1 | HR50 | 圆形 | 16.95 | 16.91 | -0.04 |
| 201 | 12-18 | HMn58-3-1-1 | HR50 | 圆形 | 17.0 | 16.94 | -0.06 |
| 202 | 12-18 | HMn58-3-1-1 | HR50 | 圆形 | 17.0 | 17.05 | 0.05 |
| 203 | 12-18 | HMn58-3-1-1 | HR50 | 圆形 | 17.0 | 16.95 | -0.05 |
| 204 | 12-18 | HMn58-3-1-1 | HR50 | 圆形 | 17.0 | 16.95 | -0.05 |
| 205 | 12-18 | HMn58-3-1-1 | HR50 | 圆形 | 17.0 | 16.94 | -0.06 |
| 206 | 12-18 | HMn59-2-2-0.5 | HR50 | 圆形 | 13.5 | 13.54 | 0.04 |
| 207 | 12-18 | HMn59-2-2-0.5 | HR50 | 圆形 | 13.5 | 13.53 | 0.03 |
| 208 | 12-18 | HMn59-2-2-0.5 | HR50 | 圆形 | 13.5 | 13.52 | 0.02 |
| 209 | 12-18 | HMn59-2-2-0.5 | HR50 | 圆形 | 13.5 | 13.52 | 0.02 |
| 210 | 12-18 | HMn59-2-2-0.5 | HR50 | 圆形 | 13.5 | 13.52 | 0.02 |
| 211 | 12-18 | HMn59-2-2-0.5 | HR50 | 圆形 | 14.2 | 14.25 | 0.05 |
| 212 | 12-18 | HMn59-2-2-0.5 | HR50 | 圆形 | 14.2 | 14.23 | 0.03 |
| 213 | 12-18 | HMn59-2-2-0.5 | HR50 | 圆形 | 14.2 | 14.24 | 0.04 |
| 214 | 12-18 | HMn59-2-2-0.5 | HR50 | 圆形 | 14.2 | 14.15 | -0.05 |
| 215 | 12-18 | HMn59-2-2-0.5 | HR50 | 圆形 | 14.2 | 14.24 | 0.04 |
| 216 | 12-18 | HMn59-2-2-0.5 | HR50 | 圆形 | 16.5 | 16.45 | -0.05 |
| 217 | 12-18 | HMn59-2-2-0.5 | HR50 | 圆形 | 16.5 | 16.45 | -0.05 |
| 218 | 12-18 | HMn59-2-2-0.5 | HR50 | 圆形 | 16.5 | 16.54 | 0.04 |
| 219 | 12-18 | HMn59-2-2-0.5 | HR50 | 圆形 | 16.5 | 16.46 | -0.04 |
| 220 | 12-18 | HMn59-2-2-0.5 | HR50 | 圆形 | 16.5 | 16.54 | 0.04 |
| 221 | 12-18 | HMn59-3-2-0.8 | HR50 | 圆形 | 13.5 | 13.54 | 0.04 |
| 222 | 12-18 | HMn59-3-2-0.8 | HR50 | 圆形 | 13.5 | 13.55 | 0.05 |
| 223 | 12-18 | HMn59-3-2-0.8 | HR50 | 圆形 | 13.5 | 13.53 | 0.03 |
| 224 | 12-18 | HMn59-3-2-0.8 | HR50 | 圆形 | 13.5 | 13.54 | 0.04 |
| 225 | 12-18 | HMn59-3-2-0.8 | HR50 | 圆形 | 13.5 | 13.45 | -0.05 |
| 226 | 12-18 | HMn59-3-2-0.8 | HR50 | 圆形 | 13.74 | 13.78 | 0.04 |
| 227 | 12-18 | HMn59-3-2-0.8 | HR50 | 圆形 | 13.74 | 13.7 | -0.04 |
| 228 | 12-18 | HMn59-3-2-0.8 | HR50 | 圆形 | 13.74 | 13.71 | -0.03 |
| 229 | 12-18 | HMn59-3-2-0.8 | HR50 | 圆形 | 13.74 | 13.76 | 0.02 |
| 230 | 12-18 | HMn59-3-2-0.8 | HR50 | 圆形 | 13.74 | 13.76 | 0.02 |
| 231 | 12-18 | HMn60-2-1-0.5 | HR50 | 圆形 | 14.5 | 14.52 | 0.02 |
| 232 | 12-18 | HMn60-2-1-0.5 | HR50 | 圆形 | 14.5 | 14.52 | 0.02 |
| 233 | 12-18 | HMn60-2-1-0.5 | HR50 | 圆形 | 14.5 | 14.48 | -0.02 |
| 234 | 12-18 | HMn60-2-1-0.5 | HR50 | 圆形 | 14.5 | 14.48 | -0.02 |
| 235 | 12-18 | HMn60-2-1-0.5 | HR50 | 圆形 | 14.5 | 14.52 | 0.02 |
| 236 | 12-18 | HMn60-2-1-0.5 | HR50 | 圆形 | 15.0 | 15.04 | 0.04 |
| 237 | 12-18 | HMn60-2-1-0.5 | HR50 | 圆形 | 15.0 | 14.96 | -0.04 |
| 238 | 12-18 | HMn60-2-1-0.5 | HR50 | 圆形 | 15.0 | 14.96 | -0.04 |
| 239 | 12-18 | HMn60-2-1-0.5 | HR50 | 圆形 | 15.0 | 14.96 | -0.04 |
| 240 | 12-18 | HMn60-2-1-0.5 | HR50 | 圆形 | 15.0 | 15.04 | 0.04 |
| 241 | 12-18 | HMn60-2-1-0.5 | HR50 | 圆形 | 18.0 | 17.98 | -0.02 |
| 242 | 12-18 | HMn60-2-1-0.5 | HR50 | 圆形 | 18.0 | 18.02 | 0.02 |
| 243 | 12-18 | HMn60-2-1-0.5 | HR50 | 圆形 | 18.0 | 18.04 | 0.04 |
| 244 | 12-18 | HMn60-2-1-0.5 | HR50 | 圆形 | 18.0 | 17.96 | -0.04 |
| 245 | 12-18 | HMn60-2-1-0.5 | HR50 | 圆形 | 18.0 | 17.96 | -0.04 |
| 246 | 12-18 | HMn60-3-1-0.75 | HR50 | 圆形 | 15.0 | 14.96 | -0.04 |
| 247 | 12-18 | HMn60-3-1-0.75 | HR50 | 圆形 | 15.0 | 14.95 | -0.05 |
| 248 | 12-18 | HMn60-3-1-0.75 | HR50 | 圆形 | 15.0 | 15.03 | 0.03 |
| 249 | 12-18 | HMn60-3-1-0.75 | HR50 | 圆形 | 15.0 | 15.04 | 0.04 |
| 250 | 12-18 | HMn60-3-1-0.75 | HR50 | 圆形 | 15.0 | 14.96 | -0.04 |
| 251 | 12-18 | HMn61-2-1-1 | HR50 | 圆形 | 12.18 | 12.2 | 0.02 |
| 252 | 12-18 | HMn61-2-1-1 | HR50 | 圆形 | 12.18 | 12.15 | -0.03 |
| 253 | 12-18 | HMn61-2-1-1 | HR50 | 圆形 | 12.18 | 12.22 | 0.04 |
| 254 | 12-18 | HMn61-2-1-1 | HR50 | 圆形 | 12.18 | 12.21 | 0.03 |
| 255 | 12-18 | HMn61-2-1-1 | HR50 | 圆形 | 12.18 | 12.2 | 0.02 |
| 256 | 12-18 | HMn61-2-1-1 | HR50 | 圆形 | 13.0 | 12.95 | -0.05 |
| 257 | 12-18 | HMn61-2-1-1 | HR50 | 圆形 | 13.0 | 12.98 | -0.02 |
| 258 | 12-18 | HMn61-2-1-1 | HR50 | 圆形 | 13.0 | 12.97 | -0.03 |
| 259 | 12-18 | HMn61-2-1-1 | HR50 | 圆形 | 13.0 | 13.04 | 0.04 |
| 260 | 12-18 | HMn61-2-1-1 | HR50 | 圆形 | 13.0 | 13.03 | 0.03 |
| 261 | 12-18 | HMn61-2-1-1 | HR50 | 圆形 | 13.48 | 13.43 | -0.05 |
| 262 | 12-18 | HMn61-2-1-1 | HR50 | 圆形 | 13.48 | 13.43 | -0.05 |
| 263 | 12-18 | HMn61-2-1-1 | HR50 | 圆形 | 13.48 | 13.53 | 0.05 |
| 264 | 12-18 | HMn61-2-1-1 | HR50 | 圆形 | 13.48 | 13.43 | -0.05 |
| 265 | 12-18 | HMn61-2-1-1 | HR50 | 圆形 | 13.48 | 13.44 | -0.04 |
| 266 | 12-18 | HAl61-4-3-1 | HR50 | 圆形 | 15.0 | 15.03 | 0.03 |
| 267 | 12-18 | HAl61-4-3-1 | HR50 | 圆形 | 15.0 | 15.04 | 0.04 |
| 268 | 12-18 | HAl61-4-3-1 | HR50 | 圆形 | 15.0 | 14.96 | -0.04 |
| 269 | 12-18 | HAl61-4-3-1 | HR50 | 圆形 | 15.0 | 15.02 | 0.02 |
| 270 | 12-18 | HAl61-4-3-1 | HR50 | 圆形 | 15.0 | 14.97 | -0.03 |
| 271 | 12-18 | HMn57-2-2-1 | HR50 | 六角 | S12.5 | S12.43 | -0.07 |
| 272 | 12-18 | HMn57-2-2-1 | HR50 | 六角 | S12.5 | S12.43 | -0.07 |
| 273 | 12-18 | HMn57-2-2-1 | HR50 | 六角 | S12.5 | S12.46 | -0.04 |
| 274 | 12-18 | HMn57-2-2-1 | HR50 | 六角 | S12.5 | S12.54 | 0.04 |
| 275 | 12-18 | HMn57-2-2-1 | HR50 | 六角 | S12.5 | S12.54 | 0.04 |
| 276 | 12-18 | HMn57-2-2-1 | HR50 | 六角 | S14.29 | S14.22 | -0.07 |
| 277 | 12-18 | HMn57-2-2-1 | HR50 | 六角 | S14.29 | S14.22 | -0.07 |
| 278 | 12-18 | HMn57-2-2-1 | HR50 | 六角 | S14.29 | S14.25 | -0.04 |
| 279 | 12-18 | HMn57-2-2-1 | HR50 | 六角 | S14.29 | S14.33 | 0.04 |
| 280 | 12-18 | HMn57-2-2-1 | HR50 | 六角 | S14.29 | S14.33 | 0.04 |
| 281 | 12-18 | HMn57-3-1 | HR50 | 矩形 | 12.2\*13 | 12.25\*13.06 | 0.06 |
| 282 | 12-18 | HMn57-3-1 | HR50 | 矩形 | 12.2\*13 | 12.24\*13.06 | 0.06 |
| 283 | 12-18 | HMn57-3-1 | HR50 | 矩形 | 12.2\*13 | 12.25\*13.07 | 0.07 |
| 284 | 12-18 | HMn57-3-1 | HR50 | 矩形 | 12.2\*13 | 12.18\*12.96 | -0.04 |
| 285 | 12-18 | HMn57-3-1 | HR50 | 矩形 | 12.2\*13 | 12.15\*12.93 | -0.07 |
| 286 | 12-18 | HMn58-2-1-0.5 | HR50 | 六角 | S12.9 | S12.85 | -0.05 |
| 287 | 12-18 | HMn58-2-1-0.5 | HR50 | 六角 | S12.9 | S12.95 | 0.05 |
| 288 | 12-18 | HMn58-2-1-0.5 | HR50 | 六角 | S12.9 | S12.95 | 0.05 |
| 289 | 12-18 | HMn58-2-1-0.5 | HR50 | 六角 | S12.9 | S12.85 | -0.05 |
| 290 | 12-18 | HMn58-2-1-0.5 | HR50 | 六角 | S12.9 | S12.87 | -0.03 |
| 291 | 12-18 | HMn58-3-1-1 | HR50 | 正方形 | a12.7 | a12.63 | -0.07 |
| 292 | 12-18 | HMn58-3-1-1 | HR50 | 正方形 | a12.7 | a12.66 | -0.04 |
| 293 | 12-18 | HMn58-3-1-1 | HR50 | 正方形 | a12.7 | a12.76 | 0.06 |
| 294 | 12-18 | HMn58-3-1-1 | HR50 | 正方形 | a12.7 | a12.76 | 0.06 |
| 295 | 12-18 | HMn58-3-1-1 | HR50 | 正方形 | a12.7 | a12.75 | 0.05 |
| 296 | 12-18 | HMn59-2-2-0.5 | HR50 | 六角 | S16.9 | S16.85 | -0.05 |
| 297 | 12-18 | HMn59-2-2-0.5 | HR50 | 六角 | S16.9 | S16.84 | -0.06 |
| 298 | 12-18 | HMn59-2-2-0.5 | HR50 | 六角 | S16.9 | S16.97 | 0.07 |
| 299 | 12-18 | HMn59-2-2-0.5 | HR50 | 六角 | S16.9 | S16.98 | 0.08 |
| 300 | 12-18 | HMn59-2-2-0.5 | HR50 | 六角 | S16.9 | S16.97 | 0.07 |
| 301 | 12-18 | HMn59-2-2-0.5 | HR50 | 正方形 | a14 | a13.92 | -0.08 |
| 302 | 12-18 | HMn59-2-2-0.5 | HR50 | 正方形 | a14 | a14.06 | 0.06 |
| 303 | 12-18 | HMn59-2-2-0.5 | HR50 | 正方形 | a14 | a14.06 | 0.06 |
| 304 | 12-18 | HMn59-2-2-0.5 | HR50 | 正方形 | a14 | a14.05 | 0.05 |
| 305 | 12-18 | HMn59-2-2-0.5 | HR50 | 正方形 | a14 | a14.04 | 0.04 |
| 306 | 12-18 | HMn59-3-2-0.8 | HR50 | 六角 | S17.48 | S17.44 | -0.04 |
| 307 | 12-18 | HMn59-3-2-0.8 | HR50 | 六角 | S17.48 | S17.44 | -0.04 |
| 308 | 12-18 | HMn59-3-2-0.8 | HR50 | 六角 | S17.48 | S17.44 | -0.04 |
| 309 | 12-18 | HMn59-3-2-0.8 | HR50 | 六角 | S17.48 | S17.53 | 0.05 |
| 310 | 12-18 | HMn59-3-2-0.8 | HR50 | 六角 | S17.48 | S17.44 | -0.04 |
| 311 | 12-18 | HMn59-3-2-0.8 | HR50 | 六角 | S13 | S13.05 | 0.05 |
| 312 | 12-18 | HMn59-3-2-0.8 | HR50 | 六角 | S13 | S13.05 | 0.05 |
| 313 | 12-18 | HMn59-3-2-0.8 | HR50 | 六角 | S13 | S13.06 | 0.06 |
| 314 | 12-18 | HMn59-3-2-0.8 | HR50 | 六角 | S13 | S12.93 | -0.07 |
| 315 | 12-18 | HMn59-3-2-0.8 | HR50 | 六角 | S13 | S12.93 | -0.07 |
| 316 | 12-18 | HMn60-2-1-0.5 | HR50 | 矩形 | 9.5\*16 | 9.45\*15.92 | -0.08 |
| 317 | 12-18 | HMn60-2-1-0.5 | HR50 | 矩形 | 9.5\*16 | 9.47\*15.93 | -0.07 |
| 318 | 12-18 | HMn60-2-1-0.5 | HR50 | 矩形 | 9.5\*16 | 9.44\*15.93 | -0.07 |
| 319 | 12-18 | HMn60-2-1-0.5 | HR50 | 矩形 | 9.5\*16 | 9.53\*16.05 | 0.05 |
| 320 | 12-18 | HMn60-2-1-0.5 | HR50 | 矩形 | 9.5\*16 | 9.55\*16.07 | 0.07 |
| 321 | 12-18 | HMn61-2-1-1 | HR50 | 六角 | s16.9 | S16.94 | 0.04 |
| 322 | 12-18 | HMn61-2-1-1 | HR50 | 六角 | s16.9 | S16.95 | 0.05 |
| 323 | 12-18 | HMn61-2-1-1 | HR50 | 六角 | s16.9 | S16.95 | 0.05 |
| 324 | 12-18 | HMn61-2-1-1 | HR50 | 六角 | s16.9 | S16.86 | -0.04 |
| 325 | 12-18 | HMn61-2-1-1 | HR50 | 六角 | s16.9 | S16.86 | -0.04 |
| 326 | 12-18 | HMn62-3-3-1 | HR50 | 正方形 | a17.5 | a17.46 | -0.04 |
| 327 | 12-18 | HMn62-3-3-1 | HR50 | 正方形 | a17.5 | a17.46 | -0.04 |
| 328 | 12-18 | HMn62-3-3-1 | HR50 | 正方形 | a17.5 | a17.47 | -0.03 |
| 329 | 12-18 | HMn62-3-3-1 | HR50 | 正方形 | a17.5 | a17.55 | 0.05 |
| 330 | 12-18 | HMn62-3-3-1 | HR50 | 正方形 | a17.5 | a17.46 | -0.04 |
| 331 | 18-30 | HMn57-2-2-1 | HR50 | 圆形 | 18.7 | 18.66 | -0.04 |
| 332 | 18-30 | HMn57-2-2-1 | HR50 | 圆形 | 18.7 | 18.66 | -0.04 |
| 333 | 18-30 | HMn57-2-2-1 | HR50 | 圆形 | 18.7 | 18.67 | -0.03 |
| 334 | 18-30 | HMn57-2-2-1 | HR50 | 圆形 | 18.7 | 18.73 | 0.03 |
| 335 | 18-30 | HMn57-2-2-1 | HR50 | 圆形 | 18.7 | 18.67 | -0.03 |
| 336 | 18-30 | HMn57-3-1 | HR50 | 圆形 | 18.7 | 18.66 | -0.04 |
| 337 | 18-30 | HMn57-3-1 | HR50 | 圆形 | 18.7 | 18.66 | -0.04 |
| 338 | 18-30 | HMn57-3-1 | HR50 | 圆形 | 18.7 | 18.75 | 0.05 |
| 339 | 18-30 | HMn57-3-1 | HR50 | 圆形 | 18.7 | 18.65 | -0.05 |
| 340 | 18-30 | HMn57-3-1 | HR50 | 圆形 | 18.7 | 18.65 | -0.05 |
| 341 | 18-30 | HMn58-2-1-0.5 | HR50 | 圆形 | 20.0 | 19.95 | -0.05 |
| 342 | 18-30 | HMn58-2-1-0.5 | HR50 | 圆形 | 20.0 | 19.95 | -0.05 |
| 343 | 18-30 | HMn58-2-1-0.5 | HR50 | 圆形 | 20.0 | 20.04 | 0.04 |
| 344 | 18-30 | HMn58-2-1-0.5 | HR50 | 圆形 | 20.0 | 20.03 | 0.03 |
| 345 | 18-30 | HMn58-2-1-0.5 | HR50 | 圆形 | 20.0 | 19.95 | -0.05 |
| 346 | 18-30 | HMn58-3-1-1 | HR50 | 圆形 | 25.0 | 24.95 | -0.05 |
| 347 | 18-30 | HMn58-3-1-1 | HR50 | 圆形 | 25.0 | 24.95 | -0.05 |
| 348 | 18-30 | HMn58-3-1-1 | HR50 | 圆形 | 25.0 | 25.03 | 0.03 |
| 349 | 18-30 | HMn58-3-1-1 | HR50 | 圆形 | 25.0 | 25.04 | 0.04 |
| 350 | 18-30 | HMn58-3-1-1 | HR50 | 圆形 | 25.0 | 25.05 | 0.05 |
| 351 | 18-30 | HMn59-2-2-0.5 | HR50 | 圆形 | 20.0 | 19.95 | -0.05 |
| 352 | 18-30 | HMn59-2-2-0.5 | HR50 | 圆形 | 20.0 | 19.95 | -0.05 |
| 353 | 18-30 | HMn59-2-2-0.5 | HR50 | 圆形 | 20.0 | 19.94 | -0.06 |
| 354 | 18-30 | HMn59-2-2-0.5 | HR50 | 圆形 | 20.0 | 20.06 | 0.06 |
| 355 | 18-30 | HMn59-2-2-0.5 | HR50 | 圆形 | 20.0 | 20.07 | 0.07 |
| 356 | 18-30 | HMn59-2-2-0.5 | HR50 | 圆形 | 23.0 | 23.03 | 0.03 |
| 357 | 18-30 | HMn59-2-2-0.5 | HR50 | 圆形 | 23.0 | 23.05 | 0.05 |
| 358 | 18-30 | HMn59-2-2-0.5 | HR50 | 圆形 | 23.0 | 22.97 | -0.03 |
| 359 | 18-30 | HMn59-2-2-0.5 | HR50 | 圆形 | 23.0 | 22.96 | -0.04 |
| 360 | 18-30 | HMn59-2-2-0.5 | HR50 | 圆形 | 23.0 | 22.96 | -0.04 |
| 361 | 18-30 | HMn59-3-2-0.8 | HR50 | 圆形 | 28.0 | 28.06 | 0.06 |
| 362 | 18-30 | HMn59-3-2-0.8 | HR50 | 圆形 | 28.0 | 28.04 | 0.04 |
| 363 | 18-30 | HMn59-3-2-0.8 | HR50 | 圆形 | 28.0 | 28.05 | 0.05 |
| 364 | 18-30 | HMn59-3-2-0.8 | HR50 | 圆形 | 28.0 | 27.94 | -0.06 |
| 365 | 18-30 | HMn59-3-2-0.8 | HR50 | 圆形 | 28.0 | 28.05 | 0.05 |
| 366 | 18-30 | HMn60-2-1-0.5 | HR50 | 圆形 | 28.5 | 28.46 | -0.04 |
| 367 | 18-30 | HMn60-2-1-0.5 | HR50 | 圆形 | 28.5 | 28.46 | -0.04 |
| 368 | 18-30 | HMn60-2-1-0.5 | HR50 | 圆形 | 28.5 | 28.46 | -0.04 |
| 369 | 18-30 | HMn60-2-1-0.5 | HR50 | 圆形 | 28.5 | 28.53 | 0.03 |
| 370 | 18-30 | HMn60-2-1-0.5 | HR50 | 圆形 | 28.5 | 28.46 | -0.04 |
| 371 | 18-30 | HMn60-3-1-0.75 | HR50 | 圆形 | 26.0 | 25.93 | -0.07 |
| 372 | 18-30 | HMn60-3-1-0.75 | HR50 | 圆形 | 26.0 | 26.06 | 0.06 |
| 373 | 18-30 | HMn60-3-1-0.75 | HR50 | 圆形 | 26.0 | 26.06 | 0.06 |
| 374 | 18-30 | HMn60-3-1-0.75 | HR50 | 圆形 | 26.0 | 26.05 | 0.05 |
| 375 | 18-30 | HMn60-3-1-0.75 | HR50 | 圆形 | 26.0 | 25.95 | -0.05 |
| 376 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 20.0 | 19.94 | -0.06 |
| 377 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 20.0 | 19.97 | -0.03 |
| 378 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 20.0 | 19.94 | -0.06 |
| 379 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 20.0 | 19.94 | -0.06 |
| 380 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 20.0 | 19.93 | -0.07 |
| 381 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 26.6 | 26.65 | 0.05 |
| 382 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 26.6 | 26.64 | 0.04 |
| 383 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 26.6 | 26.63 | 0.03 |
| 384 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 26.6 | 26.63 | 0.03 |
| 385 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 26.6 | 26.63 | 0.03 |
| 386 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 20.0 | 19.94 | -0.06 |
| 387 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 20.0 | 20.07 | 0.07 |
| 388 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 20.0 | 19.94 | -0.06 |
| 389 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 20.0 | 19.94 | -0.06 |
| 390 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 20.0 | 19.93 | -0.07 |
| 391 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 26.6 | 26.65 | 0.05 |
| 392 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 26.6 | 26.64 | 0.04 |
| 393 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 26.6 | 26.63 | 0.03 |
| 394 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 26.6 | 26.63 | 0.03 |
| 395 | 18-30 | HMn61-2-1-1 | HR50 | 圆形 | 26.6 | 26.63 | 0.03 |
| 396 | 18-30 | HMn57-2-2-1 | HR50 | 六角 | S18.85 | S18.91 | 0.06 |
| 397 | 18-30 | HMn57-2-2-1 | HR50 | 六角 | S18.85 | S18.91 | 0.06 |
| 398 | 18-30 | HMn57-2-2-1 | HR50 | 六角 | S18.85 | S18.9 | 0.05 |
| 399 | 18-30 | HMn57-2-2-1 | HR50 | 六角 | S18.85 | S18.82 | -0.03 |
| 400 | 18-30 | HMn57-2-2-1 | HR50 | 六角 | S18.85 | S18.8 | -0.05 |
| 401 | 18-30 | HMn59-2-2-0.5 | HR50 | 六角 | S19 | S18.95 | -0.05 |
| 402 | 18-30 | HMn59-2-2-0.5 | HR50 | 六角 | S19 | S18.97 | -0.03 |
| 403 | 18-30 | HMn59-2-2-0.5 | HR50 | 六角 | S19 | S19.06 | 0.06 |
| 404 | 18-30 | HMn59-2-2-0.5 | HR50 | 六角 | S19 | S19.06 | 0.06 |
| 405 | 18-30 | HMn59-2-2-0.5 | HR50 | 六角 | S19 | S19.04 | 0.04 |
| 406 | 18-30 | HMn59-2-2-0.5 | HR50 | 正方形 | a19 | a18.96 | -0.04 |
| 407 | 18-30 | HMn59-2-2-0.5 | HR50 | 正方形 | a19 | a19.04 | 0.04 |
| 408 | 18-30 | HMn59-2-2-0.5 | HR50 | 正方形 | a19 | a19.04 | 0.04 |
| 409 | 18-30 | HMn59-2-2-0.5 | HR50 | 正方形 | a19 | a18.96 | -0.04 |
| 410 | 18-30 | HMn59-2-2-0.5 | HR50 | 正方形 | a19 | a18.98 | -0.02 |
| 411 | 18-30 | HMn59-3-2-0.8 | HR50 | 六角 | S20 | S19.92 | -0.08 |
| 412 | 18-30 | HMn59-3-2-0.8 | HR50 | 六角 | S20 | S19.93 | -0.07 |
| 413 | 18-30 | HMn59-3-2-0.8 | HR50 | 六角 | S20 | S19.95 | -0.05 |
| 414 | 18-30 | HMn59-3-2-0.8 | HR50 | 六角 | S20 | S20.04 | 0.04 |
| 415 | 18-30 | HMn59-3-2-0.8 | HR50 | 六角 | S20 | S20.05 | 0.05 |
| 416 | 18-30 | HMn59-3-2-0.8 | HR50 | 正方形 | a25 | a25.04 | 0.04 |
| 417 | 18-30 | HMn59-3-2-0.8 | HR50 | 正方形 | a25 | a25.05 | 0.05 |
| 418 | 18-30 | HMn59-3-2-0.8 | HR50 | 正方形 | a25 | a24.97 | -0.03 |
| 419 | 18-30 | HMn59-3-2-0.8 | HR50 | 正方形 | a25 | a24.97 | -0.03 |
| 420 | 18-30 | HMn59-3-2-0.8 | HR50 | 正方形 | a25 | a24.97 | -0.03 |
| 421 | 18-30 | HMn60-2-1-0.5 | HR50 | 正方形 | a22 | a21.92 | -0.08 |
| 422 | 18-30 | HMn60-2-1-0.5 | HR50 | 正方形 | a22 | a22.06 | 0.06 |
| 423 | 18-30 | HMn60-2-1-0.5 | HR50 | 正方形 | a22 | a22.06 | 0.06 |
| 424 | 18-30 | HMn60-2-1-0.5 | HR50 | 正方形 | a22 | a22.04 | 0.04 |
| 425 | 18-30 | HMn60-2-1-0.5 | HR50 | 正方形 | a22 | a22.03 | 0.03 |
| 426 | 18-30 | HMn61-2-1-1 | HR50 | 六角 | S20 | S19.96 | -0.04 |
| 427 | 18-30 | HMn61-2-1-1 | HR50 | 六角 | S20 | S19.94 | -0.06 |
| 428 | 18-30 | HMn61-2-1-1 | HR50 | 六角 | S20 | S20.05 | 0.05 |
| 429 | 18-30 | HMn61-2-1-1 | HR50 | 六角 | S20 | S20.08 | 0.08 |
| 430 | 18-30 | HMn61-2-1-1 | HR50 | 六角 | S20 | S20.07 | 0.07 |
| 431 | 18-30 | HAl61-4-3-1 | HR50 | 矩形 | 18.2\*23.5 | 18.17\*23.47 | -0.03 |
| 432 | 18-30 | HAl61-4-3-1 | HR50 | 矩形 | 18.2\*23.5 | 18.15\*23.45 | -0.05 |
| 433 | 18-30 | HAl61-4-3-1 | HR50 | 矩形 | 18.2\*23.5 | 18.18\*23.45 | -0.05 |
| 434 | 18-30 | HAl61-4-3-1 | HR50 | 矩形 | 18.2\*23.5 | 18.23\*23.54 | 0.04 |
| 435 | 18-30 | HAl61-4-3-1 | HR50 | 矩形 | 18.2\*23.5 | 18.24\*23.55 | 0.05 |
| 436 | 30-50 | HMn57-2-2-1 | HR50 | 圆形 | 50 | 49.93 | -0.07 |
| 437 | 30-50 | HMn57-2-2-1 | HR50 | 圆形 | 50 | 49.93 | -0.07 |
| 438 | 30-50 | HMn57-2-2-1 | HR50 | 圆形 | 50 | 49.94 | -0.06 |
| 439 | 30-50 | HMn57-2-2-1 | HR50 | 圆形 | 50 | 50.06 | 0.06 |
| 440 | 30-50 | HMn57-2-2-1 | HR50 | 圆形 | 50 | 49.94 | -0.06 |
| 441 | 30-50 | HMn57-3-1 | HR50 | 圆形 | 40.0 | 39.92 | -0.08 |
| 442 | 30-50 | HMn57-3-1 | HR50 | 圆形 | 40.0 | 39.92 | -0.08 |
| 443 | 30-50 | HMn57-3-1 | HR50 | 圆形 | 40.0 | 40.02 | 0.02 |
| 444 | 30-50 | HMn57-3-1 | HR50 | 圆形 | 40.0 | 40.07 | 0.07 |
| 445 | 30-50 | HMn57-3-1 | HR50 | 圆形 | 40.0 | 40.08 | 0.08 |
| 446 | 30-50 | HMn58-2-1-0.5 | HR50 | 圆形 | 37.0 | 36.93 | -0.07 |
| 447 | 30-50 | HMn58-2-1-0.5 | HR50 | 圆形 | 37.0 | 36.98 | -0.02 |
| 448 | 30-50 | HMn58-2-1-0.5 | HR50 | 圆形 | 37.0 | 36.93 | -0.07 |
| 449 | 30-50 | HMn58-2-1-0.5 | HR50 | 圆形 | 37.0 | 37.06 | 0.06 |
| 450 | 30-50 | HMn58-2-1-0.5 | HR50 | 圆形 | 37.0 | 36.93 | -0.07 |
| 451 | 30-50 | HMn58-3-1-1 | HR50 | 圆形 | 39.0 | 38.94 | -0.06 |
| 452 | 30-50 | HMn58-3-1-1 | HR50 | 圆形 | 39.0 | 39.04 | 0.04 |
| 453 | 30-50 | HMn58-3-1-1 | HR50 | 圆形 | 39.0 | 38.91 | -0.09 |
| 454 | 30-50 | HMn58-3-1-1 | HR50 | 圆形 | 39.0 | 38.91 | -0.09 |
| 455 | 30-50 | HMn58-3-1-1 | HR50 | 圆形 | 39.0 | 38.9 | -0.1 |
| 456 | 30-50 | HMn59-2-2-0.5 | HR50 | 圆形 | 44.5 | 44.59 | 0.09 |
| 457 | 30-50 | HMn59-2-2-0.5 | HR50 | 圆形 | 44.5 | 44.57 | 0.07 |
| 458 | 30-50 | HMn59-2-2-0.5 | HR50 | 圆形 | 44.5 | 44.58 | 0.08 |
| 459 | 30-50 | HMn59-2-2-0.5 | HR50 | 圆形 | 44.5 | 44.41 | -0.09 |
| 460 | 30-50 | HMn59-2-2-0.5 | HR50 | 圆形 | 44.5 | 44.58 | 0.08 |
| 461 | 30-50 | HMn59-2-2-0.5 | HR50 | 圆形 | 48.5 | 48.41 | -0.09 |
| 462 | 30-50 | HMn59-2-2-0.5 | HR50 | 圆形 | 48.5 | 48.45 | -0.05 |
| 463 | 30-50 | HMn59-2-2-0.5 | HR50 | 圆形 | 48.5 | 48.58 | 0.08 |
| 464 | 30-50 | HMn59-2-2-0.5 | HR50 | 圆形 | 48.5 | 48.42 | -0.08 |
| 465 | 30-50 | HMn59-2-2-0.5 | HR50 | 圆形 | 48.5 | 48.52 | 0.02 |
| 466 | 30-50 | HMn59-3-2-0.8 | HR50 | 圆形 | 45.0 | 45.08 | 0.08 |
| 467 | 30-50 | HMn59-3-2-0.8 | HR50 | 圆形 | 45.0 | 44.92 | -0.08 |
| 468 | 30-50 | HMn59-3-2-0.8 | HR50 | 圆形 | 45.0 | 44.93 | -0.07 |
| 469 | 30-50 | HMn59-3-2-0.8 | HR50 | 圆形 | 45.0 | 45.06 | 0.06 |
| 470 | 30-50 | HMn59-3-2-0.8 | HR50 | 圆形 | 45.0 | 45.06 | 0.06 |
| 471 | 30-50 | HMn60-2-1-0.5 | HR50 | 圆形 | 48.0 | 48.08 | 0.08 |
| 472 | 30-50 | HMn60-2-1-0.5 | HR50 | 圆形 | 48.0 | 47.92 | -0.08 |
| 473 | 30-50 | HMn60-2-1-0.5 | HR50 | 圆形 | 48.0 | 47.97 | -0.03 |
| 474 | 30-50 | HMn60-2-1-0.5 | HR50 | 圆形 | 48.0 | 47.92 | -0.08 |
| 475 | 30-50 | HMn60-2-1-0.5 | HR50 | 圆形 | 48.0 | 48.04 | 0.04 |
| 476 | 30-50 | HMn60-3-1-0.75 | HR50 | 圆形 | 36.0 | 35.92 | -0.08 |
| 477 | 30-50 | HMn60-3-1-0.75 | HR50 | 圆形 | 36.0 | 35.91 | -0.09 |
| 478 | 30-50 | HMn60-3-1-0.75 | HR50 | 圆形 | 36.0 | 36.07 | 0.07 |
| 479 | 30-50 | HMn60-3-1-0.75 | HR50 | 圆形 | 36.0 | 36.08 | 0.08 |
| 480 | 30-50 | HMn60-3-1-0.75 | HR50 | 圆形 | 36.0 | 35.92 | -0.08 |
| 481 | 30-50 | HMn61-2-1-1 | HR50 | 圆形 | 44.0 | 43.91 | -0.09 |
| 482 | 30-50 | HMn61-2-1-1 | HR50 | 圆形 | 44.0 | 43.91 | -0.09 |
| 483 | 30-50 | HMn61-2-1-1 | HR50 | 圆形 | 44.0 | 44.09 | 0.09 |
| 484 | 30-50 | HMn61-2-1-1 | HR50 | 圆形 | 44.0 | 43.9 | -0.1 |
| 485 | 30-50 | HMn61-2-1-1 | HR50 | 圆形 | 44.0 | 43.9 | -0.1 |
| 486 | 30-50 | HAl61-4-3-1 | HR50 | 圆形 | 37.0 | 36.97 | -0.03 |
| 487 | 30-50 | HAl61-4-3-1 | HR50 | 圆形 | 37.0 | 36.92 | -0.08 |
| 488 | 30-50 | HAl61-4-3-1 | HR50 | 圆形 | 37.0 | 37.04 | 0.04 |
| 489 | 30-50 | HAl61-4-3-1 | HR50 | 圆形 | 37.0 | 36.92 | -0.08 |
| 490 | 30-50 | HAl61-4-3-1 | HR50 | 圆形 | 37.0 | 36.91 | -0.09 |
| 491 | 30-50 | HMn57-2-2-1 | HR50 | 六角 | S38 | S37.9 | -0.10 |
| 492 | 30-50 | HMn57-2-2-1 | HR50 | 六角 | S38 | S37.9 | -0.10 |
| 493 | 30-50 | HMn57-2-2-1 | HR50 | 六角 | S38 | S37.9 | -0.10 |
| 494 | 30-50 | HMn57-2-2-1 | HR50 | 六角 | S38 | S38.1 | 0.10 |
| 495 | 30-50 | HMn57-2-2-1 | HR50 | 六角 | S38 | S38.1 | 0.10 |
| 496 | 30-50 | HMn58-3-1-1 | HR50 | 正方形 | a35 | a34.9 | -0.10 |
| 497 | 30-50 | HMn58-3-1-1 | HR50 | 正方形 | a35 | a34.9 | -0.10 |
| 498 | 30-50 | HMn58-3-1-1 | HR50 | 正方形 | a35 | a35.11 | 0.11 |
| 499 | 30-50 | HMn58-3-1-1 | HR50 | 正方形 | a35 | a35.11 | 0.11 |
| 500 | 30-50 | HMn58-3-1-1 | HR50 | 正方形 | a35 | a35.09 | 0.09 |
| 501 | 30-50 | HMn59-2-2-0.5 | HR50 | 正方形 | a31 | a30.87 | -0.13 |
| 502 | 30-50 | HMn59-2-2-0.5 | HR50 | 正方形 | a31 | a31.11 | 0.11 |
| 503 | 30-50 | HMn59-2-2-0.5 | HR50 | 正方形 | a31 | a31.11 | 0.11 |
| 504 | 30-50 | HMn59-2-2-0.5 | HR50 | 正方形 | a31 | a31.09 | 0.09 |
| 505 | 30-50 | HMn59-2-2-0.5 | HR50 | 正方形 | a31 | a31.1 | 0.10 |
| 506 | 30-50 | HMn59-3-2-0.8 | HR50 | 六角 | S35 | S35.09 | 0.09 |
| 507 | 30-50 | HMn59-3-2-0.8 | HR50 | 六角 | S35 | S35.09 | 0.09 |
| 508 | 30-50 | HMn59-3-2-0.8 | HR50 | 六角 | S35 | S35.11 | 0.11 |
| 509 | 30-50 | HMn59-3-2-0.8 | HR50 | 六角 | S35 | S34.88 | -0.12 |
| 510 | 30-50 | HMn59-3-2-0.8 | HR50 | 六角 | S35 | S34.9 | -0.10 |
| 511 | 30-50 | HMn60-2-1-0.5 | HR50 | 矩形 | 31.96\*45 | 31.90\*44.87 | -0.13 |
| 512 | 30-50 | HMn60-2-1-0.5 | HR50 | 矩形 | 31.96\*45 | 31.89\*44.88 | -0.12 |
| 513 | 30-50 | HMn60-2-1-0.5 | HR50 | 矩形 | 31.96\*45 | 31.90\*44.90 | -0.10 |
| 514 | 30-50 | HMn60-2-1-0.5 | HR50 | 矩形 | 31.96\*45 | 32.02\*45.09 | 0.09 |
| 515 | 30-50 | HMn60-2-1-0.5 | HR50 | 矩形 | 31.96\*45 | 32.02\*45.10 | 0.10 |
| 516 | 30-50 | HMn61-2-1-1 | HR50 | 六角 | S40 | S40.1 | 0.10 |
| 517 | 30-50 | HMn61-2-1-1 | HR50 | 六角 | S40 | S40.09 | 0.09 |
| 518 | 30-50 | HMn61-2-1-1 | HR50 | 六角 | S40 | S40.09 | 0.09 |
| 519 | 30-50 | HMn61-2-1-1 | HR50 | 六角 | S40 | S39.9 | -0.10 |
| 520 | 30-50 | HMn61-2-1-1 | HR50 | 六角 | S40 | S39.9 | -0.10 |
| 521 | 30-50 | HMn62-3-3-1 | HR50 | 六角 | S36 | S35.9 | -0.10 |
| 522 | 30-50 | HMn62-3-3-1 | HR50 | 六角 | S36 | S35.9 | -0.10 |
| 523 | 30-50 | HMn62-3-3-1 | HR50 | 六角 | S36 | S35.98 | -0.02 |
| 524 | 30-50 | HMn62-3-3-1 | HR50 | 六角 | S36 | S36.09 | 0.09 |
| 525 | 30-50 | HMn62-3-3-1 | HR50 | 六角 | S36 | S35.9 | -0.10 |
| 526 | 50-80 | HMn57-2-2-1 | HR50 | 圆形 | 70.0 | 69.91 | -0.09 |
| 527 | 50-80 | HMn57-2-2-1 | HR50 | 圆形 | 70.0 | 69.97 | -0.03 |
| 528 | 50-80 | HMn57-2-2-1 | HR50 | 圆形 | 70.0 | 69.95 | -0.05 |
| 529 | 50-80 | HMn57-2-2-1 | HR50 | 圆形 | 70.0 | 70.08 | 0.08 |
| 530 | 50-80 | HMn57-2-2-1 | HR50 | 圆形 | 70.0 | 69.92 | -0.08 |
| 531 | 50-80 | HMn58-2-1-0.5 | HR50 | 圆形 | 55.0 | 55.08 | 0.08 |
| 532 | 50-80 | HMn58-2-1-0.5 | HR50 | 圆形 | 55.0 | 55.1 | 0.1 |
| 533 | 50-80 | HMn58-2-1-0.5 | HR50 | 圆形 | 55.0 | 54.92 | -0.08 |
| 534 | 50-80 | HMn58-2-1-0.5 | HR50 | 圆形 | 55.0 | 55.08 | 0.08 |
| 535 | 50-80 | HMn58-2-1-0.5 | HR50 | 圆形 | 55.0 | 54.91 | -0.09 |
| 536 | 50-80 | HMn59-2-2-0.5 | HR50 | 圆形 | 65.0 | 64.89 | -0.11 |
| 537 | 50-80 | HMn59-2-2-0.5 | HR50 | 圆形 | 65.0 | 64.94 | -0.06 |
| 538 | 50-80 | HMn59-2-2-0.5 | HR50 | 圆形 | 65.0 | 65.04 | 0.04 |
| 539 | 50-80 | HMn59-2-2-0.5 | HR50 | 圆形 | 65.0 | 64.9 | -0.1 |
| 540 | 50-80 | HMn59-2-2-0.5 | HR50 | 圆形 | 65.0 | 65.1 | 0.1 |
| 541 | 50-80 | HMn59-3-2-0.8 | HR50 | 圆形 | 80.0 | 80.1 | 0.1 |
| 542 | 50-80 | HMn59-3-2-0.8 | HR50 | 圆形 | 80.0 | 79.9 | -0.1 |
| 543 | 50-80 | HMn59-3-2-0.8 | HR50 | 圆形 | 80.0 | 79.91 | -0.09 |
| 544 | 50-80 | HMn59-3-2-0.8 | HR50 | 圆形 | 80.0 | 80.08 | 0.08 |
| 545 | 50-80 | HMn59-3-2-0.8 | HR50 | 圆形 | 80.0 | 80.08 | 0.08 |
| 546 | 50-80 | HMn60-2-1-0.5 | HR50 | 圆形 | 55.0 | 55.07 | 0.07 |
| 547 | 50-80 | HMn60-2-1-0.5 | HR50 | 圆形 | 55.0 | 54.9 | -0.1 |
| 548 | 50-80 | HMn60-2-1-0.5 | HR50 | 圆形 | 55.0 | 54.91 | -0.09 |
| 549 | 50-80 | HMn60-2-1-0.5 | HR50 | 圆形 | 55.0 | 54.97 | -0.03 |
| 550 | 50-80 | HMn60-2-1-0.5 | HR50 | 圆形 | 55.0 | 55.08 | 0.08 |

附表3棒材规格尺寸检测数据（M30态）

| 序号 | 直径（或对边距）范围/mm | 牌号 | 状态 | 形状 | 抽样规格/mm | 实测规格 | 尺寸偏差范围/mm |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 5-18 | HMn57-2-2-1 | M30 | 圆形 | 9.9 | 10.12 | 0.22 |
| 2 | 5-18 | HMn57-2-2-1 | M30 | 圆形 | 9.9 | 10.08 | 0.18 |
| 3 | 5-18 | HMn57-2-2-1 | M30 | 圆形 | 9.9 | 10.16 | 0.26 |
| 4 | 5-18 | HMn57-2-2-1 | M30 | 圆形 | 9.9 | 9.78 | -0.12 |
| 5 | 5-18 | HMn57-2-2-1 | M30 | 圆形 | 9.9 | 9.85 | -0.05 |
| 6 | 5-18 | HMn57-2-2-1 | M30 | 圆形 | 11.7 | 11.62 | -0.08 |
| 7 | 5-18 | HMn57-2-2-1 | M30 | 圆形 | 11.7 | 11.92 | 0.22 |
| 8 | 5-18 | HMn57-2-2-1 | M30 | 圆形 | 11.7 | 11.85 | 0.15 |
| 9 | 5-18 | HMn57-2-2-1 | M30 | 圆形 | 11.7 | 11.83 | 0.13 |
| 10 | 5-18 | HMn57-2-2-1 | M30 | 圆形 | 11.7 | 11.92 | 0.22 |
| 11 | 5-18 | HMn57-3-1 | M30 | 圆形 | 7.9 | 8.10 | 0.2 |
| 12 | 5-18 | HMn57-3-1 | M30 | 圆形 | 7.9 | 8.13 | 0.23 |
| 13 | 5-18 | HMn57-3-1 | M30 | 圆形 | 7.9 | 8.06 | 0.16 |
| 14 | 5-18 | HMn57-3-1 | M30 | 圆形 | 7.9 | 8.08 | 0.18 |
| 15 | 5-18 | HMn57-3-1 | M30 | 圆形 | 7.9 | 8.13 | 0.23 |
| 16 | 5-18 | HMn58-2-1-0.5 | M30 | 圆形 | 8.0 | 7.91 | -0.09 |
| 17 | 5-18 | HMn58-2-1-0.5 | M30 | 圆形 | 8.0 | 8.17 | 0.17 |
| 18 | 5-18 | HMn58-2-1-0.5 | M30 | 圆形 | 8.0 | 7.94 | -0.06 |
| 19 | 5-18 | HMn58-2-1-0.5 | M30 | 圆形 | 8.0 | 7.81 | -0.19 |
| 20 | 5-18 | HMn58-2-1-0.5 | M30 | 圆形 | 8.0 | 8.17 | 0.17 |
| 21 | 5-18 | HMn59-2-2-0.5 | M30 | 圆形 | 5.5 | 5.71 | 0.21 |
| 22 | 5-18 | HMn59-2-2-0.5 | M30 | 圆形 | 5.5 | 5.40 | -0.1 |
| 23 | 5-18 | HMn59-2-2-0.5 | M30 | 圆形 | 5.5 | 5.42 | -0.08 |
| 24 | 5-18 | HMn59-2-2-0.5 | M30 | 圆形 | 5.5 | 5.43 | -0.07 |
| 25 | 5-18 | HMn59-2-2-0.5 | M30 | 圆形 | 5.5 | 5.43 | -0.07 |
| 26 | 5-18 | HMn59-2-2-0.5 | M30 | 圆形 | 7.9 | 8.11 | 0.21 |
| 27 | 5-18 | HMn59-2-2-0.5 | M30 | 圆形 | 7.9 | 8.09 | 0.19 |
| 28 | 5-18 | HMn59-2-2-0.5 | M30 | 圆形 | 7.9 | 8.11 | 0.21 |
| 29 | 5-18 | HMn59-2-2-0.5 | M30 | 圆形 | 7.9 | 8.02 | 0.12 |
| 30 | 5-18 | HMn59-2-2-0.5 | M30 | 圆形 | 7.9 | 8.06 | 0.16 |
| 31 | 5-18 | HMn59-3-2-0.8 | M30 | 圆形 | 5.5 | 5.65 | 0.15 |
| 32 | 5-18 | HMn59-3-2-0.8 | M30 | 圆形 | 5.5 | 5.41 | -0.09 |
| 33 | 5-18 | HMn59-3-2-0.8 | M30 | 圆形 | 5.5 | 5.42 | -0.08 |
| 34 | 5-18 | HMn59-3-2-0.8 | M30 | 圆形 | 5.5 | 5.76 | 0.26 |
| 35 | 5-18 | HMn59-3-2-0.8 | M30 | 圆形 | 5.5 | 5.69 | 0.19 |
| 36 | 5-18 | HMn60-2-1-0.5 | M30 | 圆形 | 11.3 | 11.19 | -0.11 |
| 37 | 5-18 | HMn60-2-1-0.5 | M30 | 圆形 | 11.3 | 11.46 | 0.16 |
| 38 | 5-18 | HMn60-2-1-0.5 | M30 | 圆形 | 11.3 | 11.54 | 0.24 |
| 39 | 5-18 | HMn60-2-1-0.5 | M30 | 圆形 | 11.3 | 11.44 | 0.15 |
| 40 | 5-18 | HMn60-2-1-0.5 | M30 | 圆形 | 11.3 | 11.23 | -0.07 |
| 41 | 5-18 | HMn60-3-1-0.75 | M30 | 圆形 | 5.5 | 5.68 | 0.18 |
| 42 | 5-18 | HMn60-3-1-0.75 | M30 | 圆形 | 5.5 | 5.74 | 0.24 |
| 43 | 5-18 | HMn60-3-1-0.75 | M30 | 圆形 | 5.5 | 5.65 | 0.15 |
| 44 | 5-18 | HMn60-3-1-0.75 | M30 | 圆形 | 5.5 | 5.68 | 0.18 |
| 45 | 5-18 | HMn60-3-1-0.75 | M30 | 圆形 | 5.5 | 5.42 | -0.08 |
| 46 | 5-18 | HMn61-2-1-1 | M30 | 圆形 | 10.2 | 10.07 | -0.13 |
| 47 | 5-18 | HMn61-2-1-1 | M30 | 圆形 | 10.2 | 10.34 | 0.14 |
| 48 | 5-18 | HMn61-2-1-1 | M30 | 圆形 | 10.2 | 10.41 | 0.21 |
| 49 | 5-18 | HMn61-2-1-1 | M30 | 圆形 | 10.2 | 10.11 | -0.09 |
| 50 | 5-18 | HMn61-2-1-1 | M30 | 圆形 | 10.2 | 10.37 | 0.17 |
| 51 | 5-18 | HAl61-4-3-1 | M30 | 圆形 | 11.3 | 11.47 | 0.24 |
| 52 | 5-18 | HAl61-4-3-1 | M30 | 圆形 | 11.3 | 11.45 | -0.09 |
| 53 | 5-18 | HAl61-4-3-1 | M30 | 圆形 | 11.3 | 11.48 | 0.15 |
| 54 | 5-18 | HAl61-4-3-1 | M30 | 圆形 | 11.3 | 11.51 | -0.18 |
| 55 | 5-18 | HAl61-4-3-1 | M30 | 圆形 | 11.3 | 11.52 | 0.21 |
| 56 | 12-18 | HMn62-3-3-1 | M30 | 圆形 | 15.5 | 15.26 | 0.23 |
| 57 | 12-18 | HMn62-3-3-1 | M30 | 圆形 | 15.5 | 15.43 | 0.24 |
| 58 | 12-18 | HMn62-3-3-1 | M30 | 圆形 | 15.5 | 15.37 | -0.11 |
| 59 | 12-18 | HMn62-3-3-1 | M30 | 圆形 | 15.5 | 15.45 | 0.16 |
| 60 | 12-18 | HMn62-3-3-1 | M30 | 圆形 | 15.5 | 15.32 | 0.15 |
| 61 | 5-18 | HMn57-2-2-1 | M30 | 六角 | s6 | s6.25 | 0.25 |
| 62 | 5-18 | HMn57-2-2-1 | M30 | 六角 | s6 | s6.26 | 0.26 |
| 63 | 5-18 | HMn57-2-2-1 | M30 | 六角 | s6 | s6.19 | 0.19 |
| 64 | 5-18 | HMn57-2-2-1 | M30 | 六角 | s6 | s6.34 | 0.34 |
| 65 | 5-18 | HMn57-2-2-1 | M30 | 六角 | s6 | s5.83 | -0.17 |
| 66 | 5-18 | HMn57-3-1 | M30 | 六角 | s5.5 | s5.43 | -0.07 |
| 67 | 5-18 | HMn57-3-1 | M30 | 六角 | s5.5 | s5.55 | 0.05 |
| 68 | 5-18 | HMn57-3-1 | M30 | 六角 | s5.5 | s5.22 | -0.28 |
| 69 | 5-18 | HMn57-3-1 | M30 | 六角 | s5.5 | s5.77 | 0.27 |
| 70 | 5-18 | HMn57-3-1 | M30 | 六角 | s5.5 | s5.38 | -0.12 |
| 71 | 5-18 | HMn58-2-1-0.5 | M30 | 六角 | s6.5 | s6.15 | -0.35 |
| 72 | 5-18 | HMn58-2-1-0.5 | M30 | 六角 | s6.5 | s6.67 | 0.17 |
| 73 | 5-18 | HMn58-2-1-0.5 | M30 | 六角 | s6.5 | s6.84 | 0.34 |
| 74 | 5-18 | HMn58-2-1-0.5 | M30 | 六角 | s6.5 | s6.75 | 0.25 |
| 75 | 5-18 | HMn58-2-1-0.5 | M30 | 六角 | s6.5 | s6.33 | -0.17 |
| 76 | 5-18 | HMn59-2-2-0.5 | M30 | 六角 | s8.2 | s8.48 | 0.28 |
| 77 | 5-18 | HMn59-2-2-0.5 | M30 | 六角 | s8.2 | s8.09 | -0.11 |
| 78 | 5-18 | HMn59-2-2-0.5 | M30 | 六角 | s8.2 | s8.32 | 0.12 |
| 79 | 5-18 | HMn59-2-2-0.5 | M30 | 六角 | s8.2 | s8.42 | 0.22 |
| 80 | 5-18 | HMn59-2-2-0.5 | M30 | 六角 | s8.2 | s8.05 | -0.15 |
| 81 | 5-18 | HMn60-2-1-0.5 | M30 | 六角 | s14.5 | s14.82 | 0.32 |
| 82 | 5-18 | HMn60-2-1-0.5 | M30 | 六角 | s14.5 | s14.8 | 0.3 |
| 83 | 5-18 | HMn60-2-1-0.5 | M30 | 六角 | s14.5 | s14.74 | 0.24 |
| 84 | 5-18 | HMn60-2-1-0.5 | M30 | 六角 | s14.5 | s14.39 | -0.11 |
| 85 | 5-18 | HMn60-2-1-0.5 | M30 | 六角 | s14.5 | s14.75 | 0.25 |
| 86 | 5-18 | HMn60-3-1-0.75 | M30 | 六角 | s14.3 | s14.63 | 0.33 |
| 87 | 5-18 | HMn60-3-1-0.75 | M30 | 六角 | s14.3 | s14.66 | 0.36 |
| 88 | 5-18 | HMn60-3-1-0.75 | M30 | 六角 | s14.3 | s14.54 | 0.24 |
| 89 | 5-18 | HMn60-3-1-0.75 | M30 | 六角 | s14.3 | s14.12 | -0.18 |
| 90 | 5-18 | HMn60-3-1-0.75 | M30 | 六角 | s14.3 | s14.53 | 0.23 |
| 91 | 5-18 | HMn61-2-1-1 | M30 | 矩形 | 10.6\*12.8 | 10.72\*13.02 | 0.22 |
| 92 | 5-18 | HMn61-2-1-1 | M30 | 矩形 | 10.6\*12.8 | 10.78\*13.08 | 0.28 |
| 93 | 5-18 | HMn61-2-1-1 | M30 | 矩形 | 10.6\*12.8 | 10.85\*13.11 | 0.31 |
| 94 | 5-18 | HMn61-2-1-1 | M30 | 矩形 | 10.6\*12.8 | 10.72\*13.1 | 0.3 |
| 95 | 5-18 | HMn61-2-1-1 | M30 | 矩形 | 10.6\*12.8 | 10.82\*13.16 | 0.37 |
| 96 | 5-18 | HMn61-2-1-1 | M30 | 六角 | s17 | s17.37 | 0.37 |
| 97 | 5-18 | HMn61-2-1-1 | M30 | 六角 | s17 | s17.12 | 0.12 |
| 98 | 5-18 | HMn61-2-1-1 | M30 | 六角 | s17 | s16.76 | -0.24 |
| 99 | 5-18 | HMn61-2-1-1 | M30 | 六角 | s17 | s17.36 | 0.36 |
| 100 | 5-18 | HMn61-2-1-1 | M30 | 六角 | s17 | s17.25 | 0.25 |
| 101 | 5-18 | HAl61-4-3-1 | M30 | 矩形 | 12.0\*16.0 | 12.28\*16.34 | 0.34 |
| 102 | 5-18 | HAl61-4-3-1 | M30 | 矩形 | 12.0\*16.0 | 12.11\*16.29 | 0.29 |
| 103 | 5-18 | HAl61-4-3-1 | M30 | 矩形 | 12.0\*16.0 | 11.88\*15.84 | -0.16 |
| 104 | 5-18 | HAl61-4-3-1 | M30 | 矩形 | 12.0\*16.0 | 12.09\*16.09 | 0.09 |
| 105 | 5-18 | HAl61-4-3-1 | M30 | 矩形 | 12.0\*16.0 | 11.89\*15.85 | -0.15 |
| 106 | 12-18 | HMn62-3-3-1 | M30 | 正方形 | a17.5 | a17.37 | -0.13 |
| 107 | 12-18 | HMn62-3-3-1 | M30 | 正方形 | a17.5 | a17.41 | -0.09 |
| 108 | 12-18 | HMn62-3-3-1 | M30 | 正方形 | a17.5 | a17.78 | 0.28 |
| 109 | 12-18 | HMn62-3-3-1 | M30 | 正方形 | a17.5 | a17.38 | -0.12 |
| 110 | 12-18 | HMn62-3-3-1 | M30 | 正方形 | a17.5 | a17.38 | -0.12 |
| 111 | 18-30 | HMn58-2-1-0.5 | M30 | 圆形 | 20.0 | 20.4 | 0.37 |
| 112 | 18-30 | HMn58-2-1-0.5 | M30 | 圆形 | 20.0 | 20.3 | 0.29 |
| 113 | 18-30 | HMn58-2-1-0.5 | M30 | 圆形 | 20.0 | 20.3 | 0.32 |
| 114 | 18-30 | HMn58-2-1-0.5 | M30 | 圆形 | 20.0 | 19.8 | -0.25 |
| 115 | 18-30 | HMn58-2-1-0.5 | M30 | 圆形 | 20.0 | 20.3 | 0.28 |
| 116 | 18-30 | HMn59-2-2-0.5 | M30 | 圆形 | 27.5 | 27.3 | -0.19 |
| 117 | 18-30 | HMn59-2-2-0.5 | M30 | 圆形 | 27.5 | 27.6 | 0.11 |
| 118 | 18-30 | HMn59-2-2-0.5 | M30 | 圆形 | 27.5 | 27.2 | -0.27 |
| 119 | 18-30 | HMn59-2-2-0.5 | M30 | 圆形 | 27.5 | 27.9 | 0.37 |
| 120 | 18-30 | HMn59-2-2-0.5 | M30 | 圆形 | 27.5 | 27.9 | 0.35 |
| 121 | 18-30 | HMn59-3-2-0.8 | M30 | 圆形 | 20.0 | 20.4 | 0.35 |
| 122 | 18-30 | HMn59-3-2-0.8 | M30 | 圆形 | 20.0 | 19.8 | -0.22 |
| 123 | 18-30 | HMn59-3-2-0.8 | M30 | 圆形 | 20.0 | 20.3 | 0.34 |
| 124 | 18-30 | HMn59-3-2-0.8 | M30 | 圆形 | 20.0 | 20.3 | 0.31 |
| 125 | 18-30 | HMn59-3-2-0.8 | M30 | 圆形 | 20.0 | 20.3 | 0.32 |
| 126 | 18-30 | HMn61-2-1-1 | M30 | 圆形 | 20.0 | 19.7 | -0.26 |
| 127 | 18-30 | HMn61-2-1-1 | M30 | 圆形 | 20.0 | 20.3 | 0.33 |
| 128 | 18-30 | HMn61-2-1-1 | M30 | 圆形 | 20.0 | 19.7 | -0.28 |
| 129 | 18-30 | HMn61-2-1-1 | M30 | 圆形 | 20.0 | 20.3 | 0.34 |
| 130 | 18-30 | HMn61-2-1-1 | M30 | 圆形 | 20.0 | 19.7 | -0.28 |
| 131 | 18-30 | HMn62-3-3-1 | M30 | 圆形 | 25.0 | 24.8 | -0.23 |
| 132 | 18-30 | HMn62-3-3-1 | M30 | 圆形 | 25.0 | 25.3 | 0.32 |
| 133 | 18-30 | HMn62-3-3-1 | M30 | 圆形 | 25.0 | 24.7 | -0.27 |
| 134 | 18-30 | HMn62-3-3-1 | M30 | 圆形 | 25.0 | 25.3 | 0.28 |
| 135 | 18-30 | HMn62-3-3-1 | M30 | 圆形 | 25.0 | 25.4 | 0.37 |
| 136 | 18-30 | HAl61-4-3-1 | M30 | 圆形 | 25.0 | 25.3 | 0.28 |
| 137 | 18-30 | HAl61-4-3-1 | M30 | 圆形 | 25.0 | 25.3 | 0.28 |
| 138 | 18-30 | HAl61-4-3-1 | M30 | 圆形 | 25.0 | 25.3 | 0.31 |
| 139 | 18-30 | HAl61-4-3-1 | M30 | 圆形 | 25.0 | 24.8 | -0.19 |
| 140 | 18-30 | HAl61-4-3-1 | M30 | 圆形 | 25.0 | 25.3 | 0.29 |
| 141 | 18-30 | HMn57-2-2-1 | M30 | 六角 | s22 | s21.85 | -0.15 |
| 142 | 18-30 | HMn57-2-2-1 | M30 | 六角 | s22 | s21.68 | -0.32 |
| 143 | 18-30 | HMn57-2-2-1 | M30 | 六角 | s22 | s22.19 | 0.19 |
| 144 | 18-30 | HMn57-2-2-1 | M30 | 六角 | s22 | s22.23 | 0.23 |
| 145 | 18-30 | HMn57-2-2-1 | M30 | 六角 | s22 | s22.25 | 0.25 |
| 146 | 18-30 | HMn57-2-2-1 | M30 | 六角 | s22 | s22.26 | 0.26 |
| 147 | 18-30 | HMn57-2-2-1 | M30 | 六角 | s22 | s21.82 | -0.18 |
| 148 | 18-30 | HMn57-2-2-1 | M30 | 六角 | s22 | s21.75 | -0.25 |
| 149 | 18-30 | HMn57-2-2-1 | M30 | 六角 | s22 | s21.74 | -0.26 |
| 150 | 18-30 | HMn57-2-2-1 | M30 | 六角 | s22 | s22.41 | 0.41 |
| 151 | 18-30 | HMn58-2-1-0.5 | M30 | 正方形 | a27 | a27.46 | 0.46 |
| 152 | 18-30 | HMn58-2-1-0.5 | M30 | 正方形 | a27 | a27.35 | 0.35 |
| 153 | 18-30 | HMn58-2-1-0.5 | M30 | 正方形 | a27 | a27.27 | 0.27 |
| 154 | 18-30 | HMn58-2-1-0.5 | M30 | 正方形 | a27 | a27.08 | 0.08 |
| 155 | 18-30 | HMn58-2-1-0.5 | M30 | 正方形 | a27 | a26.68 | -0.32 |
| 156 | 18-30 | HMn58-3-1-1 | M30 | 六角 | s22 | s21.81 | -0.19 |
| 157 | 18-30 | HMn58-3-1-1 | M30 | 六角 | s22 | s21.74 | -0.26 |
| 158 | 18-30 | HMn58-3-1-1 | M30 | 六角 | s22 | s21.81 | -0.19 |
| 159 | 18-30 | HMn58-3-1-1 | M30 | 六角 | s22 | s21.82 | -0.18 |
| 160 | 18-30 | HMn58-3-1-1 | M30 | 六角 | s22 | s21.68 | -0.32 |
| 161 | 18-30 | HMn59-2-2-0.5 | M30 | 六角 | s21 | s21.41 | 0.41 |
| 162 | 18-30 | HMn59-2-2-0.5 | M30 | 六角 | s21 | s21.23 | 0.23 |
| 163 | 18-30 | HMn59-2-2-0.5 | M30 | 六角 | s21 | s21.24 | 0.24 |
| 164 | 18-30 | HMn59-2-2-0.5 | M30 | 六角 | s21 | s21.19 | 0.19 |
| 165 | 18-30 | HMn59-2-2-0.5 | M30 | 六角 | s21 | s20.77 | -0.23 |
| 166 | 18-30 | HMn59-2-2-0.5 | M30 | 六角 | s22 | s22.18 | 0.18 |
| 167 | 18-30 | HMn59-2-2-0.5 | M30 | 六角 | s22 | s22.49 | 0.49 |
| 168 | 18-30 | HMn59-2-2-0.5 | M30 | 六角 | s22 | s22.41 | 0.41 |
| 169 | 18-30 | HMn59-2-2-0.5 | M30 | 六角 | s22 | s22.37 | 0.37 |
| 170 | 18-30 | HMn59-2-2-0.5 | M30 | 六角 | s22 | s21.81 | -0.19 |
| 171 | 18-30 | HMn59-3-2-0.8 | M30 | 六角 | s22 | s21.76 | -0.24 |
| 172 | 18-30 | HMn59-3-2-0.8 | M30 | 六角 | s22 | s22.22 | 0.22 |
| 173 | 18-30 | HMn59-3-2-0.8 | M30 | 六角 | s22 | s22.29 | 0.29 |
| 174 | 18-30 | HMn59-3-2-0.8 | M30 | 六角 | s22 | s21.77 | -0.23 |
| 175 | 18-30 | HMn59-3-2-0.8 | M30 | 六角 | s22 | s22.22 | 0.22 |
| 176 | 18-30 | HMn59-3-2-0.8 | M30 | 六角 | s21 | s21.26 | 0.26 |
| 177 | 18-30 | HMn59-3-2-0.8 | M30 | 六角 | s21 | s20.78 | -0.22 |
| 178 | 18-30 | HMn59-3-2-0.8 | M30 | 六角 | s21 | s20.75 | -0.25 |
| 179 | 18-30 | HMn59-3-2-0.8 | M30 | 六角 | s21 | s21.29 | 0.29 |
| 180 | 18-30 | HMn59-3-2-0.8 | M30 | 六角 | s21 | s21.15 | 0.15 |
| 181 | 18-30 | HMn60-2-1-0.5 | M30 | 矩形 | 11.2\*19.5 | 10.91\*19.21 | -0.29 |
| 182 | 18-30 | HMn60-2-1-0.5 | M30 | 矩形 | 11.2\*19.5 | 10.95\*19.25 | -0.25 |
| 183 | 18-30 | HMn60-2-1-0.5 | M30 | 矩形 | 11.2\*19.5 | 11.45\*19.75 | 0.25 |
| 184 | 18-30 | HMn60-2-1-0.5 | M30 | 矩形 | 11.2\*19.5 | 11.35\*19.71 | 0.21 |
| 185 | 18-30 | HMn60-2-1-0.5 | M30 | 矩形 | 11.2\*19.5 | 11.41\*19.74 | 0.24 |
| 186 | 18-30 | HMn60-3-1-0.75 | M30 | 六角 | s27 | s27.38 | 0.38 |
| 187 | 18-30 | HMn60-3-1-0.75 | M30 | 六角 | s27 | s26.65 | -0.35 |
| 188 | 18-30 | HMn60-3-1-0.75 | M30 | 六角 | s27 | s27.25 | 0.25 |
| 189 | 18-30 | HMn60-3-1-0.75 | M30 | 六角 | s27 | s26.73 | -0.27 |
| 190 | 18-30 | HMn60-3-1-0.75 | M30 | 六角 | s27 | s27.37 | 0.37 |
| 191 | 18-30 | HMn60-3-1-0.75 | M30 | 六角 | s27 | s26.78 | -0.22 |
| 192 | 18-30 | HMn60-3-1-0.75 | M30 | 六角 | s27 | s26.71 | -0.29 |
| 193 | 18-30 | HMn60-3-1-0.75 | M30 | 六角 | s27 | s27.18 | 0.18 |
| 194 | 18-30 | HMn60-3-1-0.75 | M30 | 六角 | s27 | s26.66 | -0.34 |
| 195 | 18-30 | HMn60-3-1-0.75 | M30 | 六角 | s27 | s27.24 | 0.24 |
| 196 | 18-30 | HAl61-4-3-1 | M30 | 矩形 | 19.5\*24.7 | 19.8\*25.09 | 0.39 |
| 197 | 18-30 | HAl61-4-3-1 | M30 | 矩形 | 19.5\*24.7 | 19.82\*25.07 | 0.37 |
| 198 | 18-30 | HAl61-4-3-1 | M30 | 矩形 | 19.5\*24.7 | 19.79\*25.16 | 0.46 |
| 199 | 18-30 | HAl61-4-3-1 | M30 | 矩形 | 19.5\*24.7 | 19.62\*24.85 | 0.15 |
| 200 | 18-30 | HAl61-4-3-1 | M30 | 矩形 | 19.5\*24.7 | 19.38\*24.45 | -0.25 |
| 201 | 30-50 | HMn57-2-2-1 | M30 | 圆形 | 37.0 | 37.5 | 0.45 |
| 202 | 30-50 | HMn57-2-2-1 | M30 | 圆形 | 37.0 | 36.7 | -0.35 |
| 203 | 30-50 | HMn57-2-2-1 | M30 | 圆形 | 37.0 | 37.4 | 0.41 |
| 204 | 30-50 | HMn57-2-2-1 | M30 | 圆形 | 37.0 | 37.3 | 0.27 |
| 205 | 30-50 | HMn57-2-2-1 | M30 | 圆形 | 37.0 | 36.8 | -0.18 |
| 206 | 30-50 | HMn57-3-1 | M30 | 圆形 | 48.0 | 48.5 | 0.52 |
| 207 | 30-50 | HMn57-3-1 | M30 | 圆形 | 48.0 | 48.3 | 0.34 |
| 208 | 30-50 | HMn57-3-1 | M30 | 圆形 | 48.0 | 47.8 | -0.17 |
| 209 | 30-50 | HMn57-3-1 | M30 | 圆形 | 48.0 | 48.4 | 0.38 |
| 210 | 30-50 | HMn57-3-1 | M30 | 圆形 | 48.0 | 48.5 | 0.53 |
| 211 | 30-50 | HMn58-3-1-1 | M30 | 圆形 | 32.5 | 32.8 | 0.26 |
| 212 | 30-50 | HMn58-3-1-1 | M30 | 圆形 | 32.5 | 33.0 | 0.49 |
| 213 | 30-50 | HMn58-3-1-1 | M30 | 圆形 | 32.5 | 32.9 | 0.35 |
| 214 | 30-50 | HMn58-3-1-1 | M30 | 圆形 | 32.5 | 32.7 | 0.16 |
| 215 | 30-50 | HMn58-3-1-1 | M30 | 圆形 | 32.5 | 32.8 | 0.27 |
| 216 | 30-50 | HMn59-2-2-0.5 | M30 | 圆形 | 36.5 | 36.8 | 0.26 |
| 217 | 30-50 | HMn59-2-2-0.5 | M30 | 圆形 | 36.5 | 36.1 | -0.36 |
| 218 | 30-50 | HMn59-2-2-0.5 | M30 | 圆形 | 36.5 | 36.2 | -0.34 |
| 219 | 30-50 | HMn59-2-2-0.5 | M30 | 圆形 | 36.5 | 37.1 | 0.55 |
| 220 | 30-50 | HMn59-2-2-0.5 | M30 | 圆形 | 36.5 | 36.9 | 0.35 |
| 221 | 30-50 | HMn59-3-2-0.8 | M30 | 圆形 | 43.0 | 42.8 | -0.23 |
| 222 | 30-50 | HMn59-3-2-0.8 | M30 | 圆形 | 43.0 | 43.4 | 0.41 |
| 223 | 30-50 | HMn59-3-2-0.8 | M30 | 圆形 | 43.0 | 43.3 | 0.28 |
| 224 | 30-50 | HMn59-3-2-0.8 | M30 | 圆形 | 43.0 | 43.5 | 0.45 |
| 225 | 30-50 | HMn59-3-2-0.8 | M30 | 圆形 | 43.0 | 43.3 | 0.27 |
| 226 | 30-50 | HMn60-3-1-0.75 | M30 | 圆形 | 38.5 | 37.9 | -0.59 |
| 227 | 30-50 | HMn60-3-1-0.75 | M30 | 圆形 | 38.5 | 38.1 | -0.45 |
| 228 | 30-50 | HMn60-3-1-0.75 | M30 | 圆形 | 38.5 | 38.9 | 0.43 |
| 229 | 30-50 | HMn60-3-1-0.75 | M30 | 圆形 | 38.5 | 38.9 | 0.43 |
| 230 | 30-50 | HMn60-3-1-0.75 | M30 | 圆形 | 38.5 | 38.2 | -0.27 |
| 231 | 30-50 | HMn61-2-1-1 | M30 | 圆形 | 40.0 | 39.7 | -0.27 |
| 232 | 30-50 | HMn61-2-1-1 | M30 | 圆形 | 40.0 | 40.4 | 0.44 |
| 233 | 30-50 | HMn61-2-1-1 | M30 | 圆形 | 40.0 | 40.6 | 0.55 |
| 234 | 30-50 | HMn61-2-1-1 | M30 | 圆形 | 40.0 | 40.5 | 0.52 |
| 235 | 30-50 | HMn61-2-1-1 | M30 | 圆形 | 40.0 | 39.6 | -0.41 |
| 236 | 30-50 | HAl61-4-3-1 | M30 | 圆形 | 36.5 | 36.9 | 0.38 |
| 237 | 30-50 | HAl61-4-3-1 | M30 | 圆形 | 36.5 | 36.7 | 0.19 |
| 238 | 30-50 | HAl61-4-3-1 | M30 | 圆形 | 36.5 | 36.3 | -0.18 |
| 239 | 30-50 | HAl61-4-3-1 | M30 | 圆形 | 36.5 | 36.2 | -0.26 |
| 240 | 30-50 | HAl61-4-3-1 | M30 | 圆形 | 36.5 | 36.7 | 0.23 |
| 241 | 30-50 | HMn57-3-1 | M30 | 矩形 | 35.0\*48.0 | 35.42\*48.57 | 0.57 |
| 242 | 30-50 | HMn57-3-1 | M30 | 矩形 | 35.0\*48.0 | 34.89\*47.86 | -0.14 |
| 243 | 30-50 | HMn57-3-1 | M30 | 矩形 | 35.0\*48.0 | 35.36\*48.46 | 0.46 |
| 244 | 30-50 | HMn57-3-1 | M30 | 矩形 | 35.0\*48.0 | 35.45\*48.52 | 0.52 |
| 245 | 30-50 | HMn57-3-1 | M30 | 矩形 | 35.0\*48.0 | 35.12\*48.15 | 0.15 |
| 246 | 30-50 | HMn58-2-1-0.5 | M30 | 六角 | s38 | s37.81 | -0.19 |
| 247 | 30-50 | HMn58-2-1-0.5 | M30 | 六角 | s38 | s38.48 | 0.48 |
| 248 | 30-50 | HMn58-2-1-0.5 | M30 | 六角 | s38 | s38.65 | 0.65 |
| 249 | 30-50 | HMn58-2-1-0.5 | M30 | 六角 | s38 | s37.89 | -0.11 |
| 250 | 30-50 | HMn58-2-1-0.5 | M30 | 六角 | s38 | s37.87 | -0.13 |
| 251 | 30-50 | HMn59-3-2-0.8 | M30 | 六角 | s42 | s41.88 | -0.12 |
| 252 | 30-50 | HMn59-3-2-0.8 | M30 | 六角 | s42 | s41.84 | -0.16 |
| 253 | 30-50 | HMn59-3-2-0.8 | M30 | 六角 | s42 | s41.61 | -0.39 |
| 254 | 30-50 | HMn59-3-2-0.8 | M30 | 六角 | s42 | s41.78 | -0.22 |
| 255 | 30-50 | HMn59-3-2-0.8 | M30 | 六角 | s42 | s41.9 | -0.10 |
| 256 | 30-50 | HMn60-2-1-0.5 | M30 | 六角 | s45 | s45.41 | 0.41 |
| 257 | 30-50 | HMn60-2-1-0.5 | M30 | 六角 | s45 | s45.68 | 0.68 |
| 258 | 30-50 | HMn60-2-1-0.5 | M30 | 六角 | s45 | s44.86 | -0.14 |
| 259 | 30-50 | HMn60-2-1-0.5 | M30 | 六角 | s45 | s45.54 | 0.54 |
| 260 | 30-50 | HMn60-2-1-0.5 | M30 | 六角 | s45 | s45.23 | 0.23 |
| 261 | 30-50 | HMn60-2-1-0.5 | M30 | 六角 | s38 | s37.82 | -0.18 |
| 262 | 30-50 | HMn60-2-1-0.5 | M30 | 六角 | s38 | s37.85 | -0.15 |
| 263 | 30-50 | HMn60-2-1-0.5 | M30 | 六角 | s38 | s38.23 | 0.23 |
| 264 | 30-50 | HMn60-2-1-0.5 | M30 | 六角 | s38 | s38.34 | 0.34 |
| 265 | 30-50 | HMn60-2-1-0.5 | M30 | 六角 | s38 | s38.27 | 0.27 |
| 266 | 30-50 | HMn60-3-1-0.75 | M30 | 六角 | s45 | s44.84 | -0.16 |
| 267 | 30-50 | HMn60-3-1-0.75 | M30 | 六角 | s45 | s44.83 | -0.17 |
| 268 | 30-50 | HMn60-3-1-0.75 | M30 | 六角 | s45 | s44.59 | -0.41 |
| 269 | 30-50 | HMn60-3-1-0.75 | M30 | 六角 | s45 | s44.85 | -0.15 |
| 270 | 30-50 | HMn60-3-1-0.75 | M30 | 六角 | s45 | s45.62 | 0.62 |
| 271 | 30-50 | HMn61-2-1-1 | M30 | 正方形 | a35 | a35.38 | 0.38 |
| 272 | 30-50 | HMn61-2-1-1 | M30 | 正方形 | a35 | a35.26 | 0.26 |
| 273 | 30-50 | HMn61-2-1-1 | M30 | 正方形 | a35 | a35.55 | 0.55 |
| 274 | 30-50 | HMn61-2-1-1 | M30 | 正方形 | a35 | a34.46 | -0.54 |
| 275 | 30-50 | HMn61-2-1-1 | M30 | 正方形 | a35 | a35.13 | 0.13 |
| 276 | 30-50 | HMn61-2-1-1 | M30 | 六角 | s42 | s42.42 | 0.42 |
| 277 | 30-50 | HMn61-2-1-1 | M30 | 六角 | s42 | s42.27 | 0.27 |
| 278 | 30-50 | HMn61-2-1-1 | M30 | 六角 | s42 | s41.85 | -0.15 |
| 279 | 30-50 | HMn61-2-1-1 | M30 | 六角 | s42 | s42.22 | 0.22 |
| 280 | 30-50 | HMn61-2-1-1 | M30 | 六角 | s42 | s42.41 | 0.41 |
| 281 | 30-50 | HMn62-3-3-1 | M30 | 六角 | s38 | s38.45 | 0.45 |
| 282 | 30-50 | HMn62-3-3-1 | M30 | 六角 | s38 | s38.28 | 0.28 |
| 283 | 30-50 | HMn62-3-3-1 | M30 | 六角 | s38 | s37.88 | -0.12 |
| 284 | 30-50 | HMn62-3-3-1 | M30 | 六角 | s38 | s38.35 | 0.35 |
| 285 | 30-50 | HMn62-3-3-1 | M30 | 六角 | s38 | s37.77 | -0.23 |
| 286 | 30-50 | HAl61-4-3-1 | M30 | 正方形 | a41 | a40.85 | -0.15 |
| 287 | 30-50 | HAl61-4-3-1 | M30 | 正方形 | a41 | a40.63 | -0.37 |
| 288 | 30-50 | HAl61-4-3-1 | M30 | 正方形 | a41 | a41.29 | 0.29 |
| 289 | 30-50 | HAl61-4-3-1 | M30 | 正方形 | a41 | a40.78 | -0.22 |
| 290 | 30-50 | HAl61-4-3-1 | M30 | 正方形 | a41 | a41.51 | 0.51 |
| 291 | 50-80 | HMn57-3-1 | M30 | 圆形 | 60.0 | 59.65 | -0.35 |
| 292 | 50-80 | HMn57-3-1 | M30 | 圆形 | 60.0 | 59.71 | -0.29 |
| 293 | 50-80 | HMn57-3-1 | M30 | 圆形 | 60.0 | 60.65 | 0.65 |
| 294 | 50-80 | HMn57-3-1 | M30 | 圆形 | 60.0 | 60.18 | 0.18 |
| 295 | 50-80 | HMn57-3-1 | M30 | 圆形 | 60.0 | 60.49 | 0.49 |
| 296 | 50-80 | HMn58-2-1-0.5 | M30 | 圆形 | 55.0 | 54.79 | -0.21 |
| 297 | 50-80 | HMn58-2-1-0.5 | M30 | 圆形 | 55.0 | 55.67 | 0.67 |
| 298 | 50-80 | HMn58-2-1-0.5 | M30 | 圆形 | 55.0 | 55.53 | 0.53 |
| 299 | 50-80 | HMn58-2-1-0.5 | M30 | 圆形 | 55.0 | 54.43 | -0.57 |
| 300 | 50-80 | HMn58-2-1-0.5 | M30 | 圆形 | 55.0 | 55.69 | 0.69 |
| 306 | 50-80 | HMn59-2-2-0.5 | M30 | 圆形 | 80.0 | 80.35 | 0.35 |
| 307 | 50-80 | HMn59-2-2-0.5 | M30 | 圆形 | 80.0 | 80.24 | 0.24 |
| 308 | 50-80 | HMn59-2-2-0.5 | M30 | 圆形 | 80.0 | 80.34 | 0.34 |
| 309 | 50-80 | HMn59-2-2-0.5 | M30 | 圆形 | 80.0 | 80.61 | 0.61 |
| 310 | 50-80 | HMn59-2-2-0.5 | M30 | 圆形 | 80.0 | 79.54 | -0.46 |
| 311 | 50-80 | HMn59-3-2-0.8 | M30 | 圆形 | 60.0 | 60.55 | 0.55 |
| 312 | 50-80 | HMn59-3-2-0.8 | M30 | 圆形 | 60.0 | 60.41 | 0.41 |
| 313 | 50-80 | HMn59-3-2-0.8 | M30 | 圆形 | 60.0 | 60.36 | 0.36 |
| 314 | 50-80 | HMn59-3-2-0.8 | M30 | 圆形 | 60.0 | 59.52 | -0.48 |
| 315 | 50-80 | HMn59-3-2-0.8 | M30 | 圆形 | 60.0 | 60.53 | 0.53 |
| 316 | 50-80 | HMn60-2-1-0.5 | M30 | 圆形 | 60.0 | 59.48 | -0.52 |
| 317 | 50-80 | HMn60-2-1-0.5 | M30 | 圆形 | 60.0 | 60.43 | 0.43 |
| 318 | 50-80 | HMn60-2-1-0.5 | M30 | 圆形 | 60.0 | 60.38 | 0.38 |
| 319 | 50-80 | HMn60-2-1-0.5 | M30 | 圆形 | 60.0 | 60.26 | 0.26 |
| 320 | 50-80 | HMn60-2-1-0.5 | M30 | 圆形 | 60.0 | 60.09 | 0.09 |
| 321 | 50-80 | HMn61-2-1-1 | M30 | 圆形 | 70.0 | 69.4 | -0.6 |
| 322 | 50-80 | HMn61-2-1-1 | M30 | 圆形 | 70.0 | 70.69 | 0.69 |
| 323 | 50-80 | HMn61-2-1-1 | M30 | 圆形 | 70.0 | 69.58 | -0.42 |
| 324 | 50-80 | HMn61-2-1-1 | M30 | 圆形 | 70.0 | 70.25 | 0.25 |
| 325 | 50-80 | HMn61-2-1-1 | M30 | 圆形 | 70.0 | 70.21 | 0.21 |
| 326 | 50-80 | HAl61-4-3-1 | M30 | 圆形 | 65.0 | 64.76 | -0.24 |
| 327 | 50-80 | HAl61-4-3-1 | M30 | 圆形 | 65.0 | 64.92 | -0.08 |
| 328 | 50-80 | HAl61-4-3-1 | M30 | 圆形 | 65.0 | 65.68 | 0.68 |
| 329 | 50-80 | HAl61-4-3-1 | M30 | 圆形 | 65.0 | 65.58 | 0.58 |
| 330 | 50-80 | HAl61-4-3-1 | M30 | 圆形 | 65.0 | 65.19 | 0.19 |
| 331 | 50-80 | HMn57-2-2-1 | M30 | 正方形 | a55 | a55.53 | 0.53 |
| 332 | 50-80 | HMn57-2-2-1 | M30 | 正方形 | a55 | a55.63 | 0.63 |
| 333 | 50-80 | HMn57-2-2-1 | M30 | 正方形 | a55 | a55.59 | 0.59 |
| 334 | 50-80 | HMn57-2-2-1 | M30 | 正方形 | a55 | a55.13 | 0.13 |
| 335 | 50-80 | HMn57-2-2-1 | M30 | 正方形 | a55 | a54.58 | -0.42 |
| 336 | 50-80 | HMn58-2-1-0.5 | M30 | 六角 | s68 | s68.47 | 0.47 |
| 337 | 50-80 | HMn58-2-1-0.5 | M30 | 六角 | s68 | s68.66 | 0.66 |
| 338 | 50-80 | HMn58-2-1-0.5 | M30 | 六角 | s68 | s67.81 | -0.19 |
| 339 | 50-80 | HMn58-2-1-0.5 | M30 | 六角 | s68 | s68.62 | 0.62 |
| 340 | 50-80 | HMn58-2-1-0.5 | M30 | 六角 | s68 | s68.51 | 0.51 |
| 341 | 50-80 | HMn59-2-2-0.5 | M30 | 正方形 | a75 | a75.68 | 0.68 |
| 342 | 50-80 | HMn59-2-2-0.5 | M30 | 正方形 | a75 | a75.29 | 0.29 |
| 343 | 50-80 | HMn59-2-2-0.5 | M30 | 正方形 | a75 | a75.16 | 0.16 |
| 344 | 50-80 | HMn59-2-2-0.5 | M30 | 正方形 | a75 | a74.81 | -0.19 |
| 345 | 50-80 | HMn59-2-2-0.5 | M30 | 正方形 | a75 | a75.68 | 0.68 |
| 346 | 50-80 | HMn59-3-2-0.8 | M30 | 六角 | s70 | s69.42 | -0.58 |
| 347 | 50-80 | HMn59-3-2-0.8 | M30 | 六角 | s70 | s70.16 | 0.16 |
| 348 | 50-80 | HMn59-3-2-0.8 | M30 | 六角 | s70 | s69.81 | -0.19 |
| 349 | 50-80 | HMn59-3-2-0.8 | M30 | 六角 | s70 | s69.87 | -0.13 |
| 350 | 50-80 | HMn59-3-2-0.8 | M30 | 六角 | s70 | s70.64 | 0.64 |
| 351 | 50-80 | HMn59-3-2-0.8 | M30 | 矩形 | 52.5\*64.0 | 52.40\*63.81 | -0.19 |
| 352 | 50-80 | HMn59-3-2-0.8 | M30 | 矩形 | 52.5\*64.0 | 52.41\*63.82 | -0.18 |
| 353 | 50-80 | HMn59-3-2-0.8 | M30 | 矩形 | 52.5\*64.0 | 52.28\*63.69 | -0.31 |
| 354 | 50-80 | HMn59-3-2-0.8 | M30 | 矩形 | 52.5\*64.0 | 52.4\*63.89 | -0.11 |
| 355 | 50-80 | HMn59-3-2-0.8 | M30 | 矩形 | 52.5\*64.0 | 52.88\*64.47 | 0.47 |
| 356 | 50-80 | HMn61-2-1-1 | M30 | 正方形 | a75 | a75.12 | 0.12 |
| 357 | 50-80 | HMn61-2-1-1 | M30 | 正方形 | a75 | a75.34 | 0.34 |
| 358 | 50-80 | HMn61-2-1-1 | M30 | 正方形 | a75 | a75.55 | 0.55 |
| 359 | 50-80 | HMn61-2-1-1 | M30 | 正方形 | a75 | a75.63 | 0.63 |
| 360 | 50-80 | HMn61-2-1-1 | M30 | 正方形 | a75 | a75.65 | 0.65 |
| 361 | 50-80 | HMn62-3-3-1 | M30 | 六角 | s62 | s61.82 | -0.18 |
| 362 | 50-80 | HMn62-3-3-1 | M30 | 六角 | s62 | s61.73 | -0.27 |
| 363 | 50-80 | HMn62-3-3-1 | M30 | 六角 | s62 | s62.48 | 0.48 |
| 364 | 50-80 | HMn62-3-3-1 | M30 | 六角 | s62 | s61.49 | -0.51 |
| 365 | 50-80 | HMn62-3-3-1 | M30 | 六角 | s62 | s61.41 | -0.59 |
| 366 | 50-80 | HAl61-4-3-1 | M30 | 六角 | s70 | s69.72 | -0.28 |
| 367 | 50-80 | HAl61-4-3-1 | M30 | 六角 | s70 | s70.65 | 0.65 |
| 368 | 50-80 | HAl61-4-3-1 | M30 | 六角 | s70 | s70.59 | 0.59 |
| 369 | 50-80 | HAl61-4-3-1 | M30 | 六角 | s70 | s69.63 | -0.37 |
| 370 | 50-80 | HAl61-4-3-1 | M30 | 六角 | s70 | s69.57 | -0.43 |
| 371 | 80-150 | HMn58-3-1-1 | M30 | 圆形 | 93.0 | 93.12 | 0.12 |
| 372 | 80-150 | HMn58-3-1-1 | M30 | 圆形 | 93.0 | 92.45 | -0.55 |
| 373 | 80-150 | HMn58-3-1-1 | M30 | 圆形 | 93.0 | 93.48 | 0.48 |
| 374 | 80-150 | HMn58-3-1-1 | M30 | 圆形 | 93.0 | 92.33 | -0.67 |
| 375 | 80-150 | HMn58-3-1-1 | M30 | 圆形 | 93.0 | 92.31 | -0.69 |
| 376 | 80-150 | HMn59-2-2-0.5 | M30 | 圆形 | 98.0 | 97.72 | -0.28 |
| 377 | 80-150 | HMn59-2-2-0.5 | M30 | 圆形 | 98.0 | 97.54 | -0.46 |
| 378 | 80-150 | HMn59-2-2-0.5 | M30 | 圆形 | 98.0 | 98.12 | 0.12 |
| 379 | 80-150 | HMn59-2-2-0.5 | M30 | 圆形 | 98.0 | 97.88 | -0.12 |
| 380 | 80-150 | HMn59-2-2-0.5 | M30 | 圆形 | 98.0 | 97.52 | -0.48 |
| 381 | 80-150 | HMn59-3-2-0.8 | M30 | 圆形 | 98.0 | 98.89 | 0.89 |
| 382 | 80-150 | HMn59-3-2-0.8 | M30 | 圆形 | 98.0 | 98.67 | 0.67 |
| 383 | 80-150 | HMn59-3-2-0.8 | M30 | 圆形 | 98.0 | 98.69 | 0.69 |
| 384 | 80-150 | HMn59-3-2-0.8 | M30 | 圆形 | 98.0 | 98.75 | 0.75 |
| 385 | 80-150 | HMn59-3-2-0.8 | M30 | 圆形 | 98.0 | 98.19 | 0.19 |

附表4 力学性能检测数据明细

| 序号 | 牌号 | 状态 | 直径（或对边距）范围/mm | 形状 | 抽样规格/mm | 抗拉强度 | 断后伸长率 | 布氏硬度 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | HMn57-2-2-1 | HR50 | 5-25 | 圆形 | 5.97 | 565 | 15 | 162.3 |
| 2 | HMn57-2-2-1 | HR50 | 5-25 | 圆形 | 5.97 | 558 | 16 | 159.6 |
| 3 | HMn57-2-2-1 | HR50 | 5-25 | 圆形 | 9.3 | 543 | 18 | 158.1 |
| 4 | HMn57-2-2-1 | HR50 | 5-25 | 圆形 | 9.3 | 541 | 18 | 145.7 |
| 5 | HMn57-2-2-1 | HR50 | 5-25 | 六角 | S14.29 | 525 | 21 | 141.4 |
| 6 | HMn57-2-2-1 | HR50 | 5-25 | 六角 | S14.29 | 517 | 23 | 138.2 |
| 7 | HMn57-2-2-1 | HR50 | 5-25 | 圆形 | 18.7 | 537 | 19 | 140.7 |
| 8 | HMn57-2-2-1 | HR50 | 5-25 | 圆形 | 18.7 | 513 | 24 | 137.5 |
| 9 | HMn57-2-2-1 | HR50 | 25-50 | 六角 | S27.8 | 554 | 16 | 176 |
| 10 | HMn57-2-2-1 | HR50 | 25-50 | 六角 | S27.8 | 518 | 21 | 160.1 |
| 11 | HMn57-2-2-1 | HR50 | 25-50 | 六角 | S38 | 534 | 18 | 165.5 |
| 12 | HMn57-2-2-1 | HR50 | 25-50 | 六角 | S38 | 512 | 21 | 154.3 |
| 13 | HMn57-2-2-1 | HR50 | 25-50 | 六角 | S38 | 495 | 24 | 136.4 |
| 14 | HMn57-2-2-1 | HR50 | 50-80 | 圆形 | 55.0 | 503 | 13 | 159.8 |
| 15 | HMn57-2-2-1 | HR50 | 50-80 | 圆形 | 55.0 | 501 | 13.5 | 154.6 |
| 16 | HMn57-2-2-1 | HR50 | 50-80 | 圆形 | 70.0 | 494 | 14 | 149.2 |
| 17 | HMn57-2-2-1 | HR50 | 50-80 | 圆形 | 70.0 | 472 | 18 | 135.2 |
| 18 | HMn57-2-2-1 | M30 | 5-25 | 六角 | s6 | 528 | 11 | 179.5 |
| 19 | HMn57-2-2-1 | M30 | 5-25 | 六角 | s6 | 516 | 13 | 174.7 |
| 20 | HMn57-2-2-1 | M30 | 5-25 | 六角 | s6 | 498 | 15 | 159.9 |
| 21 | HMn57-2-2-1 | M30 | 5-25 | 圆形 | 9.9 | 504 | 14 | 161.8 |
| 22 | HMn57-2-2-1 | M30 | 5-25 | 圆形 | 9.9 | 487 | 18 | 150.2 |
| 23 | HMn57-2-2-1 | M30 | 5-25 | 圆形 | 11.7 | 483 | 19 | 149.7 |
| 24 | HMn57-2-2-1 | M30 | 5-25 | 圆形 | 11.7 | 478 | 20 | 140.8 |
| 25 | HMn57-2-2-1 | M30 | 5-25 | 六角 | s22 | 493 | 15.5 | 158.1 |
| 26 | HMn57-2-2-1 | M30 | 5-25 | 六角 | s22 | 472 | 21 | 131.5 |
| 27 | HMn57-2-2-1 | M30 | 5-25 | 六角 | s22 | 479 | 20 | 141.6 |
| 28 | HMn57-2-2-1 | M30 | 25-50 | 圆形 | 37.0 | 515 | 12.5 | 171.9 |
| 29 | HMn57-2-2-1 | M30 | 25-50 | 圆形 | 37.0 | 475 | 16 | 139.6 |
| 30 | HMn57-2-2-1 | M30 | 25-50 | 圆形 | 42.0 | 485 | 15 | 147.5 |
| 31 | HMn57-2-2-1 | M30 | 25-50 | 圆形 | 42.0 | 462 | 20 | 132.8 |
| 32 | HMn57-2-2-1 | M30 | 25-50 | 圆形 | 42.0 | 453 | 21 | 126.5 |
| 33 | HMn57-2-2-1 | M30 | 50-80 | 正方形 | a55 | 487 | 20 | 154.1 |
| 34 | HMn57-2-2-1 | M30 | 50-80 | 正方形 | a55 | 483 | 21 | 145.9 |
| 35 | HMn57-2-2-1 | M30 | 50-80 | 正方形 | a55 | 476 | 23 | 138.2 |
| 36 | HMn57-2-2-1 | M30 | 50-80 | 矩形 | 45.5\*56.5 | 463 | 25 | 131.4 |
| 37 | HMn57-2-2-1 | M30 | 50-80 | 矩形 | 45.5\*56.5 | 452 | 27 | 125.9 |
| 38 | HMn57-2-2-1 | M30 | ＞80 | 六角 | s92 |  |  | 125.4 |
| 39 | HMn57-2-2-1 | M30 | ＞80 | 六角 | s92 |  |  | 130.7 |
| 40 | HMn57-3-1 | HR50 | 5-25 | 圆形 | 5.03 | 610 | 8.5 | 202.1 |
| 41 | HMn57-3-1 | HR50 | 5-25 | 圆形 | 5.03 | 605 | 9 | 199.3 |
| 42 | HMn57-3-1 | HR50 | 5-25 | 矩形 | 3.99\*8.01 | 596 | 10.5 | 191.9 |
| 43 | HMn57-3-1 | HR50 | 5-25 | 矩形 | 3.99\*8.01 | 581 | 13 | 185.4 |
| 44 | HMn57-3-1 | HR50 | 5-25 | 圆形 | 10.2 | 585 | 12.5 | 187.7 |
| 45 | HMn57-3-1 | HR50 | 5-25 | 圆形 | 10.2 | 579 | 14 | 184.7 |
| 46 | HMn57-3-1 | HR50 | 5-25 | 圆形 | 13.95 | 582 | 13 | 186.3 |
| 47 | HMn57-3-1 | HR50 | 5-25 | 圆形 | 13.95 | 580 | 13 | 179.2 |
| 48 | HMn57-3-1 | HR50 | 5-25 | 矩形 | 12.2\*13 | 572 | 16 | 173.8 |
| 49 | HMn57-3-1 | HR50 | 5-25 | 矩形 | 12.2\*13 | 572 | 16 | 170.1 |
| 50 | HMn57-3-1 | HR50 | 25-50 | 圆形 | 28.7 | 597 | 12 | 204 |
| 51 | HMn57-3-1 | HR50 | 25-50 | 圆形 | 28.7 | 581 | 15 | 189.3 |
| 52 | HMn57-3-1 | HR50 | 25-50 | 圆形 | 37.5 | 586 | 14 | 196.1 |
| 53 | HMn57-3-1 | HR50 | 25-50 | 圆形 | 37.5 | 573 | 16 | 180.3 |
| 54 | HMn57-3-1 | HR50 | 25-50 | 圆形 | 37.5 | 568 | 17 | 173.4 |
| 55 | HMn57-3-1 | HR50 | 25-50 | 圆形 | 40.0 | 559 | 18 | 169.2 |
| 56 | HMn57-3-1 | HR50 | 25-50 | 圆形 | 40.0 | 553 | 19 | 160.5 |
| 57 | HMn57-3-1 | M30 | 5-25 | 六角 | s5.5 | 501 | 22 | 169.9 |
| 58 | HMn57-3-1 | M30 | 5-25 | 六角 | s5.5 | 489 | 23 | 163.4 |
| 59 | HMn57-3-1 | M30 | 5-25 | 圆形 | 7.9 | 482 | 24 | 162.1 |
| 60 | HMn57-3-1 | M30 | 5-25 | 圆形 | 7.9 | 461 | 26 | 146.2 |
| 61 | HMn57-3-1 | M30 | 5-25 | 圆形 | 18.0 | 468 | 26 | 157.6 |
| 62 | HMn57-3-1 | M30 | 5-25 | 圆形 | 18.0 | 460 | 27 | 149.5 |
| 63 | HMn57-3-1 | M30 | 5-25 | 矩形 | 16.5\*19.7 | 476 | 25 | 141.8 |
| 64 | HMn57-3-1 | M30 | 5-25 | 矩形 | 16.5\*19.7 | 452 | 28 | 132.8 |
| 65 | HMn57-3-1 | M30 | 25-50 | 圆形 | 33.0 | 505 | 21 | 170.5 |
| 66 | HMn57-3-1 | M30 | 25-50 | 圆形 | 33.0 | 492 | 22 | 158 |
| 67 | HMn57-3-1 | M30 | 25-50 | 矩形 | 35.0\*48.0 | 486 | 23 | 150.2 |
| 68 | HMn57-3-1 | M30 | 25-50 | 矩形 | 35.0\*48.0 | 479 | 25 | 141.5 |
| 69 | HMn57-3-1 | M30 | 25-50 | 圆形 | 48.0 | 483 | 23 | 149.1 |
| 70 | HMn57-3-1 | M30 | 25-50 | 圆形 | 48.0 | 452 | 28 | 130.8 |
| 71 | HMn57-3-1 | M30 | 50-80 | 圆形 | 60.0 | 482 | 20.5 | 175.2 |
| 72 | HMn57-3-1 | M30 | 50-80 | 圆形 | 60.0 | 446 | 24 | 145.2 |
| 73 | HMn57-3-1 | M30 | 50-80 | 圆形 | 75.0 | 476 | 21 | 170.3 |
| 74 | HMn57-3-1 | M30 | 50-80 | 圆形 | 75.0 | 435 | 26 | 125.7 |
| 75 | HMn57-3-1 | M30 | 50-80 | 圆形 | 75.0 | 432 | 27 | 126.4 |
| 76 | HMn57-3-1 | M30 | ＞80 | 六角 | s95 |  |  | 150.1 |
| 77 | HMn57-3-1 | M30 | ＞80 | 六角 | s95 |  |  | 148.3 |
| 78 | HMn57-3-1 | M30 | ＞80 | 六角 | s95 |  |  | 136.8 |
| 79 | HMn57-3-1 | M30 | ＞80 | 圆形 | 115.0 |  |  | 141.6 |
| 80 | HMn57-3-1 | M30 | ＞80 | 圆形 | 115.0 |  |  | 127.2 |
| 81 | HMn57-3-1 | M30 | ＞80 | 圆形 | 115.0 |  |  | 125.4 |
| 82 | HMn58-2-1-0.5 | M07 | 5-50 | 六角 | s19 | 492 | 22 | 151.1 |
| 83 | HMn58-2-1-0.5 | M07 | 5-50 | 六角 | s19 | 485 | 23 | 140.1 |
| 84 | HMn58-2-1-0.5 | M07 | 5-50 | 六角 | S28 | 507 | 21 | 162.7 |
| 85 | HMn58-2-1-0.5 | M07 | 5-50 | 六角 | S28 | 501 | 21.5 | 157.2 |
| 86 | HMn58-2-1-0.5 | M07 | 5-50 | 矩形 | 27.5\*36.5 | 495 | 22 | 153.8 |
| 87 | HMn58-2-1-0.5 | M07 | 5-50 | 矩形 | 27.5\*36.5 | 481 | 24 | 135.9 |
| 88 | HMn58-2-1-0.5 | M07 | 5-50 | 圆形 | 37.0 | 496 | 22 | 153.7 |
| 89 | HMn58-2-1-0.5 | M07 | 5-50 | 圆形 | 37.0 | 486 | 23 | 140.5 |
| 90 | HMn58-2-1-0.5 | M07 | 5-50 | 圆形 | 46.0 | 471 | 24 | 130.5 |
| 91 | HMn58-2-1-0.5 | M07 | 5-50 | 圆形 | 46.0 | 464 | 25 | 126.1 |
| 92 | HMn58-2-1-0.5 | M07 | ＞50 | 圆形 | 65.0 | 509 | 21 | 163.4 |
| 93 | HMn58-2-1-0.5 | M07 | ＞50 | 圆形 | 65.0 | 504 | 22 | 160.7 |
| 94 | HMn58-2-1-0.5 | M07 | ＞50 | 圆形 | 65.0 | 485 | 24 | 147.2 |
| 95 | HMn58-2-1-0.5 | M07 | ＞50 | 矩形 | 57.0\*71.5 | 479 | 24 | 139.5 |
| 96 | HMn58-2-1-0.5 | M07 | ＞50 | 矩形 | 57.0\*71.5 | 477 | 25 | 138.7 |
| 97 | HMn58-2-1-0.5 | M07 | ＞50 | 圆形 | 117.0 | 481 | 24 | 146.9 |
| 98 | HMn58-2-1-0.5 | M07 | ＞50 | 圆形 | 117.0 | 462 | 26 | 129.8 |
| 99 | HMn58-2-1-0.5 | M07 | ＞50 | 圆形 | 117.0 | 463 | 28 | 125.6 |
| 100 | HMn58-2-1-0.5 | HR50 | 5-50 | 圆形 | 6.2 | 533 | 6 | 167.2 |
| 101 | HMn58-2-1-0.5 | HR50 | 5-50 | 圆形 | 6.2 | 529 | 7 | 155.2 |
| 102 | HMn58-2-1-0.5 | HR50 | 5-50 | 圆形 | 7.9 | 537 | 5.5 | 164.4 |
| 103 | HMn58-2-1-0.5 | HR50 | 5-50 | 圆形 | 7.9 | 532 | 6 | 160.7 |
| 104 | HMn58-2-1-0.5 | HR50 | 5-50 | 六角 | S12.9 | 514 | 9 | 145.2 |
| 105 | HMn58-2-1-0.5 | HR50 | 5-50 | 六角 | S12.9 | 521 | 8 | 150.9 |
| 106 | HMn58-2-1-0.5 | HR50 | 5-50 | 圆形 | 37.0 | 493 | 11 | 136.9 |
| 107 | HMn58-2-1-0.5 | HR50 | 5-50 | 圆形 | 37.0 | 507 | 10 | 137.5 |
| 108 | HMn58-2-1-0.5 | HR50 | 50-80 | 圆形 | 55.0 | 536 | 15 | 163.9 |
| 109 | HMn58-2-1-0.5 | HR50 | 50-80 | 圆形 | 55.0 | 530 | 16 | 156.8 |
| 110 | HMn58-2-1-0.5 | HR50 | 50-80 | 六角 | S58 | 522 | 17 | 139.2 |
| 111 | HMn58-2-1-0.5 | HR50 | 50-80 | 六角 | S58 | 519 | 15 | 158.4 |
| 112 | HMn58-2-1-0.5 | HR50 | 50-80 | 六角 | S58 | 512 | 16 | 141.3 |
| 113 | HMn58-2-1-0.5 | HR50 | 50-80 | 圆形 | 62.0 | 518 | 19 | 136.1 |
| 114 | HMn58-2-1-0.5 | HR50 | 50-80 | 圆形 | 62.0 | 498 | 21 | 134.5 |
| 115 | HMn58-2-1-0.5 | HR50 | 50-80 | 圆形 | 78.0 | 492 | 22 | 132.6 |
| 116 | HMn58-2-1-0.5 | HR50 | 50-80 | 圆形 | 78.0 | 491 | 19 | 135.5 |
| 117 | HMn58-2-1-0.5 | M30 | 5-50 | 六角 | s6.5 | 498 | 22 | 158.7 |
| 118 | HMn58-2-1-0.5 | M30 | 5-50 | 六角 | s6.5 | 480 | 24 | 140.5 |
| 119 | HMn58-2-1-0.5 | M30 | 5-50 | 圆形 | 8.0 | 504 | 21 | 164.2 |
| 120 | HMn58-2-1-0.5 | M30 | 5-50 | 圆形 | 8.0 | 476 | 24 | 137.3 |
| 121 | HMn58-2-1-0.5 | M30 | 5-50 | 圆形 | 20.0 | 474 | 24 | 137.4 |
| 122 | HMn58-2-1-0.5 | M30 | 5-50 | 圆形 | 20.0 | 473 | 25 | 136.7 |
| 123 | HMn58-2-1-0.5 | M30 | 5-50 | 正方形 | a27 | 468 | 25.5 | 130.5 |
| 124 | HMn58-2-1-0.5 | M30 | 5-50 | 正方形 | a27 | 475 | 24 | 135.9 |
| 125 | HMn58-2-1-0.5 | M30 | 5-50 | 六角 | s38 | 462 | 26 | 126.8 |
| 126 | HMn58-2-1-0.5 | M30 | 5-50 | 六角 | s38 | 463 | 25 | 127.4 |
| 127 | HMn58-2-1-0.5 | M30 | ＞50 | 圆形 | 55.0 | 459 | 21 | 135.6 |
| 128 | HMn58-2-1-0.5 | M30 | ＞50 | 圆形 | 55.0 | 453 | 22 | 134.2 |
| 129 | HMn58-2-1-0.5 | M30 | ＞50 | 圆形 | 55.0 | 435 | 25 | 124.7 |
| 130 | HMn58-2-1-0.5 | M30 | ＞50 | 六角 | s68 | 441 | 24 | 126.4 |
| 131 | HMn58-2-1-0.5 | M30 | ＞50 | 六角 | s68 | 429 | 27 | 116.2 |
| 132 | HMn58-2-1-0.5 | M30 | ＞50 | 六角 | s68 | 412 | 29 | 114.1 |
| 133 | HMn58-3-1-1 | HR50 | 5-25 | 圆形 | 10.1 | 664 | 7 | 224.9 |
| 134 | HMn58-3-1-1 | HR50 | 5-25 | 圆形 | 10.1 | 659 | 8 | 219.5 |
| 135 | HMn58-3-1-1 | HR50 | 5-25 | 正方形 | a12.7 | 659 | 8 | 217.5 |
| 136 | HMn58-3-1-1 | HR50 | 5-25 | 正方形 | a12.7 | 647 | 9.5 | 209.3 |
| 137 | HMn58-3-1-1 | HR50 | 5-25 | 正方形 | a12.7 | 643 | 10 | 205.6 |
| 138 | HMn58-3-1-1 | HR50 | 5-25 | 圆形 | 16.95 | 639 | 10.5 | 196.1 |
| 139 | HMn58-3-1-1 | HR50 | 5-25 | 圆形 | 16.95 | 628 | 12 | 186.4 |
| 140 | HMn58-3-1-1 | HR50 | 5-25 | 圆形 | 16.95 | 621 | 13 | 184.2 |
| 141 | HMn58-3-1-1 | HR50 | 5-25 | 圆形 | 25.0 | 647 | 10 | 201.6 |
| 142 | HMn58-3-1-1 | HR50 | 5-25 | 圆形 | 25.0 | 632 | 11 | 190.2 |
| 143 | HMn58-3-1-1 | HR50 | 25-50 | 圆形 | 31.0 | 662 | 8.5 | 236.5 |
| 144 | HMn58-3-1-1 | HR50 | 25-50 | 圆形 | 31.0 | 645 | 11 | 217.7 |
| 145 | HMn58-3-1-1 | HR50 | 25-50 | 正方形 | a35 | 652 | 10 | 229.6 |
| 146 | HMn58-3-1-1 | HR50 | 25-50 | 正方形 | a35 | 637 | 12 | 206.3 |
| 147 | HMn58-3-1-1 | HR50 | 25-50 | 圆形 | 39.0 | 624 | 14 | 194.1 |
| 148 | HMn58-3-1-1 | HR50 | 25-50 | 圆形 | 39.0 | 605 | 17 | 176.8 |
| 149 | HMn58-3-1-1 | M30 | 5-25 | 圆形 | 10.1 | 578 | 10.5 | 214.7 |
| 150 | HMn58-3-1-1 | M30 | 5-25 | 圆形 | 10.1 | 564 | 13 | 197.3 |
| 151 | HMn58-3-1-1 | M30 | 5-25 | 圆形 | 16.0 | 581 | 10 | 220.5 |
| 152 | HMn58-3-1-1 | M30 | 5-25 | 圆形 | 16.0 | 562 | 13 | 194 |
| 153 | HMn58-3-1-1 | M30 | 5-25 | 六角 | s22 | 556 | 14 | 179 |
| 154 | HMn58-3-1-1 | M30 | 5-25 | 六角 | s22 | 548 | 15 | 172.5 |
| 155 | HMn58-3-1-1 | M30 | 5-25 | 圆形 | 25.0 | 567 | 13 | 199.8 |
| 156 | HMn58-3-1-1 | M30 | 5-25 | 圆形 | 25.0 | 542 | 16 | 168.2 |
| 157 | HMn58-3-1-1 | M30 | 25-50 | 圆形 | 32.5 | 561 | 13 | 201.3 |
| 158 | HMn58-3-1-1 | M30 | 25-50 | 圆形 | 32.5 | 552 | 14 | 186.7 |
| 159 | HMn58-3-1-1 | M30 | 25-50 | 圆形 | 32.5 | 545 | 15 | 179.1 |
| 160 | HMn58-3-1-1 | M30 | 25-50 | 圆形 | 48.0 | 538 | 16 | 171.4 |
| 161 | HMn58-3-1-1 | M30 | 25-50 | 圆形 | 48.0 | 524 | 17 | 157.5 |
| 162 | HMn58-3-1-1 | M30 | 50-80 | 矩形 | 53.5\*61.5 | 541 | 15 | 201.3 |
| 163 | HMn58-3-1-1 | M30 | 50-80 | 矩形 | 53.5\*61.5 | 534 | 16 | 189.3 |
| 164 | HMn58-3-1-1 | M30 | 50-80 | 矩形 | 53.5\*61.5 | 529 | 17 | 185.4 |
| 165 | HMn58-3-1-1 | M30 | 50-80 | 圆形 | 65.0 | 518 | 19 | 171.5 |
| 166 | HMn58-3-1-1 | M30 | 50-80 | 圆形 | 65.0 | 506 | 21 | 156.1 |
| 167 | HMn58-3-1-1 | M30 | 50-80 | 圆形 | 71.0 | 511 | 20 | 161.8 |
| 168 | HMn58-3-1-1 | M30 | 50-80 | 圆形 | 71.0 | 505 | 21 | 155.3 |
| 169 | HMn58-3-1-1 | M30 | 50-80 | 圆形 | 71.0 | 502 | 22 | 151.2 |
| 170 | HMn59-2-2-0.5 | M07 | 5-25 | 六角 | s15 | 574 | 6.5 | 177.6 |
| 171 | HMn59-2-2-0.5 | M07 | 5-25 | 六角 | s15 | 545 | 12 | 143 |
| 172 | HMn59-2-2-0.5 | M07 | 5-25 | 圆形 | 15.7 | 563 | 8 | 168.1 |
| 173 | HMn59-2-2-0.5 | M07 | 5-25 | 圆形 | 15.7 | 556 | 10 | 161.5 |
| 174 | HMn59-2-2-0.5 | M07 | 5-25 | 六角 | s17.5 | 557 | 10 | 162.7 |
| 175 | HMn59-2-2-0.5 | M07 | 5-25 | 六角 | s17.5 | 542 | 12 | 142 |
| 176 | HMn59-2-2-0.5 | M07 | 5-25 | 圆形 | 25.0 | 560 | 8 | 164.3 |
| 177 | HMn59-2-2-0.5 | M07 | 5-25 | 圆形 | 25.0 | 551 | 10 | 159.2 |
| 178 | HMn59-2-2-0.5 | M07 | 25-80 | 圆形 | 39.0 | 551 | 8.5 | 163.4 |
| 179 | HMn59-2-2-0.5 | M07 | 25-80 | 圆形 | 39.0 | 547 | 10 | 158.7 |
| 180 | HMn59-2-2-0.5 | M07 | 25-80 | 圆形 | 48.5 | 552 | 8.5 | 165.8 |
| 181 | HMn59-2-2-0.5 | M07 | 25-80 | 圆形 | 48.5 | 536 | 11 | 143.6 |
| 182 | HMn59-2-2-0.5 | M07 | 25-80 | 圆形 | 60.0 | 534 | 11 | 141.5 |
| 183 | HMn59-2-2-0.5 | M07 | 25-80 | 圆形 | 60.0 | 528 | 13 | 139.7 |
| 184 | HMn59-2-2-0.5 | M07 | 25-80 | 六角 | s65.5 | 533 | 12 | 140.9 |
| 185 | HMn59-2-2-0.5 | M07 | 25-80 | 六角 | s65.5 | 524 | 14 | 132.5 |
| 186 | HMn59-2-2-0.5 | M07 | 25-80 | 圆形 | 80.0 | 539 | 10.5 | 146.8 |
| 187 | HMn59-2-2-0.5 | M07 | 25-80 | 圆形 | 80.0 | 536 | 11 | 144.2 |
| 188 | HMn59-2-2-0.5 | M07 | ＞80 | 正方形 | a84 |  |  | 179 |
| 189 | HMn59-2-2-0.5 | M07 | ＞80 | 正方形 | a84 |  |  | 163.4 |
| 190 | HMn59-2-2-0.5 | M07 | ＞80 | 圆形 | 108.0 |  |  | 176.8 |
| 191 | HMn59-2-2-0.5 | M07 | ＞80 | 圆形 | 108.0 |  |  | 171.9 |
| 192 | HMn59-2-2-0.5 | M07 | ＞80 | 圆形 | 114.0 |  |  | 151.4 |
| 193 | HMn59-2-2-0.5 | M07 | ＞80 | 圆形 | 114.0 |  |  | 146.8 |
| 194 | HMn59-2-2-0.5 | M07 | ＞80 | 圆形 | 114.0 |  |  | 140.5 |
| 195 | HMn59-2-2-0.5 | M07 | ＞80 | 矩形 | 89.0\*115.0 |  |  | 136.2 |
| 196 | HMn59-2-2-0.5 | M07 | ＞80 | 矩形 | 89.0\*115.0 |  |  | 131.5 |
| 197 | HMn59-2-2-0.5 | HR50 | 5-15 | 圆形 | 5.97 | 668 | 8.5 | 216.7 |
| 198 | HMn59-2-2-0.5 | HR50 | 5-15 | 圆形 | 5.97 | 651 | 10 | 204.6 |
| 199 | HMn59-2-2-0.5 | HR50 | 5-15 | 正方形 | a10 | 653 | 11 | 202.6 |
| 200 | HMn59-2-2-0.5 | HR50 | 5-15 | 正方形 | a10 | 653 | 11 | 201.1 |
| 201 | HMn59-2-2-0.5 | HR50 | 5-15 | 圆形 | 11.7 | 648 | 12 | 189.4 |
| 202 | HMn59-2-2-0.5 | HR50 | 5-15 | 圆形 | 11.7 | 621 | 15 | 160.3 |
| 203 | HMn59-2-2-0.5 | HR50 | 5-15 | 正方形 | a14 | 636 | 14 | 172.8 |
| 204 | HMn59-2-2-0.5 | HR50 | 5-15 | 正方形 | a14 | 635 | 14 | 172.1 |
| 205 | HMn59-2-2-0.5 | HR50 | 15-60 | 圆形 | 16.5 | 641 | 12 | 214.7 |
| 206 | HMn59-2-2-0.5 | HR50 | 15-60 | 圆形 | 16.5 | 635 | 13 | 210 |
| 207 | HMn59-2-2-0.5 | HR50 | 15-60 | 六角 | S23 | 632 | 13 | 206.3 |
| 208 | HMn59-2-2-0.5 | HR50 | 15-60 | 六角 | S23 | 628 | 14 | 207.1 |
| 209 | HMn59-2-2-0.5 | HR50 | 15-60 | 正方形 | a31 | 619 | 16 | 206.5 |
| 210 | HMn59-2-2-0.5 | HR50 | 15-60 | 正方形 | a31 | 591 | 18 | 161.2 |
| 211 | HMn59-2-2-0.5 | HR50 | 15-60 | 圆形 | 44.5 | 609 | 17 | 189.5 |
| 212 | HMn59-2-2-0.5 | HR50 | 15-60 | 圆形 | 44.5 | 603 | 17 | 164.3 |
| 213 | HMn59-2-2-0.5 | HR50 | 15-60 | 圆形 | 48.5 | 614 | 16 | 185 |
| 214 | HMn59-2-2-0.5 | HR50 | 15-60 | 圆形 | 48.5 | 599 | 19 | 179.1 |
| 215 | HMn59-2-2-0.5 | M30 | 5-15 | 圆形 | 5.5 | 594 | 15 | 211.9 |
| 216 | HMn59-2-2-0.5 | M30 | 5-15 | 圆形 | 5.5 | 584 | 16 | 201.3 |
| 217 | HMn59-2-2-0.5 | M30 | 5-15 | 圆形 | 7.9 | 573 | 17 | 186.1 |
| 218 | HMn59-2-2-0.5 | M30 | 5-15 | 圆形 | 7.9 | 572 | 17 | 180.6 |
| 219 | HMn59-2-2-0.5 | M30 | 5-15 | 六角 | s8.2 | 568 | 18 | 175.9 |
| 220 | HMn59-2-2-0.5 | M30 | 5-15 | 六角 | s8.2 | 550 | 20 | 170.2 |
| 221 | HMn59-2-2-0.5 | M30 | 5-15 | 六角 | s8.2 | 560 | 19 | 172.4 |
| 222 | HMn59-2-2-0.5 | M30 | 5-15 | 圆形 | 8.5 | 563 | 21 | 162.3 |
| 223 | HMn59-2-2-0.5 | M30 | 5-15 | 圆形 | 8.5 | 566 | 21 | 165.2 |
| 224 | HMn59-2-2-0.5 | M30 | 15-60 | 六角 | s21 | 558 | 16 | 178.5 |
| 225 | HMn59-2-2-0.5 | M30 | 15-60 | 六角 | s21 | 537 | 19 | 156.2 |
| 226 | HMn59-2-2-0.5 | M30 | 15-60 | 圆形 | 27.5 | 568 | 15 | 190.5 |
| 227 | HMn59-2-2-0.5 | M30 | 15-60 | 圆形 | 27.5 | 556 | 18 | 161.3 |
| 228 | HMn59-2-2-0.5 | M30 | 15-60 | 圆形 | 36.5 | 555 | 17 | 170.4 |
| 229 | HMn59-2-2-0.5 | M30 | 15-60 | 圆形 | 36.5 | 530 | 20 | 154.5 |
| 230 | HMn59-2-2-0.5 | M30 | 60-80 | 圆形 | 62.0 | 532 | 15.5 | 182 |
| 231 | HMn59-2-2-0.5 | M30 | 60-80 | 圆形 | 62.0 | 511 | 18 | 149.1 |
| 232 | HMn59-2-2-0.5 | M30 | 60-80 | 圆形 | 62.0 | 510 | 18 | 145.7 |
| 233 | HMn59-2-2-0.5 | M30 | 60-80 | 正方形 | a75 | 519 | 17 | 153.6 |
| 234 | HMn59-2-2-0.5 | M30 | 60-80 | 正方形 | a75 | 515 | 17.5 | 152.4 |
| 235 | HMn59-2-2-0.5 | M30 | 60-80 | 圆形 | 80.0 | 523 | 16 | 170.3 |
| 236 | HMn59-2-2-0.5 | M30 | 60-80 | 圆形 | 80.0 | 511 | 18 | 142.6 |
| 237 | HMn59-3-2-0.8 | HR50 | 5-25 | 圆形 | 7.25 | 675 | 6.5 | 229.7 |
| 238 | HMn59-3-2-0.8 | HR50 | 5-25 | 圆形 | 7.25 | 658 | 9 | 216.6 |
| 239 | HMn59-3-2-0.8 | HR50 | 5-25 | 圆形 | 13.74 | 646 | 10 | 199.2 |
| 240 | HMn59-3-2-0.8 | HR50 | 5-25 | 圆形 | 13.74 | 645 | 10 | 201.2 |
| 241 | HMn59-3-2-0.8 | HR50 | 5-25 | 六角 | S17.48 | 637 | 11 | 195.1 |
| 242 | HMn59-3-2-0.8 | HR50 | 5-25 | 六角 | S17.48 | 624 | 12 | 184.5 |
| 243 | HMn59-3-2-0.8 | HR50 | 5-25 | 六角 | S20 | 641 | 10 | 198.8 |
| 244 | HMn59-3-2-0.8 | HR50 | 5-25 | 六角 | S20 | 639 | 10 | 192.5 |
| 245 | HMn59-3-2-0.8 | HR50 | 25-50 | 圆形 | 28.0 | 655 | 8.5 | 221.3 |
| 246 | HMn59-3-2-0.8 | HR50 | 25-50 | 圆形 | 28.0 | 648 | 10 | 215.4 |
| 247 | HMn59-3-2-0.8 | HR50 | 25-50 | 圆形 | 45.0 | 643 | 11 | 210.7 |
| 248 | HMn59-3-2-0.8 | HR50 | 25-50 | 圆形 | 45.0 | 628 | 12 | 198.5 |
| 249 | HMn59-3-2-0.8 | HR50 | 25-50 | 六角 | S35 | 617 | 14 | 190.6 |
| 250 | HMn59-3-2-0.8 | HR50 | 25-50 | 六角 | S35 | 605 | 17 | 178.2 |
| 251 | HMn59-3-2-0.8 | HR50 | 50-80 | 矩形 | 34\*72 |  |  | 206.9 |
| 252 | HMn59-3-2-0.8 | HR50 | 50-80 | 矩形 | 34\*72 |  |  | 192.4 |
| 253 | HMn59-3-2-0.8 | HR50 | 50-80 | 矩形 | 34\*72 |  |  | 183.6 |
| 254 | HMn59-3-2-0.8 | HR50 | 50-80 | 圆形 | 80.0 |  |  | 175.1 |
| 255 | HMn59-3-2-0.8 | HR50 | 50-80 | 圆形 | 80.0 |  |  | 172.8 |
| 256 | HMn59-3-2-0.8 | M30 | 5-25 | 圆形 | 5.5 | 581 | 10 | 195.7 |
| 257 | HMn59-3-2-0.8 | M30 | 5-25 | 圆形 | 5.5 | 576 | 11 | 190.5 |
| 258 | HMn59-3-2-0.8 | M30 | 5-25 | 圆形 | 5.5 | 563 | 13 | 178.1 |
| 259 | HMn59-3-2-0.8 | M30 | 5-25 | 圆形 | 20.0 | 558 | 14 | 172.3 |
| 260 | HMn59-3-2-0.8 | M30 | 5-25 | 圆形 | 20.0 | 549 | 15 | 168.9 |
| 261 | HMn59-3-2-0.8 | M30 | 5-25 | 六角 | s21 | 561 | 13 | 175.4 |
| 262 | HMn59-3-2-0.8 | M30 | 5-25 | 六角 | s21 | 542 | 15 | 166.8 |
| 263 | HMn59-3-2-0.8 | M30 | 25-50 | 圆形 | 43.0 | 554 | 12.5 | 186.5 |
| 264 | HMn59-3-2-0.8 | M30 | 25-50 | 圆形 | 43.0 | 536 | 13 | 168 |
| 265 | HMn59-3-2-0.8 | M30 | 25-50 | 六角 | s42 | 531 | 13 | 164.2 |
| 266 | HMn59-3-2-0.8 | M30 | 25-50 | 六角 | s42 | 525 | 15 | 156.7 |
| 267 | HMn59-3-2-0.8 | M30 | 50-80 | 圆形 | 60.0 | 545 | 15 | 201.5 |
| 268 | HMn59-3-2-0.8 | M30 | 50-80 | 圆形 | 60.0 | 515 | 18 | 162.7 |
| 269 | HMn59-3-2-0.8 | M30 | 50-80 | 矩形 | 52.5\*64.0 | 536 | 16 | 184.2 |
| 270 | HMn59-3-2-0.8 | M30 | 50-80 | 矩形 | 52.5\*64.0 | 508 | 19 | 156.8 |
| 271 | HMn59-3-2-0.8 | M30 | 50-80 | 六角 | s70 | 524 | 17 | 166.4 |
| 272 | HMn59-3-2-0.8 | M30 | 50-80 | 六角 | s70 | 521 | 17 | 168.1 |
| 273 | HMn59-3-2-0.8 | M30 | 50-80 | 六角 | s70 | 518 | 18 | 163.3 |
| 274 | HMn59-3-2-0.8 | M30 | ＞80 | 正方形 | a85 |  |  | 168.9 |
| 275 | HMn59-3-2-0.8 | M30 | ＞80 | 正方形 | a85 |  |  | 156.1 |
| 276 | HMn59-3-2-0.8 | M30 | ＞80 | 正方形 | a85 |  |  | 146.4 |
| 277 | HMn59-3-2-0.8 | M30 | ＞80 | 圆形 | 98.0 |  |  | 156.8 |
| 278 | HMn59-3-2-0.8 | M30 | ＞80 | 圆形 | 98.0 |  |  | 141.6 |
| 279 | HMn60-2-1-0.5 | M07 | 5-25 | 圆形 | 14.3 | 523 | 14 | 141.7 |
| 280 | HMn60-2-1-0.5 | M07 | 5-25 | 圆形 | 14.3 | 517 | 15 | 140.4 |
| 281 | HMn60-2-1-0.5 | M07 | 5-25 | 矩形 | 11.5\*15.5 | 533 | 13 | 152.3 |
| 282 | HMn60-2-1-0.5 | M07 | 5-25 | 矩形 | 11.5\*15.5 | 510 | 16 | 137.2 |
| 283 | HMn60-2-1-0.5 | M07 | 5-25 | 圆形 | 20.0 | 536 | 12.5 | 160.5 |
| 284 | HMn60-2-1-0.5 | M07 | 5-25 | 圆形 | 20.0 | 515 | 15 | 132.5 |
| 285 | HMn60-2-1-0.5 | M07 | 5-25 | 六角 | s21 | 529 | 13.5 | 146.8 |
| 286 | HMn60-2-1-0.5 | M07 | 5-25 | 六角 | s21 | 514 | 15 | 135.6 |
| 287 | HMn60-2-1-0.5 | M07 | 25-80 | 正方形 | a47 | 517 | 15 | 159.4 |
| 288 | HMn60-2-1-0.5 | M07 | 25-80 | 正方形 | a47 | 510 | 16 | 146.7 |
| 289 | HMn60-2-1-0.5 | M07 | 25-80 | 正方形 | a47 | 502 | 17 | 139.3 |
| 290 | HMn60-2-1-0.5 | M07 | 25-80 | 矩形 | 53.5\*66.0 | 489 | 19 | 126.2 |
| 291 | HMn60-2-1-0.5 | M07 | 25-80 | 矩形 | 53.5\*66.0 | 481 | 20 | 128.5 |
| 292 | HMn60-2-1-0.5 | M07 | 25-80 | 圆形 | 80.0 | 500 | 17 | 135.1 |
| 293 | HMn60-2-1-0.5 | M07 | 25-80 | 圆形 | 80.0 | 499 | 18 | 132.4 |
| 294 | HMn60-2-1-0.5 | M07 | ＞80 | 圆形 | 99.0 |  |  | 131.9 |
| 295 | HMn60-2-1-0.5 | M07 | ＞80 | 圆形 | 99.0 |  |  | 126.5 |
| 296 | HMn60-2-1-0.5 | M07 | ＞80 | 圆形 | 102.0 |  |  | 149.7 |
| 297 | HMn60-2-1-0.5 | M07 | ＞80 | 圆形 | 102.0 |  |  | 142.6 |
| 298 | HMn60-2-1-0.5 | M07 | ＞80 | 圆形 | 102.0 |  |  | 137.8 |
| 299 | HMn60-2-1-0.5 | HR50 | 5-25 | 圆形 | 5.21 | 628 | 10.5 | 185.3 |
| 300 | HMn60-2-1-0.5 | HR50 | 5-25 | 圆形 | 5.21 | 617 | 12 | 183.9 |
| 301 | HMn60-2-1-0.5 | HR50 | 5-25 | 圆形 | 10.7 | 626 | 11 | 170.4 |
| 302 | HMn60-2-1-0.5 | HR50 | 5-25 | 圆形 | 10.7 | 611 | 12 | 178.1 |
| 303 | HMn60-2-1-0.5 | HR50 | 5-25 | 正方形 | a11.04 | 598 | 14 | 163.2 |
| 304 | HMn60-2-1-0.5 | HR50 | 5-25 | 正方形 | a11.04 | 593 | 15 | 164.5 |
| 305 | HMn60-2-1-0.5 | HR50 | 5-25 | 矩形 | 9.5\*16 | 604 | 13 | 170.9 |
| 306 | HMn60-2-1-0.5 | HR50 | 5-25 | 矩形 | 9.5\*16 | 600 | 12.5 | 161.7 |
| 307 | HMn60-2-1-0.5 | HR50 | 5-25 | 正方形 | a22 | 616 | 12 | 180.6 |
| 308 | HMn60-2-1-0.5 | HR50 | 5-25 | 正方形 | a22 | 604 | 13 | 171.2 |
| 309 | HMn60-2-1-0.5 | HR50 | 25-50 | 圆形 | 28.5 | 598 | 12 | 172.6 |
| 310 | HMn60-2-1-0.5 | HR50 | 25-50 | 圆形 | 28.5 | 597 | 12 | 173.2 |
| 311 | HMn60-2-1-0.5 | HR50 | 25-50 | 圆形 | 48.0 | 568 | 15 | 152.4 |
| 312 | HMn60-2-1-0.5 | HR50 | 25-50 | 圆形 | 48.0 | 566 | 15 | 154.3 |
| 313 | HMn60-2-1-0.5 | HR50 | 25-50 | 矩形 | 31.96\*45 | 583 | 13 | 184.5 |
| 314 | HMn60-2-1-0.5 | HR50 | 25-50 | 矩形 | 31.96\*45 | 571 | 14 | 160.8 |
| 315 | HMn60-2-1-0.5 | M30 | 5-25 | 圆形 | 11.3 | 532 | 15.5 | 162.1 |
| 316 | HMn60-2-1-0.5 | M30 | 5-25 | 圆形 | 11.3 | 524 | 16 | 156.3 |
| 317 | HMn60-2-1-0.5 | M30 | 5-25 | 矩形 | 11.2\*19.5 | 516 | 17 | 142.5 |
| 318 | HMn60-2-1-0.5 | M30 | 5-25 | 矩形 | 11.2\*19.5 | 505 | 18 | 136.7 |
| 319 | HMn60-2-1-0.5 | M30 | 5-25 | 矩形 | 11.2\*19.5 | 501 | 18 | 134.2 |
| 320 | HMn60-2-1-0.5 | M30 | 5-25 | 六角 | s14.5 | 493 | 19 | 128.1 |
| 321 | HMn60-2-1-0.5 | M30 | 5-25 | 六角 | s14.5 | 484 | 20 | 125 |
| 322 | HMn60-2-1-0.5 | M30 | 5-25 | 六角 | s14.5 | 482 | 20 | 129.4 |
| 323 | HMn60-2-1-0.5 | M30 | 25-80 | 六角 | s38 | 495 | 21 | 150.7 |
| 324 | HMn60-2-1-0.5 | M30 | 25-80 | 六角 | s38 | 486 | 22.5 | 142.3 |
| 325 | HMn60-2-1-0.5 | M30 | 25-80 | 六角 | s45 | 482 | 23 | 140.6 |
| 326 | HMn60-2-1-0.5 | M30 | 25-80 | 六角 | s45 | 476 | 24 | 134.3 |
| 327 | HMn60-2-1-0.5 | M30 | 25-80 | 六角 | s45 | 454 | 26 | 112.6 |
| 328 | HMn60-2-1-0.5 | M30 | 25-80 | 圆形 | 68.0 | 467 | 25 | 130.5 |
| 329 | HMn60-2-1-0.5 | M30 | 25-80 | 圆形 | 68.0 | 463 | 25 | 125.1 |
| 330 | HMn60-2-1-0.5 | M30 | ＞80 | 正方形 | a85 |  |  | 139.5 |
| 331 | HMn60-2-1-0.5 | M30 | ＞80 | 正方形 | a85 |  |  | 126.8 |
| 332 | HMn60-2-1-0.5 | M30 | ＞80 | 六角 | s98 |  |  | 121.4 |
| 333 | HMn60-2-1-0.5 | M30 | ＞80 | 六角 | s98 |  |  | 115.2 |
| 334 | HMn60-3-1-0.75 | HR50 | 5-25 | 圆形 | 9.9 | 527 | 15 | 160.3 |
| 335 | HMn60-3-1-0.75 | HR50 | 5-25 | 圆形 | 9.9 | 518 | 17 | 144.8 |
| 336 | HMn60-3-1-0.75 | HR50 | 5-25 | 圆形 | 15.0 | 498 | 19 | 135.2 |
| 337 | HMn60-3-1-0.75 | HR50 | 5-25 | 圆形 | 15.0 | 485 | 20 | 123.7 |
| 338 | HMn60-3-1-0.75 | HR50 | 25-50 | 圆形 | 26.0 | 489 | 15 | 150.4 |
| 339 | HMn60-3-1-0.75 | HR50 | 25-50 | 圆形 | 26.0 | 444 | 21 | 110.3 |
| 340 | HMn60-3-1-0.75 | HR50 | 25-50 | 圆形 | 36.0 | 487 | 15 | 146.3 |
| 341 | HMn60-3-1-0.75 | HR50 | 25-50 | 圆形 | 36.0 | 483 | 15 | 147.2 |
| 342 | HMn60-3-1-0.75 | HR50 | 25-50 | 圆形 | 36.0 | 467 | 17 | 130.5 |
| 343 | HMn60-3-1-0.75 | M30 | 5-25 | 圆形 | 5.5 | 438 | 18 | 130.1 |
| 344 | HMn60-3-1-0.75 | M30 | 5-25 | 圆形 | 5.5 | 429 | 19 | 118.4 |
| 345 | HMn60-3-1-0.75 | M30 | 5-25 | 圆形 | 5.5 | 421 | 19 | 98.7 |
| 346 | HMn60-3-1-0.75 | M30 | 5-25 | 六角 | s14.3 | 432 | 21 | 113.2 |
| 347 | HMn60-3-1-0.75 | M30 | 5-25 | 六角 | s14.3 | 407 | 24 | 101.5 |
| 348 | HMn60-3-1-0.75 | M30 | 25-80 | 六角 | s27 | 418 | 21 | 118.1 |
| 349 | HMn60-3-1-0.75 | M30 | 25-80 | 六角 | s27 | 417 | 22 | 120.3 |
| 350 | HMn60-3-1-0.75 | M30 | 25-80 | 六角 | s27 | 413 | 23 | 119 |
| 351 | HMn60-3-1-0.75 | M30 | 25-80 | 圆形 | 38.5 | 409 | 24 | 112.4 |
| 352 | HMn60-3-1-0.75 | M30 | 25-80 | 圆形 | 38.5 | 400 | 25 | 107.3 |
| 353 | HMn60-3-1-0.75 | M30 | 25-80 | 六角 | s45 | 397 | 28 | 105.2 |
| 354 | HMn60-3-1-0.75 | M30 | 25-80 | 六角 | s45 | 384 | 32 | 97.6 |
| 355 | HMn60-3-1-0.75 | M30 | ＞80 | 圆形 | 86 |  |  | 124.6 |
| 356 | HMn60-3-1-0.75 | M30 | ＞80 | 圆形 | 86 |  |  | 121.3 |
| 357 | HMn60-3-1-0.75 | M30 | ＞80 | 正方形 | a98 |  |  | 115.7 |
| 358 | HMn60-3-1-0.75 | M30 | ＞80 | 正方形 | a98 |  |  | 112.5 |
| 359 | HMn60-3-1-0.75 | M30 | ＞80 | 六角 | s105 |  |  | 105.1 |
| 360 | HMn60-3-1-0.75 | M30 | ＞80 | 六角 | s105 |  |  | 96.8 |
| 361 | HMn61-2-1-1 | HR50 | 5-25 | 圆形 | 7.1 | 605 | 10.5 | 201.3 |
| 362 | HMn61-2-1-1 | HR50 | 5-25 | 圆形 | 7.1 | 587 | 12 | 178.6 |
| 363 | HMn61-2-1-1 | HR50 | 5-25 | 六角 | S10 | 571 | 13 | 162.5 |
| 364 | HMn61-2-1-1 | HR50 | 5-25 | 六角 | S10 | 576 | 13 | 165.2 |
| 365 | HMn61-2-1-1 | HR50 | 5-25 | 圆形 | 12.18 | 581 | 12 | 173.8 |
| 366 | HMn61-2-1-1 | HR50 | 5-25 | 圆形 | 12.18 | 567 | 15 | 154.4 |
| 367 | HMn61-2-1-1 | HR50 | 5-25 | 六角 | s16.9 | 578 | 13 | 176.2 |
| 368 | HMn61-2-1-1 | HR50 | 5-25 | 六角 | s16.9 | 577 | 13 | 172.1 |
| 369 | HMn61-2-1-1 | HR50 | 5-25 | 圆形 | 20.0 | 574 | 14 | 160.2 |
| 370 | HMn61-2-1-1 | HR50 | 5-25 | 圆形 | 20.0 | 563 | 15.5 | 155 |
| 371 | HMn61-2-1-1 | HR50 | 25-50 | 圆形 | 26.6 | 567 | 12.5 | 165.5 |
| 372 | HMn61-2-1-1 | HR50 | 25-50 | 圆形 | 26.6 | 564 | 13 | 170.2 |
| 373 | HMn61-2-1-1 | HR50 | 25-50 | 圆形 | 44.0 | 548 | 16 | 157.7 |
| 374 | HMn61-2-1-1 | HR50 | 25-50 | 圆形 | 44.0 | 546 | 16 | 161.8 |
| 375 | HMn61-2-1-1 | HR50 | 25-50 | 六角 | S40 | 533 | 17 | 150.1 |
| 376 | HMn61-2-1-1 | HR50 | 25-50 | 六角 | S40 | 521 | 18 | 143.2 |
| 377 | HMn61-2-1-1 | M30 | 50-80 | 圆形 | 58.0 | 501 | 15 | 162.4 |
| 378 | HMn61-2-1-1 | M30 | 50-80 | 圆形 | 58.0 | 496 | 16 | 153.6 |
| 379 | HMn61-2-1-1 | M30 | 50-80 | 圆形 | 58.0 | 485 | 18 | 147.2 |
| 380 | HMn61-2-1-1 | M30 | 50-80 | 圆形 | 70.0 | 463 | 21 | 123.7 |
| 381 | HMn61-2-1-1 | M30 | 50-80 | 圆形 | 70.0 | 461 | 21 | 125.1 |
| 382 | HMn61-2-1-1 | M30 | 50-80 | 正方形 | a75 | 475 | 19 | 136.5 |
| 383 | HMn61-2-1-1 | M30 | 50-80 | 正方形 | a75 | 471 | 20 | 138.1 |
| 384 | HMn62-3-3-1 | HR50 | 5-25 | 正方形 | a17.5 | 539 | 13 | 170.2 |
| 385 | HMn62-3-3-1 | HR50 | 5-25 | 正方形 | a17.5 | 533 | 13 | 161.4 |
| 386 | HMn62-3-3-1 | HR50 | 5-25 | 正方形 | a17.5 | 514 | 15 | 142.7 |
| 387 | HMn62-3-3-1 | HR50 | 25-50 | 六角 | S36 | 520 | 14 | 171.5 |
| 388 | HMn62-3-3-1 | HR50 | 25-50 | 六角 | S36 | 514 | 15 | 168.7 |
| 389 | HMn62-3-3-1 | HR50 | 25-50 | 六角 | S41 | 510 | 15 | 162.3 |
| 390 | HMn62-3-3-1 | HR50 | 25-50 | 六角 | S41 | 498 | 17 | 151.4 |
| 391 | HMn62-3-3-1 | HR50 | 25-50 | 六角 | S41 | 484 | 19 | 137.6 |
| 392 | HMn62-3-3-1 | M30 | 5-25 | 圆形 | 15.5 | 448 | 18.5 | 156.7 |
| 393 | HMn62-3-3-1 | M30 | 5-25 | 圆形 | 15.5 | 441 | 19 | 145.8 |
| 394 | HMn62-3-3-1 | M30 | 5-25 | 圆形 | 15.5 | 432 | 20 | 132.2 |
| 395 | HMn62-3-3-1 | M30 | 5-25 | 圆形 | 25.0 | 425 | 21 | 130.1 |
| 396 | HMn62-3-3-1 | M30 | 5-25 | 圆形 | 25.0 | 419 | 25 | 125.4 |
| 397 | HMn62-3-3-1 | M30 | 5-25 | 正方形 | a17.5 | 417 | 25 | 121.6 |
| 398 | HMn62-3-3-1 | M30 | 5-25 | 正方形 | a17.5 | 405 | 27 | 114.2 |
| 399 | HMn62-3-3-1 | M30 | 25-80 | 正方形 | a45 | 428 | 21 | 140 |
| 400 | HMn62-3-3-1 | M30 | 25-80 | 正方形 | a45 | 417 | 23 | 132.5 |
| 401 | HMn62-3-3-1 | M30 | 25-80 | 正方形 | a45 | 421 | 22 | 131.4 |
| 402 | HMn62-3-3-1 | M30 | 25-80 | 六角 | s38 | 414 | 24 | 124.6 |
| 403 | HMn62-3-3-1 | M30 | 25-80 | 六角 | s38 | 391 | 26 | 105.4 |
| 404 | HMn62-3-3-1 | M30 | 25-80 | 六角 | s62 | 405 | 25 | 117.5 |
| 405 | HMn62-3-3-1 | M30 | 25-80 | 六角 | s62 | 381 | 28 | 104.3 |
| 406 | HMn62-3-3-1 | M30 | ＞80 | 六角 | s95 |  |  | 116.8 |
| 407 | HMn62-3-3-1 | M30 | ＞80 | 六角 | s95 |  |  | 96.2 |
| 408 | HMn62-3-3-1 | M30 | ＞80 | 六角 | s115 |  |  | 104.8 |
| 409 | HMn62-3-3-1 | M30 | ＞80 | 六角 | s115 |  |  | 104.1 |
| 410 | HMn62-3-3-1 | M30 | ＞80 | 六角 | s115 |  |  | 101.2 |
| 411 | HAl61-4-3-1 | HR50 | 5-25 | 矩形 | 5.8\*6.55 | 686 | 3 | 231.3 |
| 412 | HAl61-4-3-1 | HR50 | 5-25 | 矩形 | 5.8\*6.55 | 679 | 5 | 224.3 |
| 413 | HAl61-4-3-1 | HR50 | 5-25 | 矩形 | 5.8\*6.55 | 664 | 7 | 202.5 |
| 414 | HAl61-4-3-1 | HR50 | 5-25 | 圆形 | 8.0 | 677 | 6 | 212.6 |
| 415 | HAl61-4-3-1 | HR50 | 5-25 | 圆形 | 8.0 | 654 | 7 | 195.1 |
| 416 | HAl61-4-3-1 | HR50 | 5-25 | 圆形 | 15.0 | 643 | 8 | 197.2 |
| 417 | HAl61-4-3-1 | HR50 | 5-25 | 圆形 | 15.0 | 632 | 9 | 186.5 |
| 418 | HAl61-4-3-1 | HR50 | 5-25 | 矩形 | 18.2\*23.5 | 655 | 8 | 201.7 |
| 419 | HAl61-4-3-1 | HR50 | 5-25 | 矩形 | 18.2\*23.5 | 638 | 10 | 189.4 |
| 420 | HAl61-4-3-1 | HR50 | 25-50 | 圆形 | 37.0 | 624 | 4 | 198.8 |
| 421 | HAl61-4-3-1 | HR50 | 25-50 | 圆形 | 37.0 | 606 | 7 | 189.2 |
| 422 | HAl61-4-3-1 | HR50 | 25-50 | 圆形 | 42.0 | 641 | 5 | 239.9 |
| 423 | HAl61-4-3-1 | HR50 | 25-50 | 圆形 | 42.0 | 632 | 6 | 225.6 |
| 424 | HAl61-4-3-1 | HR50 | 25-50 | 圆形 | 42.0 | 617 | 9 | 191.1 |
| 425 | HAl61-4-3-1 | M30 | 5-25 | 圆形 | 11.3 | 659 | 3.5 | 212.3 |
| 426 | HAl61-4-3-1 | M30 | 5-25 | 圆形 | 11.3 | 654 | 3 | 206.7 |
| 427 | HAl61-4-3-1 | M30 | 5-25 | 矩形 | 12.0\*16.0 | 649 | 3 | 194.1 |
| 428 | HAl61-4-3-1 | M30 | 5-25 | 矩形 | 12.0\*16.0 | 648 | 7 | 195.2 |
| 429 | HAl61-4-3-1 | M30 | 5-25 | 圆形 | 25.0 | 652 | 6 | 208.3 |
| 430 | HAl61-4-3-1 | M30 | 5-25 | 圆形 | 25.0 | 637 | 7 | 185.6 |
| 431 | HAl61-4-3-1 | M30 | 25-80 | 圆形 | 36.5 | 642 | 5 | 638.6 |
| 432 | HAl61-4-3-1 | M30 | 25-80 | 圆形 | 36.5 | 638 | 7 | 634.1 |
| 433 | HAl61-4-3-1 | M30 | 25-80 | 正方形 | a41 | 641 | 5 | 635.9 |
| 434 | HAl61-4-3-1 | M30 | 25-80 | 正方形 | a41 | 605 | 12 | 205.2 |
| 435 | HAl61-4-3-1 | M30 | 25-80 | 圆形 | 65.0 | 629 | 9 | 221.4 |
| 436 | HAl61-4-3-1 | M30 | 25-80 | 圆形 | 65.0 | 595 | 13 | 193.6 |
| 437 | HAl61-4-3-1 | M30 | 25-80 | 六角 | s70 | 592 | 13 | 196.2 |
| 438 | HAl61-4-3-1 | M30 | 25-80 | 六角 | s70 | 581 | 14 | 184.7 |
| 439 | HAl61-4-3-1 | M30 | 25-80 | 六角 | s70 | 580 | 14 | 185.3 |
| 440 | HAl61-4-3-1 | M30 | ＞80 | 正方形 | a92 |  |  | 194.5 |
| 441 | HAl61-4-3-1 | M30 | ＞80 | 正方形 | a92 |  |  | 183.6 |
| 442 | HAl61-4-3-1 | M30 | ＞80 | 正方形 | a92 |  |  | 174.2 |
| 443 | HAl61-4-3-1 | M30 | ＞80 | 圆形 | 105 |  |  | 181.4 |
| 444 | HAl61-4-3-1 | M30 | ＞80 | 圆形 | 105 |  |  | 178.5 |
| 445 | HAl66-6-3-2 | M07 | 5-25 | 圆形 | 13.5 | 672 | 5.5 | 222.4 |
| 446 | HAl66-6-3-2 | M07 | 5-25 | 圆形 | 13.5 | 649 | 9 | 198.5 |
| 447 | HAl66-6-3-2 | M07 | 5-25 | 六角 | s16 | 658 | 8 | 202.6 |
| 448 | HAl66-6-3-2 | M07 | 5-25 | 六角 | s16 | 642 | 10 | 195.2 |
| 449 | HAl66-6-3-2 | M07 | 5-25 | 圆形 | 25.0 | 657 | 8 | 201.1 |
| 450 | HAl66-6-3-2 | M07 | 5-25 | 圆形 | 25.0 | 639 | 11 | 183.1 |
| 451 | HAl66-6-3-2 | M07 | 5-25 | 矩形 | 19.0\*25.0 | 641 | 10 | 186.2 |
| 452 | HAl66-6-3-2 | M07 | 5-25 | 矩形 | 19.0\*25.0 | 638 | 11 | 181.3 |
| 453 | HAl66-6-3-2 | M07 | 25-80 | 圆形 | 36.0 | 642 | 7 | 225.7 |
| 454 | HAl66-6-3-2 | M07 | 25-80 | 圆形 | 36.0 | 622 | 11 | 603.3 |
| 455 | HAl66-6-3-2 | M07 | 25-80 | 矩形 | 28.5\*37.5 | 631 | 9 | 217.5 |
| 456 | HAl66-6-3-2 | M07 | 25-80 | 矩形 | 28.5\*37.5 | 627 | 10 | 201.7 |
| 457 | HAl66-6-3-2 | M07 | 25-80 | 圆形 | 41.0 | 618 | 12 | 196.3 |
| 458 | HAl66-6-3-2 | M07 | 25-80 | 圆形 | 41.0 | 611 | 13 | 192.4 |
| 459 | HAl66-6-3-2 | M07 | 25-80 | 六角 | s57 | 605 | 14 | 183.4 |
| 460 | HAl66-6-3-2 | M07 | 25-80 | 六角 | s57 | 603 | 14 | 181.5 |
| 461 | HAl66-6-3-2 | M07 | 25-80 | 六角 | s57 | 594 | 15 | 178.6 |
| 462 | HAl66-6-3-2 | M07 | ＞80 | 矩形 | 68.0\*101.0 |  |  | 195.5 |
| 463 | HAl66-6-3-2 | M07 | ＞80 | 矩形 | 68.0\*101.0 |  |  | 182.3 |
| 464 | HAl66-6-3-2 | M07 | ＞80 | 矩形 | 68.0\*101.0 |  |  | 176.5 |
| 465 | HAl66-6-3-2 | M07 | ＞80 | 六角 | s95 |  |  | 174.1 |
| 466 | HAl66-6-3-2 | M07 | ＞80 | 六角 | s95 |  |  | 168.2 |
| 467 | HSi68-1 | HR50 | ≥5-25 | 圆形 | 15.6 | 578 | 6.5 | 171.8 |
| 468 | HSi68-1 | HR50 | ≥5-25 | 圆形 | 15.6 | 526 | 11 | 128.2 |
| 469 | HSi68-1 | HR50 | ≥5-25 | 圆形 | 15.6 | 503 | 13 | 125 |
| 470 | HSi68-1 | HR50 | ≥5-25 | 六角 | s22 | 552 | 8 | 152.6 |
| 471 | HSi68-1 | HR50 | ≥5-25 | 六角 | s22 | 547 | 9 | 149.5 |
| 472 | HSi68-1 | HR50 | ≥5-25 | 六角 | s22 | 537 | 10 | 136.1 |
| 473 | HSi68-1 | HR50 | 25-50 | 六角 | S38 | 514 | 8 | 163.9 |
| 474 | HSi68-1 | HR50 | 25-50 | 六角 | S38 | 482 | 12.5 | 140.1 |
| 475 | HSi68-1 | HR50 | 25-50 | 矩形 | 31.96\*45 | 487 | 12 | 140.3 |
| 476 | HSi68-1 | HR50 | 25-50 | 矩形 | 31.96\*45 | 451 | 15 | 116.2 |
| 477 | HSi68-1 | HR50 | 25-50 | 六角 | s42 | 466 | 14 | 126.4 |
| 478 | HSi68-1 | HR50 | 25-50 | 六角 | s42 | 464 | 14 | 127.8 |
| 479 | HSi68-1 | HR50 | 25-50 | 六角 | s42 | 454 | 15 | 117.5 |
| 480 | HSi68-1 | HR50 | 50-80 | 圆形 | 55.0 | 481 | 10 | 172.6 |
| 481 | HSi68-1 | HR50 | 50-80 | 圆形 | 55.0 | 453 | 13 | 159.8 |
| 482 | HSi68-1 | HR50 | 50-80 | 圆形 | 60.0 | 468 | 11.5 | 154.4 |
| 483 | HSi68-1 | HR50 | 50-80 | 圆形 | 60.0 | 462 | 12 | 157.3 |
| 484 | HSi68-1 | HR50 | 50-80 | 矩形 | 34\*72 | 444 | 14 | 135.1 |
| 485 | HSi68-1 | HR50 | 50-80 | 矩形 | 34\*72 | 425 | 15.5 | 118.4 |
| 486 | HSi68-1 | HR50 | 50-80 | 矩形 | 34\*72 | 420 | 16 | 111.2 |
| 487 | HSi68-1 | M30 | ≥5-25 | 圆形 | 8.7 | 453 | 12 | 151.8 |
| 488 | HSi68-1 | M30 | ≥5-25 | 圆形 | 8.7 | 437 | 16 | 135.4 |
| 489 | HSi68-1 | M30 | ≥5-25 | 圆形 | 8.7 | 429 | 17 | 130.1 |
| 490 | HSi68-1 | M30 | ≥5-25 | 矩形 | 12.2\*13 | 438 | 14.5 | 136.2 |
| 491 | HSi68-1 | M30 | ≥5-25 | 矩形 | 12.2\*13 | 407 | 20 | 107.5 |
| 492 | HSi68-1 | M30 | 25-80 | 圆形 | 26 | 432 | 16 | 146.5 |
| 493 | HSi68-1 | M30 | 25-80 | 圆形 | 26 | 411 | 21 | 142.6 |
| 494 | HSi68-1 | M30 | 25-80 | 圆形 | 36 | 417 | 19 | 145.3 |
| 495 | HSi68-1 | M30 | 25-80 | 圆形 | 36 | 388 | 23 | 112.4 |
| 496 | HSi68-1 | M30 | 25-80 | 六角 | S36 | 385 | 24 | 113.6 |
| 497 | HSi68-1 | M30 | 25-80 | 六角 | S36 | 376 | 26 | 104.2 |
| 498 | HSi68-1 | M30 | 25-80 | 六角 | S36 | 364 | 30 | 95.7 |
| 499 | HSi68-1 | M30 | >80 | 圆形 | 102 |  |  | 108.6 |
| 500 | HSi68-1 | M30 | >80 | 圆形 | 102 |  |  | 95.8 |
| 501 | HSi68-1 | M30 | >80 | 六角 | s115 |  |  | 107.2 |
| 502 | HSi68-1 | M30 | >80 | 六角 | s115 |  |  | 98.1 |
| 503 | HSi75-3 | HR50 | ≥5-25 | 圆形 | 9.3 | 528 | 12 | 175.6 |
| 504 | HSi75-3 | HR50 | ≥5-25 | 圆形 | 9.3 | 521 | 13 | 178.5 |
| 505 | HSi75-3 | HR50 | ≥5-25 | 六角 | s22 | 506 | 17 | 169.4 |
| 506 | HSi75-3 | HR50 | ≥5-25 | 六角 | s22 | 500 | 18 | 156.8 |
| 507 | HSi75-3 | HR50 | ≥5-25 | 正方形 | a25 | 509 | 16 | 146.2 |
| 508 | HSi75-3 | HR50 | ≥5-25 | 正方形 | a25 | 485 | 20 | 149.3 |
| 509 | HSi75-3 | HR50 | ≥5-25 | 正方形 | a25 | 481 | 21 | 145.7 |
| 510 | HSi75-3 | HR50 | 25-50 | 圆形 | 28.5 | 519 | 15 | 172.1 |
| 511 | HSi75-3 | HR50 | 25-50 | 圆形 | 28.5 | 511 | 16 | 167.2 |
| 512 | HSi75-3 | HR50 | 25-50 | 圆形 | 28.5 | 467 | 25 | 135.4 |
| 513 | HSi75-3 | HR50 | 25-50 | 六角 | s42 | 498 | 18 | 152.7 |
| 514 | HSi75-3 | HR50 | 25-50 | 六角 | s42 | 482 | 22 | 145.7 |
| 515 | HSi75-3 | HR50 | 25-50 | 圆形 | 49 | 500 | 18 | 143.8 |
| 516 | HSi75-3 | HR50 | 25-50 | 圆形 | 49 | 471 | 23 | 142.3 |
| 517 | HSi75-3 | HR50 | 25-50 | 圆形 | 49 | 455 | 27 | 136.8 |
| 518 | HSi75-3 | M30 | ≥5-25 | 圆形 | 13.74 | 432 | 18 | 140.2 |
| 519 | HSi75-3 | M30 | ≥5-25 | 圆形 | 13.74 | 428 | 20 | 121.5 |
| 520 | HSi75-3 | M30 | ≥5-25 | 六角 | s15 | 410 | 24 | 133.3 |
| 521 | HSi75-3 | M30 | ≥5-25 | 六角 | s15 | 381 | 31 | 117.1 |
| 522 | HSi75-3 | M30 | ≥5-25 | 六角 | s22 | 427 | 21 | 142.5 |
| 523 | HSi75-3 | M30 | ≥5-25 | 六角 | s22 | 399 | 27 | 126.7 |
| 524 | HSi75-3 | M30 | ≥5-25 | 六角 | s22 | 396 | 28 | 124.5 |
| 525 | HSi75-3 | M30 | 25-80 | 圆形 | 37.0 | 416 | 21 | 142.5 |
| 526 | HSi75-3 | M30 | 25-80 | 圆形 | 37.0 | 394 | 24 | 129.3 |
| 527 | HSi75-3 | M30 | 25-80 | 矩形 | 31.96\*45 | 370 | 30 | 106.4 |
| 528 | HSi75-3 | M30 | 25-80 | 矩形 | 31.96\*45 | 363 | 32 | 100.8 |
| 529 | HSi75-3 | M30 | 25-80 | 矩形 | 53.5\*66.0 | 401 | 23 | 127.8 |
| 530 | HSi75-3 | M30 | 25-80 | 矩形 | 53.5\*66.0 | 385 | 26 | 124.5 |
| 531 | HSi75-3 | M30 | >80 | 正方形 | a98 |  |  | 126.8 |
| 532 | HSi75-3 | M30 | >80 | 正方形 | a98 |  |  | 123.4 |
| 533 | HSi75-3 | M30 | >80 | 六角 | s105 |  |  | 105.8 |
| 534 | HSi75-3 | M30 | >80 | 六角 | s105 |  |  | 106.2 |
| 535 | HSi75-3 | M30 | >80 | 圆形 | 115.0 |  |  | 101.6 |
| 536 | HSi75-3 | M30 | >80 | 圆形 | 115.0 |  |  | 94.6 |
| 537 | HSi75-3 | M30 | >80 | 圆形 | 115.0 |  |  | 98.5 |