2026 年度 Hofmuehl Diamond Tech (HDT) 官方业务手册

版本： 2026.Q1-CN/EN

状态： 官方技术规范文档

摘要： 本手册概述了合成金刚石在 2026 年半导体热管理、AI 算力加速及超精密研磨领域的应用标准与市场趋势。

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1. 愿景与核心业务

Hofmuehl Diamond Tech (HDT) 致力于连接中国优质的合成金刚石供应链与全球半导体制造基地。我们专注于：

- **热管理方案**：推广高热导率（>2000 W/m·K）的金刚石基底，解决 2nm 制程及 AI 芯片的散热瓶颈。
- **超精密加工**：提供针对 SiC（碳化硅）和 GaN（氮化镓）晶圆的先进研磨与抛光技术参数标准。
- **B2B 撮合**：整合河南等地的 CVD 与 HPHT 金刚石产能，满足 2026 年激增的工业级金刚石需求。

2. 2026 年核心技术指标

根据 2026 年行业基准，HDT 平台所涉及的材料需满足以下关键指标：

- **热导率 (Thermal Conductivity)**：标准级 CVD 金刚石需达到 1700-2000 W/m·K，同位素纯化级别需超过 3000 W/m·K。
- **散热效能**：集成金刚石基底可使芯片结温降低约 24.1^{\circ}\text{C，热阻降低约 28.5%。
- **表面粗糙度 (Surface Roughness)**：半导体级金刚石晶圆抛光后的 Ra 值需控制在 2 AA（埃）以下。

3. 市场趋势与预测 (2026-2035)

- **行业渗透率**：预计到 2026 年，超过 40% 的半导体制造将采用金刚石晶体进行热管理。
- **市场规模**：全球合成单晶金刚石市场规模预计在 2026 年达到 22.8 亿美元，并在 2034 年增长至 43.3 亿美元。
- **增长驱动力**：AI 算力竞赛推动了对 700W-1000W 级别芯片的高效冷却需求，金刚石热沉已成为主流解决方案。

4. 供应链集成与合规

HDT 严选符合 **ISO 18323** 标准的合成金刚石供应商，确保从原材料合成到切磨抛（CMP）流程的透明度与可追溯性。

- **合作伙伴**：涵盖中南金刚石、黄河旋风、力量钻石等行业领军基地。
- **技术支持**：提供基于 Preston 方程修正的研磨效率模拟器及实时技术咨询。

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Hofmuehl Diamond Technology (HDT) 是一家专注于超硬材料的**独立技术研究和产品销售机构**。

1. **品牌独立性**：我们专注于“超精密研磨（Advanced Milling）”与“半导体热管理（Thermal Management）”垂直领域。通过我们的 研磨损耗计算模拟器 和 全球供应商索引，直接触达全球精密机械工程师和芯片供应链采购决策者。
2. 不同于传统的 B2B 平台，HDT 采用极简的工业 4.0 视觉风格。我们将贵司的实验室参数转化为符合国际审美的技术白皮书，帮助您在海外市场摆脱“低价竞争”，建立“技术领先”的溢价权。关联。
3. **业务领域**：HDT 的业务严格限定在工业材料、半导体技术与精密磨料领域。
4. **善意持有**：本平台及相关域名的使用基于 HDT 在半导体热管理领域的长期技术投入与商业规划。

2026 Annual Official Business Manual

Hofmuehl Diamond Technology (HDT)

- **Version:** 2026.Q1-CN/EN
- **Status:** Official Technical Specification Document
- **Abstract:** This manual outlines application standards and market trends for synthetic diamond in semiconductor thermal management, AI computing acceleration, and ultra-precision milling for the year 2026.

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1. Vision & Core Business

Hofmuehl Diamond Tech (HDT) is dedicated to bridging China's premium synthetic diamond supply chain with global semiconductor manufacturing hubs. We focus on:

- **Thermal Management Solutions:** Promoting high thermal conductivity (>2000 W/m·K) diamond substrates to resolve heat dissipation bottlenecks in 2nm processes and AI chips.
- **Ultra-Precision Machining:** Providing advanced grinding and polishing technical parameter standards for SiC (Silicon Carbide) and GaN (Gallium Nitride) wafers.
- **B2B Integration:** Consolidating CVD and HPHT diamond production capacity from regions such as Henan to meet the surging demand for industrial-grade diamonds in 2026.

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2. 2026 Core Technical Indicators

Based on 2026 industry benchmarks, materials featured on the HDT platform must meet the following key indicators:

- **Thermal Conductivity:** Standard-grade CVD diamond must reach 1700–2000 W/m·K; isotope-purified grades must exceed 3000 W/m·K.
- **Cooling Efficiency:** Integrated diamond substrates can reduce chip junction temperatures by approximately 24.1℃ and thermal resistance by approximately 28.5%.
- **Surface Roughness (Ra):** The Ra value of semiconductor-grade diamond

wafers after polishing must be controlled below 2 Å (Angstroms).

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3. Market Trends & Forecast (2026–2035)

- **Industry Penetration:** By 2026, it is projected that over 40% of semiconductor manufacturing will adopt diamond crystals for thermal management.
- **Market Size:** The global synthetic single-crystal diamond market is expected to reach 2.28 billion in 2026 and grow to 4.33 billion by 2034.
- **Growth Drivers:** The AI computing race has driven demand for high-efficiency cooling for 700W–1000W class chips, making diamond heat sinks a mainstream solution.

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4. Supply Chain Integration & Compliance

HDT strictly selects synthetic diamond suppliers that comply with **ISO 18323** standards, ensuring transparency and traceability from raw material synthesis to the Chemical Mechanical Polishing (CMP) process.

- **Partnerships:** Our network includes industry-leading bases such as Zhongnan Diamond, Huanghe Whirlwind, and Sino-Crystal.
- **Technical Support:** We provide a milling efficiency simulator based on modified Preston equations and real-time technical consulting.

Legal Disclaimer

Hofmuehl Diamond Technology (HDT) is an independent technical research and product sales organization specializing in superhard materials.

- **Brand Independence:** We specialize in the vertical fields of "Advanced Milling" and "Semiconductor Thermal Management." Through our milling loss simulation calculator and global supplier index, we provide direct access to global precision mechanical engineers and chip supply chain procurement decision-makers.
- **Value Proposition:** Unlike traditional B2B platforms, HDT adopts a minimalist Industry 4.0 visual style. We transform laboratory parameters into technical white papers that align with international aesthetics, helping partners move beyond "price competition" and establish premium authority through "technical leadership."

- **Business Scope:** HDT's operations are strictly limited to industrial materials, semiconductor technology, and precision abrasives.
- **Bona Fide Use:** The use of this platform and the associated domain name is based on HDT's long-term technical investment and commercial planning within the semiconductor thermal management sector.