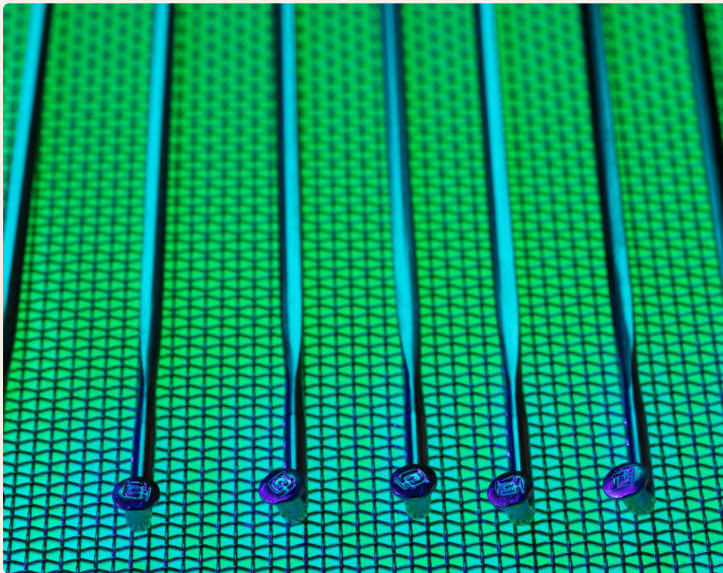


LORH LA SENG

Commercial Sole Company Limited

Premium ROM Streaks for Fused Silica & Crucibles

Vein-Quartz Feedstock for Downstream
Beneficiation



Sector reference — silicon wafer processing



LLS hand-sorted premium streaks — XRF-traced

Hydrothermal Vein

RIGHT GEOLOGY FOR HPQ BENEFICIATION

Fe₂O₃ 30 – 100 ppm

HAND-SORTED PREMIUM STREAKS

XRF Traceability

LOT-LEVEL CHEMISTRY DOCUMENTED

For HPQ refiners and crucible OEMs evaluating new ROM-grade vein-quartz feedstock for their own beneficiation pipeline

About Lorh La Seng

Lorh La Seng Commercial Sole Co., Ltd. operates hydrothermal vein-quartz deposits in Bolikhamxay Province, Lao PDR, dedicated to supplying **lump quartz feedstock** for ROM-grade hydrothermal vein quartz feedstock for downstream HPQ beneficiation and fused-silica refining. Our ROM ore is naturally high-purity (SiO_2 99.5–99.89%), with iron content already low enough for most downstream processes — without acid leaching or flotation. With a government-granted export quota of 120,000 MT/year (Mine 1) and a further 500,000 MT/year coming online in 2027 (Mine 2), we offer scale, consistency, and long-term supply security for HPQ refiners and crucible manufacturers across Asia.



Crystalline silica vein — low-inclusion starting material



Hand-sorting line — premium streaks separated, XRF-tagged per lot

Fused Silica & Semiconductor Suitability

End-Use	Purity Required	Customer-Side Beneficiation	LLS ROM Fit
Czochralski PV-grade crucibles	4N (99.99%)	Yes — acid leach + flotation	⦿ Premium streaks suitable as feedstock
Semi-grade poly-Si crucibles	4N5+ (99.995%)	Yes — full HPQ refining	⦿ Premium streaks only — customer beneficiates
Standard fused silica (lab, optical)	99.5%+	Optional	✓ Direct ROM use possible
Industrial silica refractory	99%+	No	✓ Comfortably (bulk ROM)
Fused-quartz lighting (lamp tubes)	99.95%+	Yes — moderate purification	⦿ Premium streaks as feedstock

ATIGA 0% Import Duty + 0% VAT: Lao PDR origin qualifies for zero import duty into Vietnam, Thailand, Indonesia, Malaysia, Philippines, and all ASEAN member states under the ASEAN Trade in Goods Agreement. Combined with 0% VAT for export-processing enterprises, **LLS feedstock delivers ~30% lower landed cost** versus domestic-sourced quartz across Southeast Asia.

Note — honest about scope: Lorh La Seng ships ROM. Downstream HPQ refining (4N / 5N) is the customer's domain — we deliver suitable feedstock, not finished electronic-grade material. The quartz starting material decides what beneficiation can achieve; hydrothermal vein quartz is the right material to start from. Hand-sorted premium streaks come with full XRF traceability per lot.

Why LLS for HPQ Refiners

1. Hydrothermal origin geology. The vein system itself is the right starting material — crystalline, dense, low-inclusion — for a beneficiation customer who controls their own purification line. Sedimentary sand brings iron baked in; vein quartz does not. **2. Premium streaks, transparently graded.** We sort and label the cleanest hand-picked streaks separately from bulk ROM, with full Guanlong XRF traceability per lot. No "average chemistry across the pile" — you buy the streak you tested. **3. Honest about what we sell.** ROM, not refined HPQ. Customers who run their own beneficiation pipeline find LLS economical because they don't pay refiner-margin on feedstock that they'll re-process anyway. **4. Sample-then-commit.** 50–500 kg sealed pilot lots from labelled streaks for your beneficiation trials before contract. Lot-traceable so production lots match the pilot. **5. Long-term feedstock partnership.** Capacity to support multi-year HPQ refiner offtake; willing to develop sector-specific QA protocol jointly. **6. Mine 2 expansion.** 500k MT/year additional capacity from 2027 includes selective premium-streak segregation built into the mine plan.



XRF lab — chemistry documented per lot for traceability

Target Customers & End Uses

Chinese Crucible OEMs

Hengtong, Heraeus China — quartz crucible feedstock for solar wafer industry

Korean Si-Wafer Industry

LG Chem, OCI Korea — fused-silica crucibles for poly-Si pulling

Japanese Fused-Silica Refiners

TOSOH Quartz, Shin-Etsu Quartz — premium feedstock evaluations

European HPQ Refiners

Sibelco, The Quartz Corp — vein-quartz feedstock alternatives

Refractory Industry

Saint-Gobain Refractory — fused-silica industrial refractory

Lamp & Lighting Quartz

Fused-quartz lamp tube manufacturers — moderate-purity feedstock

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