PolyPave Global Inc. | Technical Brief 2025

1. Executive Summary

PolyPave Global Inc. utilizes a proprietary **Reactive Polymer Stabilization (RPS)** process to convert post-consumer polymer waste (HDPE, LDPE, PP) into high-performance interlocking paving units. Managed by a licensed Ontario P.Eng., the technology addresses the structural limitations of traditional Portland cement in tropical and high-moisture environments.

2. Material Composition & Engineering

- **Binder Matrix:** Upcycled high-density and low-density polymers (70-80% post-consumer).
- **Structural Aggregate:** Locally sourced sand/fine aggregate (20-30%).
- **Additives:** Proprietary UV stabilizers and thermal modifiers to ensure structural integrity in high-heat (40°C+) environments.

3. Performance Benchmarks

Metric	PolyPave™ Standard	Industry Standard (Concrete)
Compressive Strength	**55 - 65 MPa**	25 - 35 MPa
Water Absorption	**< 0.1%**	5% - 8%
Impact Resistance	**High (Non-brittle)**	Low (Propensity for cracking)
Freeze/Thaw Stability	**Exceeds ASTM C67**	Standard
UV Degradation	**< 0.05% per decade**	N/A

4. The "Waste-to-Road" Micro-Factory Model

Our facilities are designed as modular, industrial units capable of processing **15,000 tons of plastic annually**.

- **Energy Efficiency:** Low-heat extrusion profiles reduce energy consumption by 40% compared to traditional brick kilns.
- **Quality Control:** Real-time sensor monitoring of melt-flow index and cooling rates to

ensure uniform density.

5. Environmental Impact

- **Carbon Offset:** Every 1km of PolyPave road diverts approximately **20 tons of plastic** from landfills.
- **Permeability Control:** While the stones are impermeable (preventing internal erosion), our interlocking design allows for controlled drainage to mitigate urban flooding.