Cruze (Pty) Ltd is provider of world-class value-add technologies to the civil construction and mining industries. Our focus is to provide cutting edge advancements to the existing road construction, road rehabilitation and road maintenance industry which are in line with long standing protocols to ensure that African roads are more cost effective, longer lasting, and are environmentally sustainable.

Cruze (Pty) Ltd was born out of the need to split the key areas of expertise within the group and expand upon the divisions of research and development and client-focused needs fulfilment of sales, site training and skills transfer. Both these departments put pressure on delivering solutions to our clients. The split was key to focus on developing a better understanding of changing environmental conditions experienced by clients, pavement design engineers and mines which allowed us to partner with some of the best research and in-field minds in the road design & construction industry.

In 2013, Cruze (Pty) Ltd was formed by Mark Wise, with the intent of becoming the continents leading soil solutions provider for Africa’s vast unpaved road network. Cruze began developing its local footprint within the Bafokeng region of South Africa in 2011 and now spans supply of its technologies internationally as far North as Nigeria, DRC, Zambia & Mozambique.

**Market Segments:**

Below are the key focus areas that our world class suite of technologies service:

- Soil stabilisation for new & rehabilitated pavement layers, parking lots, foundation layers & traffic bearing surfaces.
- Sealing or waterproofing of compacted or non-compacted gravel layers and gravel shoulders to improve weathering and ensure gravel preservation.
- Sealing or waterproofing concrete substrates like dams and slabs, and bricks for reduced weathering and erosion using our nanotechnology.
- Dust suppression using nanotechnology applied to above and below ground roadways to reduce road dust of haulage roads
- Routine road maintenance (RRM) products that have been locally designed to out-perform existing products ensuring more road for Rand.
- Prime and tack coat application nanotechnology
- Skills Transfer & Site Training. We do not supply our technology without the in-depth product training of both off and on-site.
BEE Credentials & Company Footprint:

Cruze (Pty) Ltd is a Level 4 Black Empowered contributor with offices in Bryanston, Johannesburg. Both our research and development facility and manufacturing plant are located in the Germiston area in Gauteng.

Our research into soil stabilization and dust suppressants began in the early 1990’s. Local and international nanotechnology & polymer manufacturers and suppliers have contributed to the successful design of the GE-NANO formula.

The nano-modified emulsions we have developed are completely unique and have been specifically designed to stabilize a wider variety of materials without the use of cement thus not introducing any stabilization or thermal cracking into the layer whilst enhancing the compressive and tensile strengths of the compacted material. All of the above can be achieved while using lower dosage rates of bitumen emulsion liquid than conventional BSM designs.
Soil stabilization became an urgent need during war times as large convoys of supplies, equipment and people were required to be deployed across vast stretches of land. Various technology options were developed to harden different soils across different terrains and weather patterns thus soil standards and specifications were developed that are used to this day, like the California Bearings Ration (CBR) & the Plasticity Index (PI). Experience has shown that the chemical formulation of the technology plays the pivotal role in the bonding of the technology to the material type affecting their durability and performance of the layer under load during fluctuating environmental conditions.

Our Products:

**GE-NANO** is comprised of a nano-modified bitumen emulsion NME, which has been combined with purpose-built, aqueous nano-modified liquid technology creating a high-strength soil stabilizer.

1. Soil Stabilization for layer works – NME’s have been designed for surfaced pavements, foundations, parking lots, airstrips and unpaved roadways etc
2. Pavement Plasters – instant temporary wearing course application
3. Pot-Hole & Patching repairs – using selected bitumen coated aggregate & other materials
4. Surface Waterproofers & Enrichment seals – extending the life of the asphalt and gravel wearing course
5. Dust Suppression – for both above & below ground load-bearing surfaces as well as tailings dams

Nano Technology

Cruze (Pty) Ltd has included in their basket of road product offerings, a series of world-class nanotechnology products which if used correctly will advance the state and longevity of the pavement and road surface considerably:

- **GE-NANO** – is the nano-modified bitumen emulsion used to stabilize soil for pavement layers
- **NanoDust** – highly efficient surface spray dust palliative mixed with bitumen emulsion
- **NanoSil** – breathable soil waterproofing for road bases and road surfaces
- **NanoPrime** – quick penetrative priming product which dries in 1-2 hours causing no pick-up
- **NanoTak** - Tackless Tack Coat with no nozzle clogging
- **NanoDust** – waterproofing for structures comprised of concrete and brick substrates
- **NanoBond** – highly efficient surface spray dust palliative mixed with water
- **NanoCruzt** – highly efficient surface spray dust palliative mixed with water to form a waterproof crust
Training

Our focus on skills transfer and off/on-site training is tantamount to the successful implementation of our technology in the field.

We have strong skills and experience to grow knowledge in the application of our products as well as the using our technology to empower both individuals and SMME’s to maintain rural and township road networks thereby sustaining employment and future opportunities.

We have a very stringent and thorough on-site training program. This process starts by a site attendance and induction process, whereby every team member that could influence the performance of the pavement layer, will be identified and trained in a training room on the full scope of the product, from off-loading, to storage to mixing, to application and compaction as well as trouble shooting. We then perform on-site training during the actual construction for between 3 – 5 days using our Site Control Manuals.

We train each individual on how they affect the product and the importance of their role in the success of the products performance. We then provide hard and soft copy support as well as telephonic support if needs be and certificates of completion of the Skills Transfer Process. We then co-ordinate with the site laboratory after the section has been completed for that day.

We have successfully completed projects, provided trials & transferred skills to contractors in the following regions for the following Road Agencies:
Past Projects Where Our Products Have Been Used Successfully:

<table>
<thead>
<tr>
<th>Surface Type</th>
<th>Location</th>
<th>Year</th>
<th>Area Size</th>
<th>Road Condition</th>
<th>No of Vehicles Per Day</th>
<th>% GE-NANO Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>19mm Cape Seal</td>
<td>Matola-Mozambique</td>
<td>2002</td>
<td>10000m²</td>
<td>Good</td>
<td>5160 Vehicles P/day</td>
<td>0.8lt m²</td>
</tr>
<tr>
<td>Cape Seal</td>
<td>Sutherland-Eastern Cape</td>
<td>2005</td>
<td>13km</td>
<td>Good</td>
<td>175 Vehicles P/day</td>
<td>0.3lt m²</td>
</tr>
<tr>
<td>19mm Cape Seal</td>
<td>Port Shepstone-Kwa-Zulu</td>
<td>2007</td>
<td>8km</td>
<td>Good</td>
<td>950 per/day</td>
<td>2lt m²</td>
</tr>
<tr>
<td></td>
<td>Natal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2lt m²</td>
</tr>
<tr>
<td>Paved</td>
<td>Refreddy - Royal Bafokeng</td>
<td>2013</td>
<td>1.8km</td>
<td>Good</td>
<td>Low Traffic - Township Rds</td>
<td>1lt m²</td>
</tr>
<tr>
<td>Paved</td>
<td>Tlapa East - Royal Bafokeng</td>
<td>2013</td>
<td>2km</td>
<td>Good</td>
<td>Low Traffic - Township Rds</td>
<td>1.5lt m²</td>
</tr>
<tr>
<td>Gravel Road - Unsealed</td>
<td>Mabitse - Royal Bafokeng</td>
<td>2011</td>
<td>1km</td>
<td>Base very strong</td>
<td>Low Traffic</td>
<td>1.5lt m²</td>
</tr>
<tr>
<td>Sealed</td>
<td>Boksburg - Housing Estate</td>
<td>2013</td>
<td>2500m²</td>
<td>Good</td>
<td>Low traffic - Residential Development</td>
<td>1lt m²</td>
</tr>
<tr>
<td>Gravel Road - Unsealed</td>
<td>DRC - Mine Track</td>
<td>2014</td>
<td>50 000m²</td>
<td>Good</td>
<td>Low traffic - Mine track</td>
<td>2/ltm²</td>
</tr>
<tr>
<td>Gravel Road - Unsealed</td>
<td>Zambian Copper Mine</td>
<td>2015</td>
<td>25 000m²</td>
<td>Good</td>
<td>High Traffic - Mine Haulage Road</td>
<td>2/ltm²</td>
</tr>
<tr>
<td>Access road with pavers</td>
<td>Kyalami Race track ring Rd for WSP</td>
<td>2015</td>
<td>1 000m²</td>
<td>Good</td>
<td>Low volume Access road</td>
<td>1kg/m³</td>
</tr>
<tr>
<td>Engen - Forecourt - 40mm asphalt</td>
<td>Engen Kroonvaal - Forecourt base repair</td>
<td>2015</td>
<td>1 000m²</td>
<td>Good</td>
<td>High Traffic - Garage forecourt</td>
<td>3,9/ltm²</td>
</tr>
<tr>
<td>Base Rehabilitation with double seal</td>
<td>Thohoyandou - Roads Agency Limpopo (RAL)</td>
<td>2015</td>
<td>36 500m²</td>
<td>Very Good</td>
<td>Medium Traffic</td>
<td>2/ltm²</td>
</tr>
<tr>
<td>Base Rehabilitation with 50mm Asphalt</td>
<td>N14 - Johannesburg - Dept Roads &amp; Transport Gauteng</td>
<td>2016</td>
<td>2700m²</td>
<td>Very Good</td>
<td>Very High Traffic</td>
<td>0,5% NS + 1%</td>
</tr>
<tr>
<td>Temporary Deviation</td>
<td>Mount Frere - Eastern Cape Dept of Roads &amp; Public Works</td>
<td>2016</td>
<td>7000m²</td>
<td>Very Good</td>
<td>Low Traffic - Rural Roads</td>
<td>2/ltm²</td>
</tr>
<tr>
<td>New Sub base and Base Construction with 30mm Asphalt</td>
<td>K46 - William Nicol Extension - Gauteng Dept. of Roads &amp; Transport</td>
<td>2017</td>
<td>40 000m³</td>
<td>In construction</td>
<td>High volume Road</td>
<td>25L/m3</td>
</tr>
</tbody>
</table>
Cruze strives to become the leader in providing solutions to clients’ civil construction pavement problems whilst ensuring long-lasting collaborative partnerships with all of its stakeholders.
Client List:
Contact Details

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- Website: www.cruzeholdings.co.za

R & D Office, Manufacturing and Batching Plant - Gauteng

- Germiston