Presentation on use of 
“SoilTech MK-III”
3rd Generation Nano Polymer Stabilizer
For All types of Hard Stands
India Polyroads Private Limited (IPPL) manufactures high polymer stabilization products for the road construction industry under technical collaboration of Polymer Pavements, South Africa. Have been active in development of polymers for road stabilization for more than 15 years and formed strategic alliance with leading international polymer companies that are at the forefront of nano-polymer technology.

IPPL started its operation in India since last 5 years. Has Corporate office in Gurgaon with branch offices in major metro cities in India with state-of-art soil test laboratory in Gurgaon. Manufactured indigenously in Roorkee with a capacity to stabilise 8000 lanes Km. of roads per annum.
Polymer Stabilizer **SoilTech MK-III**

Polymeric materials are characterized by long chains of repeated molecular units and give the plastic an amorphous structure having good impact strength and toughness.

**SoilTech MK-III** is a polymer which uses water as a carrier to lubricate the fine particles at molecular level which under mechanical compaction get interlocked.

More the compaction the stronger the soil stabilization as the water between the soil particles evaporate leaving a film layer preventing water ingress.

www.ippl.net.in
Conventional Stabilizers:

Stabilization of the base layer with Fly Ash, Lime, Cement etc. has made traditional designed roads very strong with good longevity. Notwithstanding, the good properties of traditional designed roads, very little progress has been made during the last 100 years to utilize technology in reducing costs associated with bringing in borrow-pit or quarry materials for road construction.
Eco Green SoilTech MK-III:

Reduces Construction Time Substantially

Reduces Quarry Materials Significantly

Reduce Construction Cost Subsequently

Environment Friendly Green Product

Exceeds all strength parameters of standard Codes of Practice.
Eco Green Alternate Stabilizer:
Severe environmental damage is caused by extracting aggregate from quarries. Many countries are limiting the use of quarries and are actively researching and encouraging to consider the use of alternative materials such as Polymer Base Stabilizer as alternate design of roads. SoilTech MK-III is one of them offering 92% reduction in CO₂ emissions as compared to other Stabilization:

Carbon Footprint

Fuel Consumption Emission

Source
- Poly roads Pavements
- Other Stabilization

www.ippl.net.in
Stabilization Technique:

SoilTech MK-III act to preserve the ‘adequate’ any strength of water susceptible gravels by a process of ‘External’ & ‘Internal’ water proofing. This involves creating a hydrophobic soil matrix between the soil/stones. Which reduces permeability and so limits water ingress (‘External’ water proofing) also, polymer are so strongly attached to the soil particle, it competes successfully with water to coat them. Thus, the softening and lubricating effect of any moisture that does enter the pavement is much reduced. (‘Internal ‘waterproofing).
### Associated Terms in Stabilization:

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adhesion</td>
<td>Act as glue in bonding particles.</td>
</tr>
<tr>
<td>Adsorption</td>
<td>To attract atmospheric moisture to reduce dust emission.</td>
</tr>
<tr>
<td>Dilatant</td>
<td>To dispel water when compacted under vibration.</td>
</tr>
<tr>
<td>Dispersant</td>
<td>Separates fine particles from each other.</td>
</tr>
<tr>
<td>Ionic</td>
<td>It’s bonding from a reversing of the electrostatic charge from some soil particle.</td>
</tr>
<tr>
<td>Surfactant</td>
<td>To reduce surface tension.</td>
</tr>
</tbody>
</table>
Design & Technology

- **SoilTech MK-III** is the third Generation Road Stabilizing polymer & Dust Suppressant.

- Widely used by the US Military in Afghanistan, South Africa, Australia, Middle East, and Indian Projects.

- The Product gains excellent strength from mechanical compaction and an excellent solution for heavy transmitted traffic roads and hard stands.

- “Substantially increases Base/ Sub-base layer strength, due to INCREASE in substantial a) **Unconfined Compressive Strength (U.C.S)**, b) **Resilient Modulus** & c) **California Bearing Ratio (C.B.R)**.
India Polyroads Pvt. Ltd.

……..Road to a Green Future

Design & Technology : (Typical Cross Section) :

Traditional Design Vs Polymer Stabilized Road (Alternate Design)

- SDBC
- DBM
- WMM
- GSB
- Sub Grade

- SDBC
- SSB
- GSB
- Sub Grade

www.ippl.net.in
Soil Stabilisation technique uses almost 60% existing soil and only 40% smaller aggregates in contrasts to usages of 100% aggregates as in conventional crust making method.

- Substantially increases the soil strength over 300%.
- Stabilized Base Layer has E-modulus of more than 3000 MPa.
- Road can be designed with reduced Bituminous and Base Layers.
- Thus; Reduction in Quarry/ Mining of Aggregate is Substantial
- Reduction in Crust Layers Hence; reduction in construction time.

**Key Benefits SoilTech MK-III:**

- [www.ippl.net.in](http://www.ippl.net.in)
Key Benefits SoilTech MK-III:

- Resulting in Lower Costs – Less equipment wear & tear.
- Stabilization process simple- No Specialized equipment required.
- Exceeding AASHTO structural load bearing axle capacity
- Environmental friendly and a green product, (Much less CO₂ emission.)
- Toxicity effect is Zero. (pH value 8-9)
Execution Methodology

SSB Material Dumping at Site
India Polyroads Pvt. Ltd.

……..Road to a Green Future

SSB Material Spreading

www.ippl.net.in
India Polyroads Pvt. Ltd.

........Road to a Green Future

Mixing on the SSB stretch before SoilTech used

www.ippl.net.in
India Polyroads Pvt. Ltd.

.......Road to a Green Future

Application of SoilTech MK-III on the SSB stretch
Pulverization on the SSB stretch after SoilTech used
Profiling and grading the top surface of SSB Layer
India Polyroads Pvt. Ltd.

.......Road to a Green Future

Compaction with 8-12 Ton Vibratory Roller

www.ippl.net.in
India Polyroads Pvt. Ltd.

.......Road to a Green Future

Traffic Movement on Finished Layer
India Polyroads Pvt. Ltd.

.......Road to a Green Future

COMMERCIAL HIGHLIGHTS:

Savings per Km. of Road Construction

- Man Power (Man Days)
- Machinery Power (Hours)
- Aggregate (Cum)
- Bitumen (MT)
- Construction Time (Day)

- As per Conventional Crust
- As per IPPL’s Suggested Crust

www.ippl.net.in
India Polyroads Pvt. Ltd.

........Road to a Green Future

Industrial Recognition

TEST RESULTS FROM PREMIUM ORGANISATIONS

- Without SoilTech MK-III
- CRRI New Delhi with Soil Tech MK-III
- IIT Kharagpur with SoilTech MK-III
- CSIR, South Africa with SoilTech MK-III

www.ippl.net.in
India Polyroads Pvt. Ltd.

Accreditation & Membership:

- Accredited by Indian Road Congress
- Technology recommended and published in IRC Highway Research board bulletin 2010-11
- Tested and developed (IRC Guideline) from I.I.T Kharagpur
- Tested at C.R.R.I New Delhi

www.ippl.net.in
India Polyroads Pvt. Ltd.

......Road to a Green Future

IRC Accreditation

www.ippl.net.in
India Polyroads Pvt. Ltd.

........Road to a Green Future

Membership

Environmental Membership

International Erosion Control Association

Member of:

The Australian Stabilization Industry Association

www.ippl.net.in
India Polyroads Pvt. Ltd.

...Road to a Green Future

Application Opportunity Area

- Highways & Express ways
- Hill, Urban & Rural Roads
- Unpaved Roads
- Railway Embankments
- Airstrips / Helipads

www.ippl.net.in
India Polyroads Pvt. Ltd.

…….Road to a Green Future

Application Opportunity Area

• Mine Haul Roads & Industrial Plants
• Container Depots & Rly Yards
• Parking Lots & Stadium.
• Ware House & Coal Handling Areas

www.ippl.net.in
India Polyroads Pvt. Ltd.

........Road to a Green Future

Other Stabilizing products:

- Asphalt Tech
- PotTech
- Dust Tech

www.ippl.net.in
IPPL VISION:

Upholding excellent innovative capabilities and unbeatable quality in technology and workmanship for a greener, cleaner and faster future of mankind, we contemplate a world equipped with a most advance and sustainable road work.
IPPL MISSION:

In the coming 5 - 7 years, we intend to be one of the pioneer polymer stabilization product companies with the most advance technology forward looking workforce and power to inno
India Polyroads Pvt. Ltd.

.......Road to a Green Future

Thank You

India Polyroads Private Limited
1st Floor, Plot no- 115
Sector- 44
Gurgaon- 122 002
Haryana, India

www.ippl.net.in