CATALOG OF PRODUCTS & TECHNOLOGIES FOR ROAD CONSTRUCTION

WWW.CANTAT-ASSOCIATES.COM
Canadian company **Cantat Associates Inc.** is a global distributor of world leading road construction products, technologies and equipment, designed to provide a complete solution for road construction and maintenance companies in their production and execution operations, with a line of materials and equipment designed to produce the best results and attain the highest quality.

We represent some of the leading developers and producers of road construction products and equipment in the field, allowing us to provide not only the product, but as importantly complete technical support and service to our customers and distributors in every step of the way. We represent such technologies, as the Perma Patch and Evotherm 3G additives for cold mix and warm mix asphalt production, mobile and stationary asphalt plants, crack sealants and crack-sealing kettles, emulsion plants and technologies, de-icers for airports, roads and railroads and others.
**McAsphalt Perma Patch** is a year-round all-weather road repair and pothole patching technology, can be used at temperatures from -30 °C to +49 °C both on extremely cold winter days and will perform just as well on hot and rainy days.

**McAsphalt Perma Patch** is a uniquely designed paving material that offers a wide range of road and street repair applications, specifically designed to endure the most severe weather conditions.

**McAsphalt Perma Patch** does not require emulsion tack coat and can be resurfaced or overlaid thanks to its compatible materials and its durable components.

**McAsphalt Perma Patch** will enable your pavement maintenance personnel to complete a wide range of repairs. The permanent repair to potholes, wide cracks, utility cuts, road edging and emergency road construction create a universal and flexible material for use in your road maintenance budget.

**McAsphalt Perma Patch** is completely adaptable to all paving equipment; however, it may be easily installed using a shovel and simple compaction. This long-lasting material has a 2-year storage life in uncovered stockpiles outdoors and indefinite life in bags, pails or drums. It is an ideal pavement product for streets, highways, airport runways, and parking areas and is instantly ready for traffic flow after paving.
**McAsphalt Perma-Patch as alternative to traditional Hot Mix Asphalt**

<table>
<thead>
<tr>
<th></th>
<th><em>Perma Patch Cold Mix Asphalt</em></th>
<th><em>Traditional Hot Mix Asphalt</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Influence on traffic</strong></td>
<td>Insignificant obstruction for very short periods of time</td>
<td>Large sections of road blocked for an extended period of time</td>
</tr>
<tr>
<td><strong>Labour costs</strong></td>
<td>Minimal</td>
<td>Significant, requires multiple teams and heavy machinery</td>
</tr>
<tr>
<td><strong>Road opening for traffic</strong></td>
<td>Immediate</td>
<td>Delayed</td>
</tr>
<tr>
<td><strong>Weather dependency</strong></td>
<td>None</td>
<td>Can only be used in warm weather conditions</td>
</tr>
<tr>
<td><strong>Energy consumption</strong></td>
<td>None</td>
<td>Significant, due to the required heating of the material</td>
</tr>
<tr>
<td><strong>Production and paving operations</strong></td>
<td>Year-round</td>
<td>Seasonal</td>
</tr>
<tr>
<td><strong>Environmental effects</strong></td>
<td>Environmentally friendly, minimal greenhouse effect, no waste</td>
<td>Significant greenhouse effect, waste management problems</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>Can be stored outdoors for 24 months, or indefinitely when packaged in bags.</td>
<td>None, leftovers must be removed or utilized within hours</td>
</tr>
</tbody>
</table>

*Cold Mix Asphalt as main asphalt pavement for roads of 2nd and 3rd category*
Airport runways and taxiways

The use of the **Perma Patch** cold mix asphalt technology for pothole repair is the easiest, most reliable and cost-effective method to fix potholes in airport runways, taxiways and aprons.

Waterproofing Applications

**Perma Patch** Cold Mix Asphalt is commonly used for waterproofing of flat rooftops of industrial buildings, public parking lots and oil terminals.
Evotherm 3G Warm Mix Asphalt

The Warm Mix Asphalt (WMA) technology introduces a paving alternative that delivers longevity and performance – while dramatically reducing emissions and fuel demands. Our innovative technology is designed to improve mixing, coating, workability, compaction & adhesion of asphalt mixes. WMA is a long-lasting paving solution that significantly lowers temperatures for asphalt production and application. This means major reductions in fuel consumption, energy requirements and environmental impact.

The WMA Technology is offered by us in the form of the water-free form additive Evotherm 3G, which can be introduced at the mix plant or asphalt terminal. This additive generally lowers plant mix temperatures by up to 50°C (122°F).

Warm mix asphalt – can be produced at any asphalt plant by adding 156 grams (per 1 ton of asphalt mix) of “Evotherm 3G” chemical additive to the bitumen. Warm mix asphalt is used as main asphalt pavement for any road category (highways, 1st, 2nd, and 3rd road categories) and can be placed at any environment temperatures.

Characteristic advantages of Evotherm 3G Warm Mix Asphalt:

- Easy to incorporate product into the asphalt production process – using existing equipment.
- The product is an additive for production of warm asphalt mixes, with superior adhesion and cohesion properties compared to traditional hot mix asphalt.
- The operation of the product as an adhesive additive yields both active and passive adhesion - to ensure good coating of the aggregate in the mixing process, as well as to extend the service life of the road pavement.
- The use of the product does not lead to change of bitumen gradation.
- Moisture is extruded from the blend with the use of the product.
- The product composition is selected in such a way, that it meets the requirements of its exploitation in a wide spectrum of mix and aggregate types.
Other advantages, achieved with the use of “Evotherm 3G Warm Mix Asphalt”

- Decreases the production temperature of hot mixes by at least 50°C.
- Improves the adhesion of bitumen to the aggregate.
- Increases cohesion and, consequently, reduces rutting.
- Allows exclusion of cement, limestone and mineral filler.
- Actively extrudes moisture from the aggregate and guarantees high water resistance.
- Simplifies placement of asphalt by reducing temperature and pickup by the asphalt compactor drums.
- Reduces thermal load on bridges.
- Improves the plasticity of the asphalt under low temperatures.
- The liquid additive is easy to dose at the asphalt plant.
- Does not modify bitumen grade based on penetration, slows the aging process of bitumen.
- No need to modify the asphalt formula, simply add the additive.
- Aids to asphalt placement and compaction.
- Allows placement and compaction temperatures reduction.
- Extended haul distances to far away objects.
- Reduces emissions of CO2, CO, SO2, NOx, and other harmful fumes.
- Extends the paving season.
- Allows energy savings of more than 55%.
- Odourless.
- Allows RAP (recycled asphalt) utilization of up to 45%.
- The service life of a Warm mix asphalt pavement is extended by 1.5 - 2 times with compliance to the asphalt mix production process technology, as recommended by Cantat Associates Inc.
Mobile Asphalt Plants

Modular, portable asphalt plants by WRT Equipment Ltd. (Canada), designed to produce cold asphalt mixes with discharge temperatures of 50-60°C, warm asphalt mixes at 125°C and hot asphalt mixes at 150-160°C.

Aggregate heating can be done via either of two types of fuel: fuel oil (diesel) and/or gas (natural gas), depending on the customer preferences (with a diesel burner or a combination diesel & natural gas burner).

The spiral-shaped burner, allows a two-fold reduction in fuel consumption per ton of finished asphalt mix.

<table>
<thead>
<tr>
<th></th>
<th>60 ton/hr</th>
<th>110 ton/hr</th>
<th>160 ton/hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2 or 4 cold feed bins, struck capacity (heaped capacity)</td>
<td>12 tons (15 tons)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Gathering/weighing conveyor with load cell | width 610 mm
weighing accuracy 0.5-1% |
| Drum mixer          | diameter 1.37 m
length 7.31 m | diameter 1.57 m
length 7.92 m | diameter 1.83 m
length 8.53 m |
| Burner output       | 8176 kWh  | 11810 kWh  | 14448 kWh  |
| Fuel pump – fuel consumption, L/hr (L/ton asphalt mix) | 386 (6.43) | 707.8 (6.43) | 1029 (6.43) |
| Venturi scrubber    | diameter 1.52 m
length 2.44 m | diameter 1.73 m
length 3.05 m | diameter 1.83 m
length 3.66 m |
| Drag conveyor, batcher for truck loading, capacity | 700 kg | 1000 kg | 1300 kg |
| Plant control system | Automatic (with optional computer) |
| Burner control system | Flame control and adjustment |
| Blend control, raw material feed | Digital, automatic |
Portable modular cold mix plant

The world’s first asphalt plant designed for cold mix asphalt production:
- Mobile or stationary for placement in a closed facility
- Aggregate heating temperature 47-68 °C
- Production capacity range from 7 to 30 tons per hour (can be increased to 45 TPH with burner upgrade)
- Minimal fuel consumption - only 1 L/ton of cold asphalt mix!
- Easy assembly, start-up and maintenance.
- Simply design, requiring only one operator and one loader.
- High operational efficiency, allowing significant reduction in energy and fuel costs, guaranteeing low cost per ton of asphalt mix.
- Can operate on various types of fuel (diesel, natural gas, mazut).
- Compact design, allowing reduction in transportation costs to any region in a single container.
Main advantages of the WRT plants

- **Mobility**

Initial startup of the WRT plant with configurations and supervised installation, takes no more than 2-3 days, with additional training of on-site personnel.

- **Modularity (interchangeability)**

The plants uses a design based on individual modules, allowing retrofitting the plant with additional (optional) components, when needed. For example, WRT’s cold mix plant, with production capacity of 7-30 TPH, can be retrofitted with additional modules, allowing it to produce also warm and hot asphalt mixes, with increased capacity of 45 TPH.

- **Economy**

  - **Fuel consumption** is one of the lowest, thanks to the continuous production flow technology (6.43 liters per 1 ton of hot/warm asphalt mix, 1.0 liter per ton of cold asphalt mix), since both heating and mixing virtually occur all at once – the material mixing zone is located in the 3rd portion of the drum mixer. Consequently, the heat, dispersed in the drum mixer does not release into the atmosphere and continues to heat the mix. The fuel consumption of batch plants, in comparison, is within the range of 11 – 13 liters per 1 ton of asphalt mix, which surpasses the fuel consumption of WRT plants by 71 – 102 %.

  - **Energy consumption** in these plants is also among the lowest. For example, the energy consumption of WRT’s 60 TPH plant – is only 150 kW/hr. Batch plants from other manufacturers stay within the range of 230 - 260 kW/hr, which surpasses the energy consumption of WRT plants by 53 -73 %.

  - **Reliability**: The plant contains a minimal quantity of high-wear components, which dramatically decreases the costs of purchasing replacement parts and allows full-scale plant operation during the peak season, without having to halt production for repairs and/or part replacement.

  - **The Drum-Mix technology**: Thanks to its unique drum-mixer/heater, the material mixing time is 40 seconds, as opposed to batch-type plants where the mixing time is only 25 seconds. This enables the production of SMA while maintaining the same production capacity.

- **Asphalt mix quality**

The plant is fitted with an innovative, accurate weigh batching system, allowing batching of aggregate materials with accuracy of ± 1.0 %, bitumen ± 0.5 % and mineral filler ± 2-3% while maintaining continuous asphalt mix discharge. An additional advantage is that mixing takes place within an inert environment without access to oxygen, which eliminates bitumen oxidation.

*In the end, you are getting a: MOBILE, MODULAR PLANT WITH THE LOWEST PRODUCED ASPHALT MIX COST AND SUPERIOR QUALITY!*
**Joint and Crack Sealing**

**Crack sealing** is a localized treatment method used to prevent water and debris from entering cracks in asphalt and concrete pavements, to extend the service life of the pavement by preventing the further deterioration of the pavement structure and sub-base.

**Beram 3060 LM** is a high performance, hot applied, single component extra low modulus joint and crack sealant. Beram 3060 LM is a very soft sealant that offers excellent low temperature bonding properties, while still maintaining a high degree of resiliency to reject incompressibles. The product is recommended for use in any climate conditions (environment temperatures range from -50 to +80 °C).

**Beram 3060 LM** is recommended for the large scale sealing of joints and random cracks in Portland cement concrete and asphaltic concrete pavements in cold climate areas. Beram 3060 LM was specifically formulated to provide extra protection against low temperature expansion and repeated freeze thaw cycles.

Common applications:
- Road and highway maintenance and repair
- Bridge expansion joint sealing
- Airport and airfield joint sealing
- Wide range of waterproofing applications
### The “Beram” Series of Joint and Crack Sealants

<table>
<thead>
<tr>
<th><strong>Beram 3060 LM (extra low modulus)</strong></th>
<th>Intended for both extremely cold and extremely hot weather applications in either asphalt or concrete pavements. Able to withstand up to 200% expansion at -29°C. Excellent adhesion and cohesion properties while staying within the modified resiliency of 30-60%. Lowest (tested) temperature without fracture: -38°C (or lower)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beram 190</strong></td>
<td>Polymer modified crack sealant able to withstand moderate to low level expansion and contraction at -18 °C. Good adhesion and cohesion properties. Lowest temperature without fracture: -31°C</td>
</tr>
<tr>
<td><strong>Beram 190 PM</strong></td>
<td>Polymer modified crack sealant designed with no crumb rubber content, able to withstand moderate expansion and contraction at -18 °C. Good adhesion and cohesion properties.</td>
</tr>
<tr>
<td><strong>Beram 195</strong></td>
<td>Polymer modified crack sealant designed to withstand colder more extreme expansion and contraction at -29°C. For use in either asphalt or concrete pavements. Better adhesion and cohesion properties. Lowest temperature without fracture: -34°C</td>
</tr>
<tr>
<td><strong>Beram 195 LM (low modulus)</strong></td>
<td>Intended for applications that experience cold weather extremes colder than -29°C. Due to the nature of Low Modulus materials it is able to withstand up to 200% expansion while keeping excellent adhesion &amp; cohesion properties intact. Lowest (tested) temperature without fracture: -38°C (or lower)</td>
</tr>
<tr>
<td><strong>Beram Direct Fire (DF)</strong></td>
<td>Designed for applicators using Direct Fire Melters. Beram DF is both adhesive and cohesive in nature and is usually used in moderate climates that experience cold weather of -18 °C. Beram DF should be stirred or agitated while melting.</td>
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</tbody>
</table>
Certification of Beram 3060 LM joint and crack sealant for airports and airfields, roads, bridges

On March 2, 2012, Cantat Associates INC together with McAsphalt Industries LTD and representatives of the "RCC OPITNOE" certifying agency for industrial products in construction, namely:

Deputy Chair of the "RCC OPITNOE" certifying agency Mitrokhin V.S. and Deputy General Director of Innovation and Research of JSC "LENAEROPROJECT" Vtorushin V.N., directors of company "Koronker", Tretyak T.M. and Khomiakov M.E., conducted a production analysis and evaluation of the quality assurance of "Beram 3060 LM" joint and crack sealant for airports, roads/highways, bridges in the manufacturing facilities of McAsphalt Industries LTD (Canada).

Following this certification, the Beram 3060 LM joint and crack sealant, manufactured in Canada, will be recommended for use in joint and crack sealing operations in airports, roads/highways, bridges in the territory of the Russian Federation.
Stepp Crack-Sealing Kettles

Fully self-contained, trailer-mounted, oil-jacketed kettles from Stepp Manufacturing (USA) are used to melt and apply rubberized crack sealing and waterproofing compounds, during road maintenance operations on asphalt and concrete pavements.

We offer 2 types of kettles:

- Compact vertical kettles (OJK-V series): available sizes 284 and 473 liters
- High-capacity kettles (OJK-H series): available sizes 719, 1060 and 1665 liters

The Stepp crack-sealing kettles have acquired their reputation as being the most simple to use, reliable, efficient and easy to maintain machines on the market.

**Bitumen Emulsion and Modified Bitumen Plants**

**Cantat Associates Inc.** and **McAsphalt Industries Limited** carry out full process and plant engineering and turnkey start-up of bitumen emulsion plants (cationic and anionic), with subsequent production of “Liquid-Rubber” waterproofing material from anionic bitumen materials, as well as modified bitumen.

The Liquid Rubber, produced using anionic emulsion, is used in the waterproofing of underground and basement premises, roofs and other building structures. Liquid Rubber is also used to coat metal structures, to prevent rust formation, and pipelines used in by the gas and oil industry.
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