

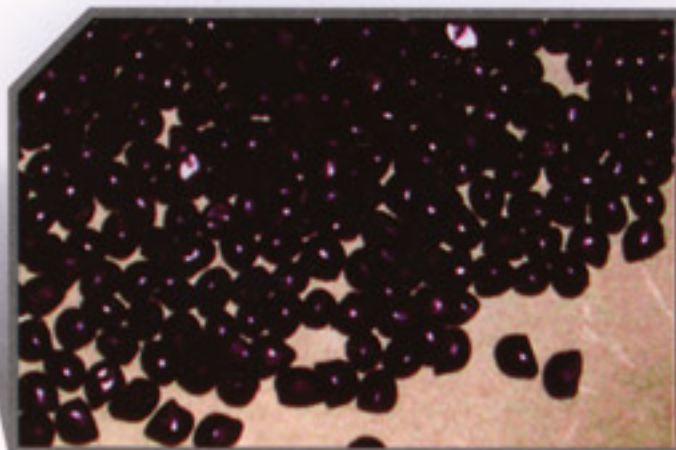


Lake Asphalt of Trinidad and Tobago (1978) Limited



# NEW WARM MIX TECHNOLOGY

TLA-X is a warm mix additive providing grade bump to the next higher level with load bearing enhancement and environmental benefits.





State of the Art Pellet Plant ▲

Trinidad Lake Asphalt (TLA) has been used for over 80 years in niche high performance applications such as Airport Runways, Shipping Harbor Wharf Sides, Highways, Fuel Resistant Applications and many others throughout the world.

**TLA is now in a proven Warm Mix Technology to meet Customer and Industry needs.**



Pellet used on New York Bridge (June 2008) ▲

TLA has traditionally been a proven binder stiffening additive to enhance pavement load bearing properties and prevent rutting and wear and tear to reduce pavement maintenance and prolong pavement life.

This new TLA-X Warm Mix technology has been especially developed to deliver the same benefits but in Lower Temperature paving Warm Mix mode with the added benefit of Grade Bumping to higher performance level.



Uncoated and coated TLA-X warm mix pellets ▲



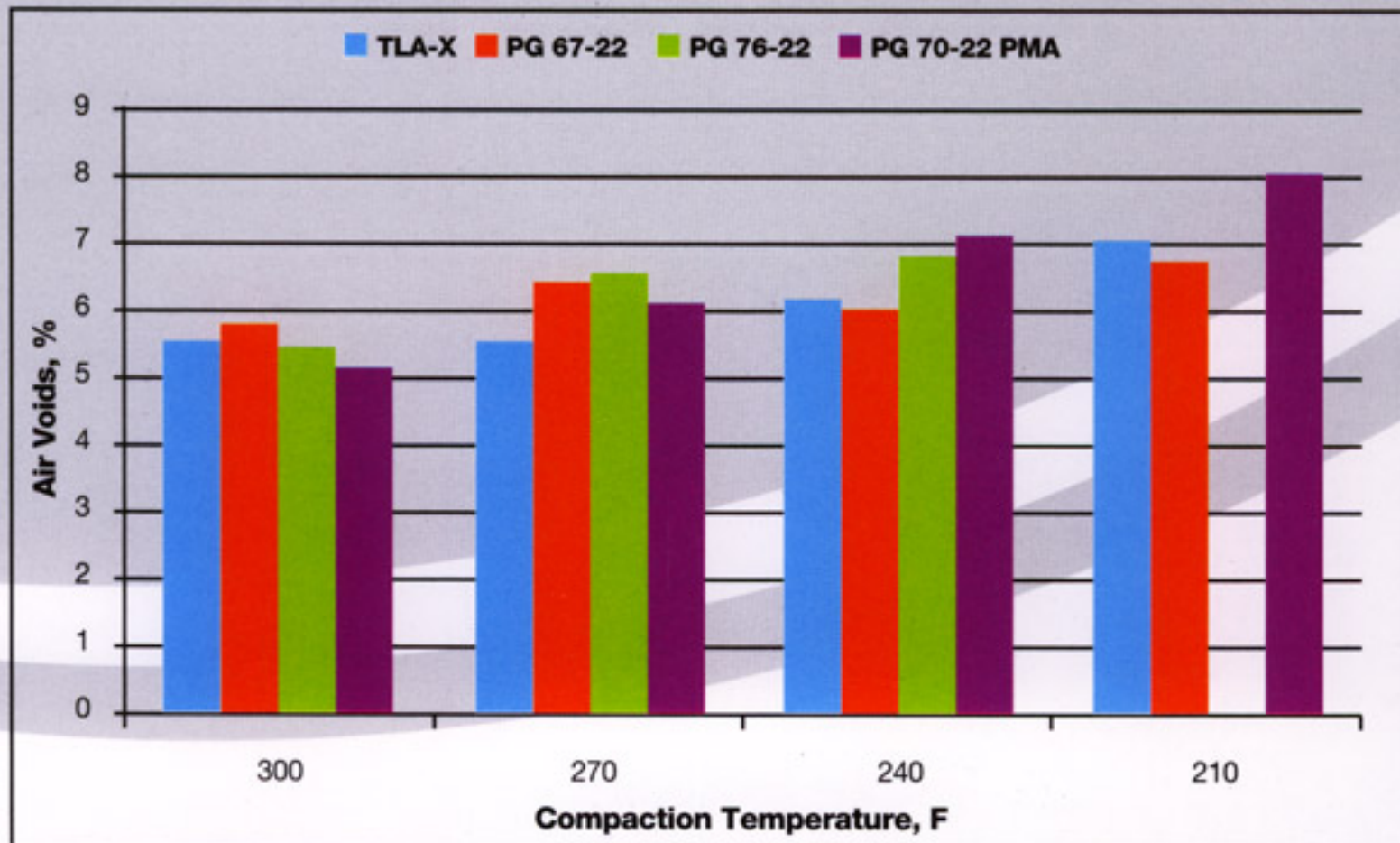
**Comparison of Air voids versus Compaction Temperatures for TLA-X, PG 67-22 control, Standard PG 70-22 (PMA) and Standard PG 76-22 (PMA)**

**Key Features indicated in bar chart below:**

Flexible Performance in compaction over broad temperature range.

PG performance elevated from PG 67-22 to over PG 70-22.

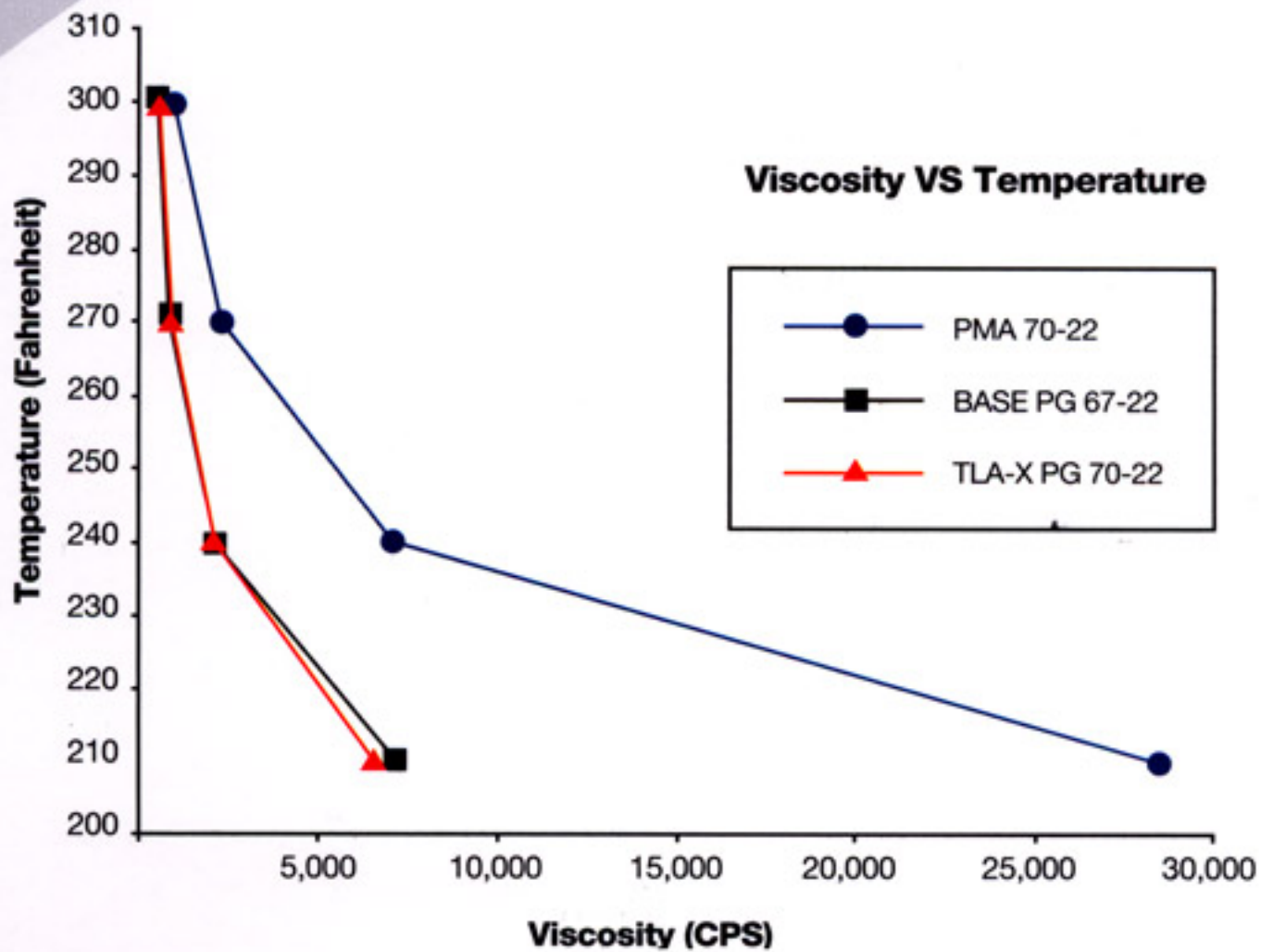
TLA-X Warm Mix outperforms all binders in range 67-22 to 76-22 in Low Temperature compaction efficiency.



All specimens prepared using Granite Aggregate Mix.

## Temperature versus Viscosity Data for PMA PG 70-22, Base PG 67-22 and TLA-X PG 70-22

Viscosity (CPS)			
TEMP (°F / °C)	PMA PG 70-22	BASE PG 67-22	TLA-X PG 70-22
300 / 149	938	340	332
270 / 132	2287	760	733
240 / 116	7100	2017	1920
210 / 99	28,500	7020	6438



## Benefits of TLA-X Warm Mix

- Reduces aggregate mixing, lay down and compaction temperatures by 60°F to 90°F.
- Can be added to the binder or directly to the aggregate mix.
- Formulated in free flowing bead form to facilitate ease of handling and ease of incorporation to binder or directly to aggregate mixing drum.
- No changes to binder or hot mix plant necessary.
- Aggregate mix design stays the same.
- The Performance Grading test of the TLA-X modified binder results in a Grade Bump to the next higher level, eg. PG 67-22 elevated to PG 70-22. Therefore TLA-X is more than just a Warm Mix additive.
- The TLA-X modified binder is distinctly non-tacky and this means good flow from truck bins onto paver, will not stick to paver equipment and wheels and will not stick to compacting roller wheels. Also, nonsticky surface means quicker return to traffic without any adverse effects.
- Reduction in aggregate mixing temperature means reduction in CO<sub>2</sub> emissions at the mixing plant through reduced fuel consumption.
- Reduced mixing aggregate temperature means reduced mixing plant fuel consumption by at least 2 liters or 20% reduction in heating fuel per ton aggregate mix produced.
- Reduced paving temperatures eliminate blue smoke at paving site and health risk to paving crew and motoring public.
- TLA-X Warm Mix technology means a wider paving window i.e. earlier paving in Spring and later paving into Fall as well as broadening the paving window for high elevation areas and colder climates.
- TLA-X Warm Mix means that the mix can be hauled to longer distance paving operations.



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