

Asphalt pavements typically experience three major problems: permanent deformation (rutting) in hot weather, loss of adhesion in wet weather (stripping) and wear course cracking (reflective and thermal.) Heavier loads from today's newer trucks, machinery and aircraft also play a major role in the degradation of asphalt structures.

Every engineer knows the best way to build an enduring structure is to start with a solid foundation – roads are no different. Designing a road with a strong base course can provide the load-bearing capacity needed to handle these heavy loads. Strong base courses also provide the load-spreading ability to take the stress and strain off of any wearing course placed above it.

Reduce Pavement Thickness Seamless Integration

IntegraBase – The Technology

Resperion's IntegraBase is a multi-metallic catalyst (MMC) in asphalt soluble form. When mixed with asphalt cement and aggregates, this catalyst initiates a series of chemical reactions which ultimately cross link the asphalt molecules and consume the catalyst; this reaction creates an Organic Metallic Complex, the strongest bond in all of Chemistry. The new higher-molecular-weight materials created are extremely resistant to heat and heavy loads. They also exhibit superior water resistance and anti-stripping properties. Hence, when using the Resperion modifier, other common additives such as rubber, lime and anti-stripping agents may not be required as the benefits of those additives have already been provided. IntegraBase has been specifically formulated to ensure that all of the increase in performance properties is achieved by the time the road surface is ready for use.

IntegraBase – Making Road Building Simple

Design

Dosing and Mixing

IntegraBase is injected into aggregate and asphalt cement at a rate of 2% by weight of asphalt cement directly into the asphalt feed line at the mixing plant. An inline static mixer ensures that the modifier is thoroughly mixed throughout the asphalt cement. Resperion will provide the proper pump and metering system if needed. Either drum mix plants or batch plants may be used. The mixing temperature for IntegraBase should be in the range of 135°C and 145°C.

Lay down and Compaction

The normal specified procedures for the lay down activities of asphalt concrete base are followed with IntegraBase treated asphalt. Lay down and compaction is performed using conventional equipment and construction techniques. In spite of the higher strength of the IntegraBase modified mix, the workability of the material in terms of compactability and obtaining optimum density is superior to that of unmodified mixes due to the lubricating effects of IntegraBase.

Benefits From Utilizing IntegraBase

- Reduction in pavement thickness (up to 40%)
- Allows for the use of marginal aggregates
- Reduction of pavement deformation
- Increase of fatigue resistance
- Greater adhesion of asphalt to the aggregate
- Increased ESALs (Equivalent Standard Axle Loads)



Resperion Solution: IntegraBase

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Cost Savings

In a typical well-graded asphalt paving mix, IntegraBase will increase the resilient modulus of the asphalt material by approximately 50-75%. This increase is so dramatic that IntegraBase is the only additive that can offer the following innovative design options to the hot mix asphalt paving industry:

Initial Cost Savings

Rational pavement design techniques confirm that base course layers constructed with IntegraBase can be reduced in thickness by up to 40%, while achieving an equal or greater number of equivalent standard axle loads (ESAL's) as conventional materials. Since the cost of the materials saved exceeds the cost of the MMC by a wide margin, Resperion enables you to build the same road for less money.

Zero Upfront Cost

A more conservative design approach is to reduce the thickness of the modified base course materials by just enough to completely off-set the cost of the MMC. This alternative permits you to build a superior pavement without increasing existing costs or budgets.

Life-Cycle Savings

Full depth asphalt base courses constructed with IntegraBase can withstand more than twice the number of standard axles over their useful lifetime as conventional base course layers. This superior durability generates long-term savings by reducing maintenance costs and delaying required structural overlays. The total life-cycle savings associated with this option are often substantial.

Savings from Marginal Materials

For most road applications, high-quality, crushed aggregate materials must be used because they are the only materials which can withstand today's heavy loads. However, the significantly greater strength generated by IntegraBase now makes constructing successful roads with marginal materials possible. The upfront savings associated with using marginal materials such as rounded aggregates or sands can be substantial, particularly when higher-quality materials must be transported over great distances.

About Resperion

Resperion is a leading provider of asphalt paving solutions to governmental agencies and private organizations worldwide. Resperion develops, manufactures and markets various chemical modifiers used to improve specific properties of asphaltic concrete paving mixtures; namely, strength, temperature susceptibility and aggregate adhesion. Resperion manufactures the only modifier which so dramatically increases the structural capacity of asphaltic materials that it is possible to reduce the thickness of the base course and lower initial construction costs. Founded in 1999, Resperion is headquartered in San Mateo, California and has sales offices in Asia, Europe, the Middle East and Mexico.

Physical Specifications

Property	Method	Value
Specific Gravity @ 25°C		0.95 - 1.02
Viscosity, Centipoises @ 40°C	ASTM D445	250 -3000
Flashpoint, PMCC, °C	ASTM D93	110 Min
Water Content, %		1.0 Max

Performance Specifications

Tests	Designation	Asphalt Concrete Base	
		Neat Binder	Modified Binder
Swell (Max.) (Millimeters)	CT305	0.76	0.76
Moisture Vapor Susceptibility (Min.)	CT307	30	30
Stablimoter Value (Min.)	CT366	37	37
Resilient Modulus @ 25°C (psi)	ASTM D4123	X	1.35X
Resilient Modulus @ 40°C (psi)	ASTM D4123	Y	2.0Y

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