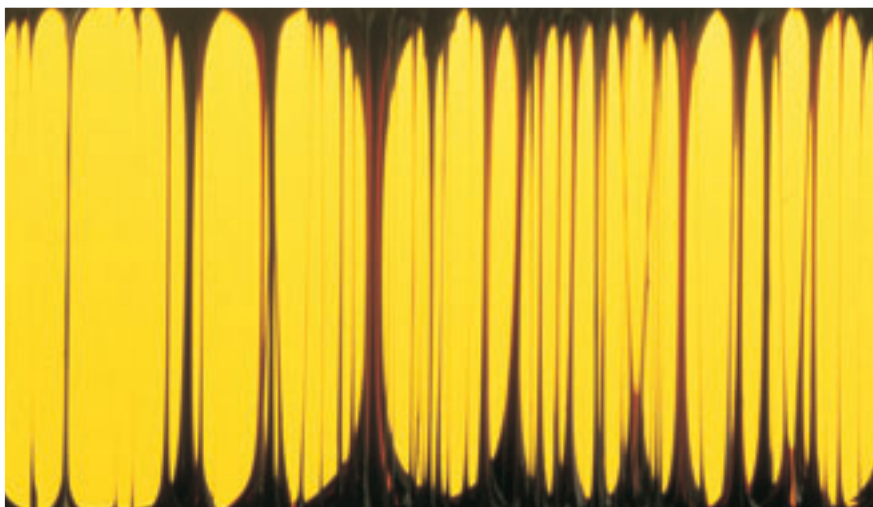


# Hot future for cold lay

Comprehensive technology for cold-mix road recycling is being developed by a pan European asphalt alliance working on a project known as SCORE.



Cold-mix techniques are still at a formative stage in the UK

forefront of cold-mix technology. As a result, we hope the project will lead to better recycling techniques and materials being developed.”

One of the key aims of the SCORE project is to establish a common approach throughout Europe to the recycling of existing bitumen in a carriageway, which is sustainable, durable and economic. Bitumen within a road can remain in a good condition for many years and often needs only the addition of a fresh emulsion to renew its performance. Doing so can save on the production of large quantities of fresh binder and improve the surface profile and life span of a road relatively simply and cheaply.

Nynas Bitumen’s research as part of the project involves looking at the chemical and rheological properties of aged bitumen and

Rejuvenating worn roads by means of cold-mix recycling represents an emerging technology with great scope for the future and many countries are progressing the development of cold-mix processes. But there are currently few common standards that bring together cold-mix best practice with appropriate techniques and methods of application.

With this in mind and as part of the fifth framework programme of the European Commission, a pan European asphalt alliance of eight member bodies was formed last summer to work on a three year initiative known as the SCORE project.

Materials specialist Nynas Bitumen is represented, as are pavement contractor Probisa of Spain, Eurovia of France, SSZ of the Czech Republic, Produktion of Sweden and research centres LCPC of France, CEDEX of Spain and Université Joseph Fourier Grenoble of France. The project is coordinated by Dr Juan José Potti of Probisa.

Their collective aim is to set a definitive

benchmark for Superior COLD REcycling, based on the benefits of using bituminous emulsions, micro-emulsions and foamed bitumen.

“Our research is going well and all of the alliance members will come together later this year to begin trials of cold-mix materials on live road sites.”

Jean Walter

Nynas Bitumen, one of the founding members of the project’s alliance, has an established track record in developing durable bitumen emulsions for cold-mix applications.

UK Technical Manager Chris Southwell is responsible for the managerial and financial aspects of Nynas’s involvement in the project. He says: “The SCORE project is about furthering the development of cold recycling of bituminous materials.

“Over the last 15 years there has been a great deal of work carried out in cold-mix in different parts of Europe and this project will help to synchronise the efforts of those at the

establishing an emulsion binder that can rejuvenate a road effectively.

Nynas Bitumen’s Technical Development Manager Jean Walter is leading the project research for SCORE on behalf of the company. He says: “The chemistry of bituminous roads evolves with time and the binder becomes harder after 20 years.

“We are working very closely with the University of Grenoble in France, looking at a complex chemistry known as cold diffusion that involves chemical exchanges between old and new bitumen into the road mix. We are also studying how different materials react in aged bitumen.”

Another possible outcome of the project is to improve the structural design of a cold-mixed pavement by using established computer software. Nynas Bitumen is working to further develop analytical design systems such as its NOAH program, to support innovative designs and uses of new materials.

A third element of the project in which Nynas is involved is an improvement in the design of foamed bitumen for cold-mix use. Foamed bitumen is formed by injecting compressed air and water into penetration bitumen and expands to coat recycled aggregate particles.

Emulsion designs that have been devised by universities in the project alliance are being tested by Nynas Bitumen in order to establish improved designs of emulsification techniques. Nynas is working hard to develop a thorough understanding of how cold-mix materials can be recycled insitu using specialist plant as well as exsitu at dedicated coating facilities.

The project team is also looking at developing specialist machinery for cold-mix processes, which may lead to the development of mixing plant and compacting equipment, and specialist testing for properties such as fatigue.

"This is a very interesting, practical project that looks closely at how the finished cold-mix product will perform," says Walter. "Our research is going well and all of the alliance members will come together later this year to begin trials of cold-mix materials on live road sites."

Renewing an asphalt pavement at ambient temperatures presents clients with significant environmental and economic benefits. These include the production of fewer emissions associated with the heating of recycled materials and once a cold-mix material has been produced, it can be stockpiled for many months.

Following the results of road trials planned for 2004, a document is set to be produced that will include the project's findings and a comprehensive guide to developing suitable cold-mix materials.

The success of cold-mix recycling techniques will depend to an extent on how a material or process is marketed, says Chris Southwell. "Cold-mix is a technique that is in



its formative stage in the UK. We want to show that it will be suitable for many countries, but specific products may need to be tailored for individual climates and temperatures."

Potential clients for further cold-mix developments include highway authorities working on major road maintenance schemes and contractors involved in localised highway repair. Chris Southwell

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adds: "The SCORE project is promoting sustainable construction and fits well with Government initiatives." Further information about the project can be found at [www.score-project.org](http://www.score-project.org)

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