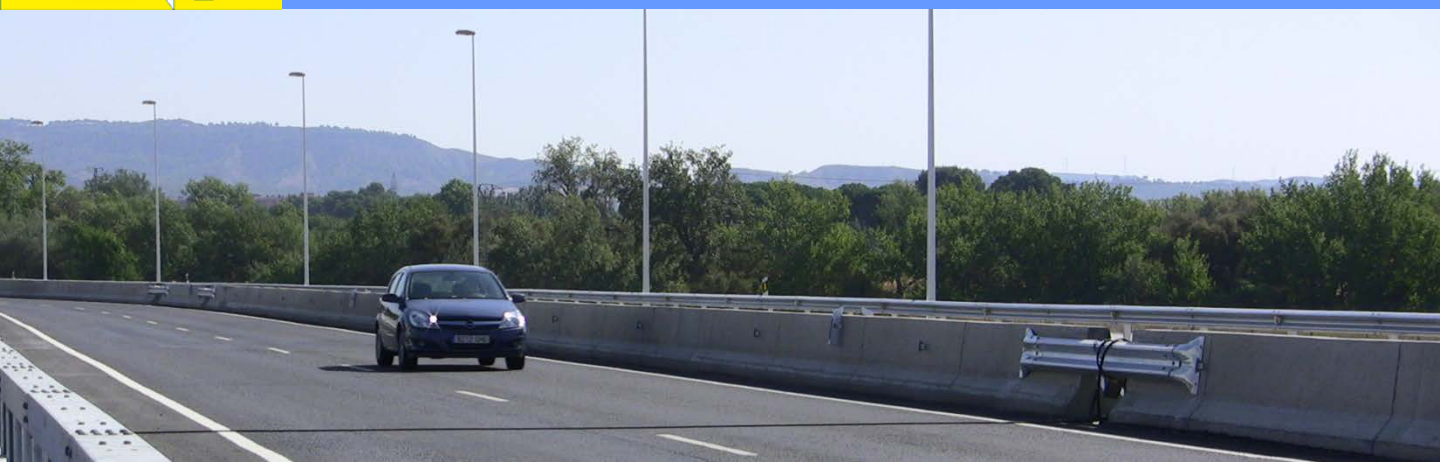
POLYMIX news

POLYMER WASTES IN ASPHALT MIXES: A WAY TO INCREASE SUSTAINABILITY OF ROAD INFRASTRUCTURES

POLYMIX LIFE+ Project NEWSLETTER - Nº1 November 2013



¿Why Polymix?

The National and European environmental regulation aim to achieve a sustainable development within the EU member states and thus meet human needs while respecting natural resources, reducing environmental deterioration and preventing pollution, obtaining this way a lower environmental impact.

The polymer consumption has increased in recent years with an average consumption per citizen in the European Union exceeding 10 Kg/year. The high use of these kind of products entails, at the end of theirs useful life, the generation of a large amount of waste.

Europe recycles around 20% while about 30% is incinerated with energy recovery. The rest is still landfilled. It is important, then, to work on plastic waste recovery systems to improve polymeric materials sustainability, providing a proper end of life within a viable technical and economic framework. In this line is the POLYMIX project focused.

The LIFE programme is the EU's funding instrument for the environment. The general objective of LIFE is to contribute to the implementation, updating and development of EU environmental policy and legislation by co-financing pilot or demonstration projects with European added value.

The POLYMIX project is being co-financing by the European Commission as part of the LIFE Programme under the component Environment Policy and Governance.
The Environment Policy and Governance component co-finance innovative or pilot projects that contribute to the implementation of European environmental policy and the development of innovative policy ideas, technologies, methods and instruments.

The aim of POLYMIX Project is the demonstration of new environmental friendly asphalt mixes, using polymer waste for modifying mixes. In this way environmental problems associated to polymer waste will be reduced, permitting new alternatives for its reuse.

In this project, plastic waste and rubber from used tires are used for road construction, improving this way the mechanical behavior of the road while benefiting the environment.

Start date:
1st September 2011

Duration:
36 months

Total budget:
1.5 M€

EC contribution:
50%

PARTICIPANTS:

UC Universidad de Cantabria – GITECO UC Universidad de Cantabria

acciona Infraestructuras

VIAM Comunidad de Madrid

AIMPLAS Instituto Tecnológico del Plástico

Project Structure

PHASE 1
Design and characterization of asphalt mixes modified with polymers

Upscaling production process

PHASE 2

Implementation and Monitoring

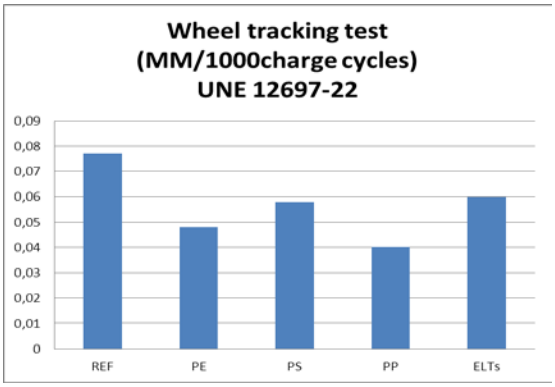
PHASE 3
Life cycle analysis and definition of the criteria to include POLYMIX environmental concepts into Public Procurement Processes (GPP)

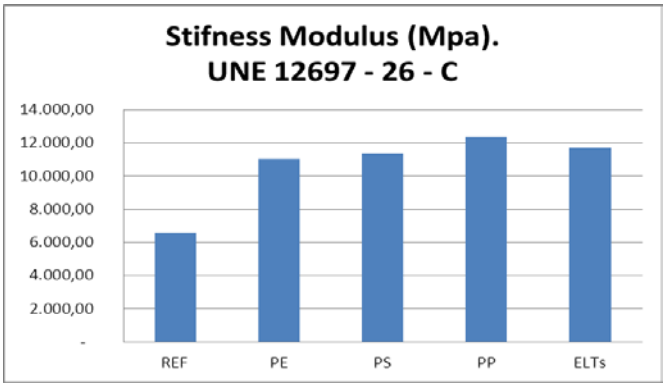
Asphalt mixes design

For the designing of the asphalt mixes, either standard or modified with polymers, the Marshall Methodology has been used by ACCIONA Infraestructuras. This methodology is based on the volumetric relation of asphalt mix (density-voids content and stability-deformation). During this phase, AIMPLAS identified the most suitable polymeric wastes for the modification of asphalt mixtures. For the selection of the polymeric wastes, technical and economical aspects have been taking into account, including availability of each waste.

All four mixtures modified with polymers comply with the requirements of Spanish standard PG-3. Moreover, an improvement in the resistance to plastic deformation was found in all of them.

Asphalt mixes complete characterization, including the evaluation of fatigue laws, dynamic modulus, indirect tensile stiffness and skid resistance, will be taken into account at the laboratory of roads of the University of Cantabria. Results of this characterization will be compared with the results obtained during the pilot road monitoring.

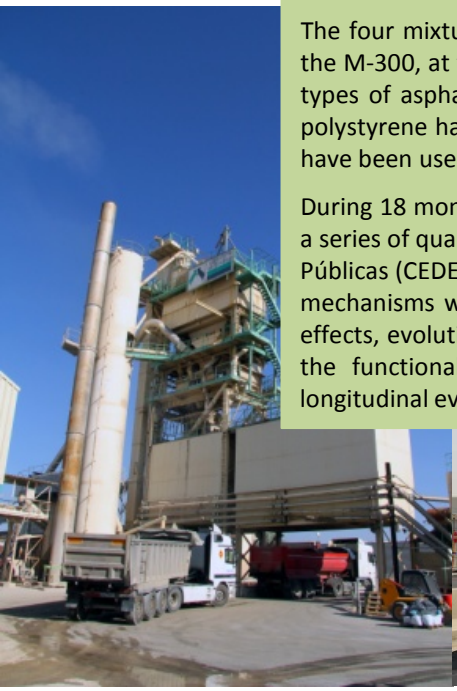


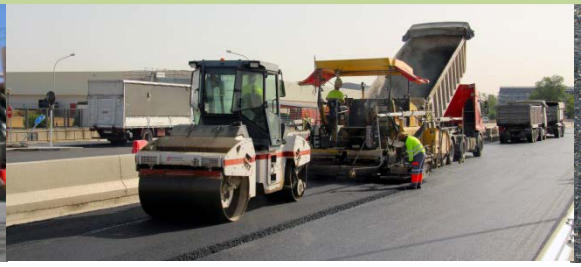


Pilot site

The four mixtures (and also a reference) were implemented in the wearing course along a stretch of the M-300, at the entrance to Alcalá de Henares in Madrid. Along two kilometres of this road, the four types of asphalt mixes modified with waste have been implemented (500 km/mixture). Specifically, polystyrene hangers, polypropylene caps, polyethylene containers and rubber powder from used tires have been used.

During 18 months, the measurement and assessment of the performance of the surface layer through a series of quality control tests and monitoring conducted by the “Centro de Experimentación de Obras Públicas (CEDEX)” will be carried out. In relation to structural performance, the following deterioration mechanisms will be studied: top-down fatigue, permanent deformation, deterioration due to water effects, evolution of elastic stiffness modulus and resilient modulus and rutting formation. Concerning the functional point of view, the following deterioration mechanisms will be studied: loss of longitudinal evenness, loss of macrotexture and loss of skid resistance.





Polymix media coverage

Pavements made with wastes (Alcobendas). Telemadrid. November 2013.
View video >>

This video explains the construction and implementation of POLYMIX mixes. By ACCIONA Infraestructuras. May 2013
View video >>

POLYMIX project and the implementation of the pilot road is presented in La Sexta News.
Source: La Sexta. September 2012.
View video >>

This video shows the opening of the trial section by the former president of the Comunidad de Madrid, Esperanza Aguirre.
Source: Comunidad de Madrid. September 2012.
View video >>

Forthcoming events

Training course in Madrid
December 2013
POLYMIX consortium will organize a training course about the designing of asphalt mixtures. More information will be available soon in POLYMIX website.

Webinar about POLYMIX Project
January 2014
Do not miss this free webinar!!. More information will be available soon in POLYMIX website.

Workshop Polymix.
February 2014

More information will be available soon in POLYMIX website.

More Information

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In this website, visitors can find a wide information about the project and consult the last news, forthcoming events and also the progress and last results obtained.

This newsletter is part of the dissemination and communication activities of the project LIFE10 ENV/ES/516 “POLYMIX”.
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