



<b>VEGECOL</b>	<b>PRODUCT SHEET</b>
Transparent pigmentable plant-based binder	April 2005

**Product definition**

**Vegecol** is an innovative binder developed by COLAS. It is manufactured from renewable raw materials obtained from agricultural resources and is compatible with the aims of sustainable development. It is used to manufacture different types of road materials, in particular hot mixes. Its performance means the physico-mechanical characteristics of the hot mixes are at least as good as bituminous mixes. It is transparent, so for architectural projects the natural colour of the aggregate is visible. It is also pigmentable which allows different colours of mix to be manufactured. Its French patent number is FR 28 53 647-A1.

**Scope of application**

**Vegecol** is a binder intended for the manufacture of various materials for use in roads and urban areas. Mixes of all types can be made with this binder. It is particularly well-suited for manufacturing surfacings with natural colours. If pigments are added these mixes can also be coloured so they meet architectural and decorative requirements, in particular in urban locations.

Its specific rheology means that the manufacturing temperature of mixes can be lowered by 40°C if it is used in bulk, in comparison with conventional bituminous mixes, which results in considerable energy and environmental savings. The workability of **Vegecol** mixes means that they are easy to lay, even manually.

**General characteristics**

**Vegecol** is available in different viscosity classes depending on the envisaged use. A few characteristic values are set out in the table below.

Class	1	2	3
<b>Initial viscosity (Pa.s)</b>			
<b>Brookfield viscosity, (SC 4-27), 70°C, 1.4 s<sup>-1</sup></b>	33 to 45	16 to 24	11 to 14
<b>Pumpability temperature (°C)</b>	100	100	100
<b>Density at 25°C</b>	0.95 to 1.05	0.95 to 1.05	0.95 to 1.05
<b>Cleveland Flashpoint (°C)</b>	> 210	> 210	> 210
<b>Complex Modulus G*(MPa) at 20°C ; 7.8Hz</b>	> 2.5	> 0.8	> 0.2

The ASTM colorimetric value for all classes of fresh binder is below 7, which is characteristic of a transparent binder.

The binder's scope of application cannot be determined from the results of the tests which are normally carried out on bituminous binders.

***The conventional performance tests used on bituminous binders are not directly transposable to Vegecol.***

---

### ***Vegecol mixes***

**Vegecol** mixes have interesting physico-mechanical characteristics which are equal to or better than the equivalent bituminous mixes:

- they take on the natural colour of the aggregate due to their transparency.
- good low temperature workability as measured by the Gyratory shear press.
- a stiffness modulus that can be adapted to the domain of application.
- high rutting resistance that can be adapted for the use.
- very high fatigue strength
- good resistance to accidental hydrocarbon spillages
- surface characteristics which are at least as good as bituminous mixes.

---

### ***Manufacturing and laying***

**Vegecol** mixes can be manufactured in coating plants of all types.

To ensure the natural colour of the aggregate is conserved or to obtain a mix of the desired colour a dedicated production line is required, as with oil-derived synthetic binders.

Suitable pigments are added to the mixer in order to obtain a mix of the desired colour.

The usual precautions that are necessary when manufacturing and laying coloured mixes must be taken.

The manufacturing temperature of these mixes can be reduced by about 40°C if it is used in bulk. This temperature depends on the type of binder, the use to which the mix will be subjected and the external temperature.

The trucks that transport the mix must be covered by a tarpaulin.

Laying is conducted using a conventional laying machine.

Compaction is conducted with a smooth steel roller, in accordance with best practice.