COLOURED AGGLOMERATE WITH CLEAR SYNTHETIC BINDER, UNLIMITED COLOURS

The advantages of asphaltic agglomerate pavements, have led them to be used beyond roads. Nowadays, they compete with other materials in the execution of bike lanes, parks, sidewalks and other surfaces and urban environments.

An important step was the pigmentation of conventional asphaltic agglomerates, this is, those that use asphalt or bitumen in black as agglomerate or binder. The asphaltic agglomerate has few options to be coloured. As stated on our document: http://www.gc-colors.es/eng/descargas/docdow.php?id=166 the use of red iron oxide is viable at high dosages, but other pigments are virtually overridden by the black of the bitumen.

The constant demand to improve the decorative possibilities of the asphaltic agglomerates has been rewarded with the appearance on the market of clear or albinos synthetic binders replacing the black asphaltic bitumen. This has permitted to obtain pavements of agglomerate in any colour and compete successfully against other decorative paving options.

This new generation of synthetic agglomerates are not hydrocarbon products out of petroleum distillation as in the case of black asphaltic bitumen, but are composed of a mixture of resins, oils and polymers. However, they keep a similar viscoelastic performance depending on the temperature as well as a high chemical stability.
Agglomerate with clear synthetic binder. Pigmented samples were assayed at a rate of 0.5% of the total agglomerate.

Agglomerate with black asphaltic binder. Pigmented samples were assayed at a rate of 5% of the total bitumen mixture.

Without pigment

Green G6PE

Yellow ChromaFer 9520PE

Red ChromaFer 1330

Red ChromaFer 1305
In the previous image, we can see the large differences in luminosity between the agglomerate with black asphaltic binder and with clear synthetic binder when they are pigmented. The dosage of the pigment is significantly lower in the case of clear synthetic agglomerate binder.

**COMPARATIVE TABLE OF USUAL DOSAGE OF PIGMENT**

<table>
<thead>
<tr>
<th>DOSAGE OF PIGMENT</th>
<th>AGGLOMERATE WITH BLACK BITUMEN</th>
<th>AGGLOMERATE WITH CLEAR SYNTHETIC BINDER</th>
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</thead>
<tbody>
<tr>
<td>PER TONNE OF AGGLOMERATE</td>
<td>30 to 50 kg</td>
<td>5 to 15 kg</td>
</tr>
<tr>
<td>% OF TOTAL AGGLOMERATE</td>
<td>3 to 5%</td>
<td>0,5 to 1,5%</td>
</tr>
<tr>
<td>% OF TOTAL BINDER</td>
<td>60 to 100%</td>
<td>10 to 30%</td>
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The dosages indicated in the previous table, do not constitute commitment on our part, and each user must determine the appropriate dose by testing his product.

However, given the limitations of black asphaltic agglomerate that only supports red pigments with poor chromatic results, the option of an agglomerate with clear synthetic binder, with unlimited colours and bright shades, is something to consider.

**Saturation**

While in the asphaltic agglomerate the pigment saturation goes beyond 5% of the total dosage of bituminous mixture, in the agglomerate with clear synthetic binder, the saturation occurs at around 2%. In the next picture we see the evolution of the intensity in an agglomerate with clear synthetic binder using red pigment ChromaFer 1305 at different dosages to total agglomerate. As we saturate the colour, we lose the orange shade.
Concrete versus asphaltic agglomerate

Concrete tile with grey cement on the left and white cement on the right. Dosage of pigment: 3% regarding cement.

Agglomerate with clear synthetic binder on the left and black asphaltic on the right. Dosage of pigment: 0,5% of the total mixture in the clear and 5% in the black.

ChromaFer 1005 for concrete and ChromaFer 1305 for asphalt
ChromaFer 1030 for concrete and ChromaFer 1330 for asphalt
ChromaFer 9520 for concrete and ChromaFer 9520PE for asphalt
Green Chrome Oxide G6 for concrete and G6PE for asphalt
Unpigmented
Other examples of coloured agglomerate with clear synthetic binder

<table>
<thead>
<tr>
<th>Cobalt Blue B22</th>
<th>Green Chrome Oxide G6PE</th>
<th>ChromaFer Yellow 9520PE</th>
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</thead>
<tbody>
<tr>
<td>ChromaFer Red 1035</td>
<td>ChromaFer Red 1330</td>
<td>ChromaFer Orange 9060PE</td>
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</tbody>
</table>

For the preparation of the agglomerate we have used the following composition:

- 90% aggregates.
- 5% fillers.
- 5% binder.