

# Pigmentable Synthetic Binders



Special binders



Pigmentable synthetic binders are binding products with similar properties to bitumens that are obtained from a mix of resins, oils and polymers. They are colourless on thin film and through the incorporation of mineral pigments can be given the desired colour.

Repsol commercialises pigmentable synthetic binders under the name RECOFAL and pigmentable synthetic emulsion under the name EMULSTAR. These ranges of products have been developed for the manufacture of pigmented mixes in special areas in which the colour is an essential requisite.

With these binders we can achieve road surfaces in a wide range of colours or they can be used without pigment, the colour of the mix turning out similar to that of the aggregate used. This is ideal for achieving natural tones fully integrated with the environment.

## / APPLICATIONS

The synthetic binders developed by Repsol are applied in special areas such as:

- Paving for parks and gardens.
- Cycle lanes.
- Bus lanes.
- Pedestrian areas.
- Sports grounds.
- Traffic islands.
- Differentiated surface elements.
- Paved paths and walkways in protected areas, natural parks, etc.
- Special areas for security purposes.

## / PRODUCT CHARACTERISTICS

The following tables show the characteristics of RECOFAL and EMULSTAR binders:

| CHARACTERISTICS                                   |                                 | UNE EN  | UNIT              | RECOFAL |       |                       |
|---|---------------------------------|---------|-------------------|---------|-------|-----------------------|
|   |                                 |         |                   | S-50    | S-100 | S-100P <sup>[1]</sup> |
| <b>Tests on original bitumen</b>                  |                                 |         |                   |         |       |                       |
| Density   |                                 | 15326   | g/cm <sup>3</sup> | -       | -     | 0,95-1,15             |
| Penetration at 25°C                               |                                 | 1426    | 0,1 mm            | 40-60   | 50-70 | 20-50                 |
| Softening Point                                   |                                 | 1427    | °C                | ≥45     | ≥60   | ≥85                   |
| Fraass breaking point                             |                                 | 12593   | °C                | ≤-5     | ≤-8   | ≤-20                  |
| Elastic Recovery                                  |                                 | 13398   | %                 | ≥20     | ≥40   | -                     |
| Stability in storage                              | Decrease in softening point     | 1426    | 0,1 mm            | ≤5      | ≤5    | -                     |
|   | Difference in penetration point | 1427    | °C                | ≤2      | ≤2    | -                     |
| Brookfield viscosity at 160 °C                    |                                 | 13303   | Cp                | -       | -     | ≥400                  |
| <b>Durability-Resistance to ageing EN 12607-1</b> |                                 |         |                   |         |       |                       |
| Variation of mass                                 |                                 | 12607-1 | %                 | -       | -     | ≤1,5                  |
| Retained penetration                              |                                 | 1426    | %                 | -       | -     | ≥80                   |
| Increase in softening point                       |                                 | 1427    | °C                | -       | -     | ≥10                   |

[1] See specific product file for Recofal S-100P

| CHARACTERISTICS                      | EMULSTAR SPECIFICATIONS |
|--------------------------------------|-------------------------|
| Solids content (infrared desiccator) | 45 ± 1%                 |
| Brookfield viscosity                 | 20 a 25 poises          |
| Particle size                        | < 0,5 micron            |

## / RECOMMENDATIONS FOR USE

| RECOFAL S-50                                       |                            |             | RECOFAL S-100                                      |                            |             |
|--|----------------------------|-------------|--|----------------------------|-------------|
| RECOMMENDED TEMPERATURE RANGES FOR ITS APPLICATION | MIXING                     | 130 - 140°C | RECOMMENDED TEMPERATURE RANGES FOR ITS APPLICATION | MIXING                     | 140 - 150°C |
|  | SPREADING AND COMPACTING   | 120 - 130°C |  | SPREADING AND COMPACTING   | 130 - 140°C |
|  | MAX TEMP. HEATING IN PLANT | 160°C       |  | MAX TEMP. HEATING IN PLANT | 170°C       |
|  | MIN TEMP. STORAGE          | 120°C       |  | MIN TEMP. STORAGE          | 120°C       |

*Indicative data, not contractual and not subject to specifications. Temperatures depend on the specific viscosity curves of each product.*

Avoid excessive overheating both of the binder and the mix as it can cause discolouration and/or a possible degradation of the binder.

Repsol offers its Technical Support and Development Department that can offer advice regarding the best possible conditions of use.

## / SPECIFIC USES

Our pigmentable synthetic binders enable the manufacture of hot mixes with similar mechanical characteristics to those obtained with conventional bitumens, offering the following advantages:

- Easy pigmentation for any colour.
- Good resistance to ageing and oxidation.
- Possibility of making mixes with the natural colour of the aggregate.
- Uniform product for all types of applications.

### • Recofal S-50

It is the most widely used and standardised pigmentable synthetic binder used for manufacturing colour mixes applied to singular elements. It allows both the bulk supply in manufacturing plants with the appropriate tanks and the supply in drums.

### • Recofal S-100

The Recofal S-100 allows the same applications as the Recofal S-50, giving an improvement in both the mechanical behaviour of the mixture and the desired shade range, enabling much clearer final colours.

### • Recofal S-100 P

High-end pigmentable synthetic binder in granular form for use in the manufacture of hot mixes. This format facilitates storage, use in small-volume works, and transport for both short and long distances (national and international).

### • Pigmentable synthetic emulsion

Synthetic emulsion especially designed for use in bitumen slurries in order to obtain different colour surfaces, depending on their final use or the required colour contrast.

The range of pigmentable synthetic binder can be expanded according to local requirements.

