

CARBOFEN® 6060

Asphalt Emulsifier

PRODUCT DESCRIPTION

Carbofen 6060 is derived from a natural resin that has been especially modified to form an emulsifier that can be used to produce high quality anionic asphalt emulsions. The resin is obtained from a special resinous part of the *Araucaria angustifolia*, also known as the Parana Pine. In addition, Carbofen 6060 has a chemical composition similar to the oxidized gum rosin and performs well in waterproofing products, roofing, sealants, adhesives, coatings, etc....

SPECIFICATIONS

Acid Number, ASTM D-465 (mg KOH/g)	85 – 105
Softening point, ASTM E-28 (B&R °C)	95 – 110

ADVANTAGES OF CARBOFEN 6060 AS AN ANIONIC ASPHALT EMULSIFIER:

- High quality asphalt emulsions can be readily made;
- SS and MS type asphalt mix well with our aggregate;
- The viscosity of the asphalt emulsion is well within specification compliance;
- The emulsifier has excellent solubility in water;
- No need to use preservatives after neutralization;
- The formulations are cost effective.

DIRECTIONS FOR USE:

Asphalt emulsions are prepared from the sodium or potassium soap solution of Carbofen 6060. The solution is used to make slow set (SS) and medium set (MS) emulsions.

To prepare the Carbofen 6060 Emulsifier Solution, place 50% of the total amount of water to be used in a suitable tank and add the appropriate amount of sodium hydroxide while maintaining moderate agitation (see Table 1). Then, heat the caustic solution to 85-90 ° C (185-195 ° F) and slowly add our product while stirring for 30-45 minutes. Lastly, add the remaining water and adjust the desired temperature for the production of the emulsion, typically in the range of 40-50 ° C (105-125 ° F).

Important: If the soap solution was prepared properly, all sodium hydroxide flakes should be dissolved. Also, the finished pH should not be below 11.5.

Table 1 Example Formula for Carbofen 6060 Emulsifier Solution

Product	Weight %
Carbofen 6060	1 – 3%
Caustic Soda (NaOH at 99%)	0.2 – 0.58%
Water	Complete to 100%

Note: When potassium hydroxide is used, the amount of caustic soda should be adjusted to reflect the difference in the molecular weights of NaOH and KOH. This difference can be calculated by dividing the amount of NaOH by its molecular weight (40) and then multiplying the result by the molecular weight of KOH (56.1).



The amount of emulsifier may be adjusted for the desired purpose. For SS type emulsions, the required emulsifier in the soap solution should be about 2.7 – 3.0% and for MS type emulsions, the required emulsifier should be between 1.5 – 2.6%.

Heat the emulsion base asphalt up to 130-140 °C (270-285 °F) and recirculate. Heat the Carbofen 6060 Soap Solution to 40-50 °C (105-125 °F) and recirculate. Follow the plant operation instructions.

Note: the temperatures of the asphalt and soap solution may vary beyond the limits shown here as long as the temperature of the finished emulsion is at least 5 °C (48 °F) below the boiling point of water at the altitude at which the emulsion is produced.

Below is the range of the formulation ingredients, the exact values of which will depend on the type of emulsion being prepared and the source of the asphalt:

Table 2 Example Formulation for an Asphalt Emulsion

Product	Weight %
Carbofen 6060 Emulsifier Solution	43% - 30%
Asphalt	57% - 70%

Important: The amount of Carbofen 6060 in the soap solution will depend upon the source of the asphalt and the type of emulsion to be produced. The exact formulation can be determined with laboratory evaluation.

For medium-setting emulsions, it may be necessary to use an excess of 0.2 % sodium hydroxide (NaOH) in preparing the Carbofen 6060 soap solution.

Mixing the finished emulsion by aeration should be avoided as it may cause foaming.

SOLUBILITY

- Soluble in acetone, ethanol and ethyl acetate.
- Insoluble in petroleum ether and water.

PACKAGING

- Paper bags of 25 kg (55 lbs)
- Big Bags of 840 kg (1900 lbs)
- We recommend storage in dry and fresh places.

PRODUCT SAFETY INFORMATION

Please read our Safety Data Sheet (SDS) for more information.

COMPLEMENTARY INFORMATION

Formula 1 Temperature for the Unloaded Emulsion:

The temperature of the emulsion exiting the mill may be calculated by the following formula:

P_A = % asphalt;

T_A = temperature of the asphalt;

T_S = temperature of the soap solution;

T_E = temperature of the emulsion;

And assuming that the specific heat of the asphalt is 0.5 and of the soap solution is 1

$$T_E = \frac{T_A \cdot P_A \cdot 0.5 + T_S \cdot (100 - P_A)}{(100 - P_A) + P_A \cdot 0.5}$$

Formula 2 Volume Correction for Emulsion:

For an emulsion designated by ASTM as group 0, specific weight at 60°F higher than 0.966, the volume variation by temperature may be calculated by following formula:

T_E = Temperature of the emulsion, from 50°F to 185°F;

V_{TE} = Volume of the emulsion at unloading temperature;

$V_{60°F}$ = Volume of the emulsion at 60°F.

$$V_{60°F} = V_{TE} \cdot (-2.500E - 04 \cdot T_E + 1.015)$$

Formula 3 Changing the Concentration of Caustic Soda Utilized:

When using sodium hydroxide with a concentration different from that shown in Table 1 (NaOH at 99%), it is necessary to adjust the amounts. The new percentages may be calculated by the following formula:

$N_{W\%}$ = New weight percent;

$O_{W\%}$ = Old weight percent, 0.20 to 0.58%;

$N_{C\%}$ = New concentration of caustic soda, for example: 50%, $N_{C\%}=50$.

$$N_{W\%} = \frac{99 \cdot O_{W\%}}{N_{C\%}}$$

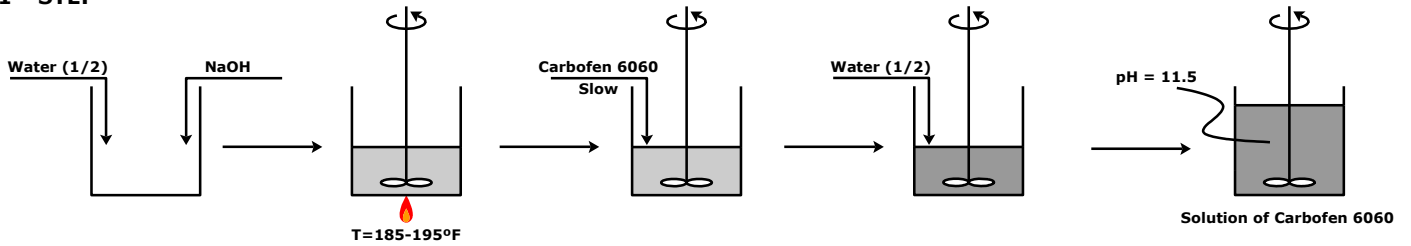
Then, the new quantities to be used can be found in Table 3:

Table 3 Carbofen 6060 Emulsifier Solution with New Caustic Soda (NaOH at $N_{C\%}$) Concentration

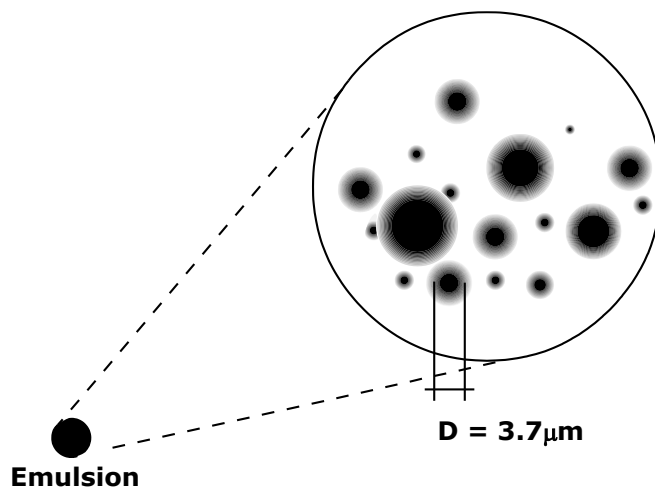
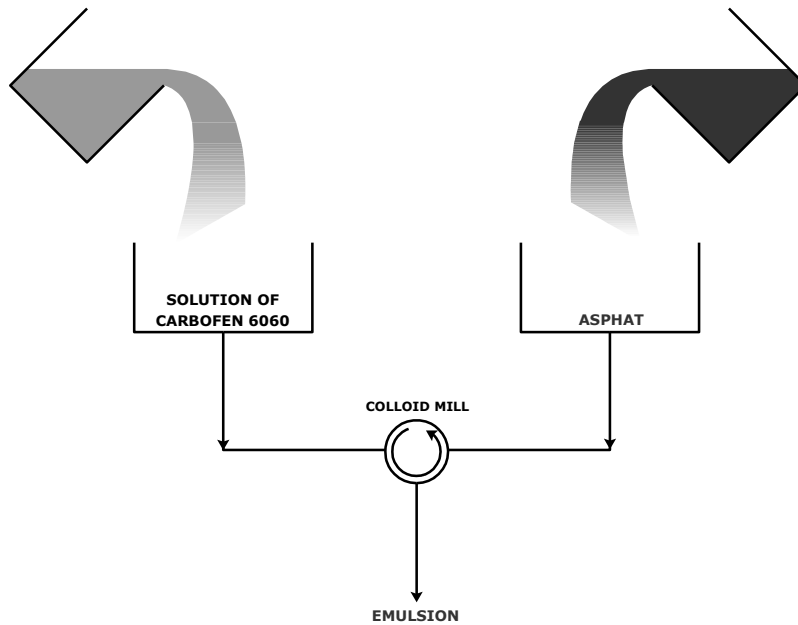
Product	Weight %
Carbofen 6060	1 – 3%
Caustic Soda (NaOH at $N_{C\%}$)	$N_{W\%}$
Water	Complete to 100%

Table 4 Simplified model of the Directions for Use. (We recommend the thorough reading of the procedure contained in page 1)

1ST STEP



2ND STEP



Note: The information given here is valid at the time of publication and Polytrade reserves the right to amend any without notice. We try our best to keep our records up to date, but if you want the latest information, contact one of our agents. Also, the data and suggestions regarding this product are given in good faith, but without guarantee, since the ultimate use of our products is beyond our control.