

C-200 & C-300

FOAMING AGENTS FOR CONCRETE

1. DESCRIPTION

C200 & C300 are highly concentrate synthetic-based foam agents that are used in the production of lightweight aerated concrete. These foaming agents are clear liquids with low viscosity based on biodegradable surfactant products that when added to the cement slurry, make possible the incorporation of air as small bubbles into the mixture, producing a stable foam with good fluidity. Once the foamed concrete is forged, it has a low weight and good isolating properties.

The concrete foam produced is non-corrosive and has no harmful effects on other materials commonly used in construction.

The foaming agents can be used with either cements, mortar and concrete.

2. TECHNICAL DATA

C200 & C300 are formulated with biodegradable synthetic surfactants and foam stabilizers. Unlike the protein base products, C200 & C300 do **not contain any metal nor chlorine compounds** in the formulation.

The products have **low viscosity** and are easily soluble in water making the products easy to handled.

Following table shows the main characteristic of concentrates:

	C-200	C-300
Aspect	liquid with low viscosity	liquid with low viscosity
Density @ 20°C	1.015	1.030
pH @ 20°C	7.0-8.0	7.5-8.5
Freezing point, °C	-2	-2
Solubility in water	complete	complete
Storage temperature, °C	0 - 50	0 - 50
C.O.D. mgO2/l (concentrate)	493000	630000
C.O.D. mgO2/l (1% solution)	4930	6300

The **C-200** solution make slurries with **high fluidity**. The **C-300** solution makes slurries with **shorter curing time**.

The curing time can be reduced using an accelerator.

3. USE

The usage rate of C200 & C300 is **1%** of the cement for the production of light weight cellular cements and concrete material. The table below shows the different usages required depending on the final density.

	Solids	Main application
300 - 600 kg/m ³	Cement	Insulation Filling cavities Roofs
600 - 900 kg/m ³	Cement	Industrial foundations slabs
900-1200 kg/m ³	Cement + sand	Walls Small Panels
900-1500 kg/m ³	Cement + sand	Panels



AUXQUIMIA S.A.

 Vanity Fire

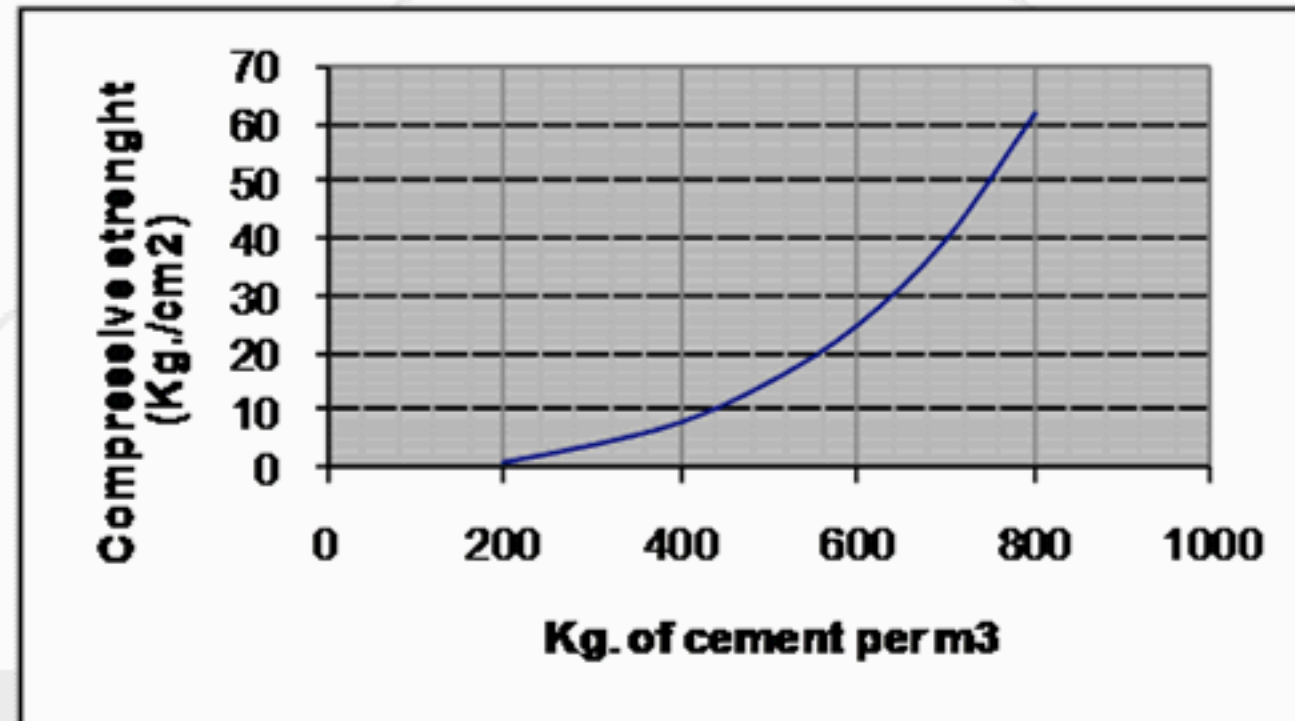
Via Gian Battista Bogino, 9
10123 Torino
Italy

Tel. +39-392-3874171
www.elelamperti.it
info@elelamperti.it



To obtain these low densities, it is necessary to work with high proportions of water in the mixture (the viscosity of the mixture must be low when the product is being applied) in order to make easier the addition of air bubbles. As a result the foamed concrete is very fluid and making levelling easier.

Some experimental tests have been carried out to establish a correlation between the cement consumption per m³ related with the foam density, and the compressive strength (kg / cm²) 28 days later. These tests are carried out with commercial cement, type 35A/IC according to the standard UNE-80-.301-88, and a proportion water/cement of 0.6:1. The following graph shows the obtained results:



From the calculation of the above graph, it is possible to deduce the average of the compressive strength depending on the cement consumption per m³:

Kg. of cement per m ³	Wet density (kg/l)	Compressive strength (kg/cm ²)
300	0.48	4
400	0.64	8
500	0.80	15
600	0.96	25
700	1.12	40

4. EXAMPLE OF APPLICATION PROCEDURE

The mixtures of *water + cement + foaming agent* are prepared in a tank equipped with an agitator to maintain the product in a uniform suspension. If there are two tanks, it is possible to prepare a second mixture while the other is being applied in batches of 200 liters.

As an example, it is possible to prepare a mixture of:

- 120 liters of water
- 200 kg. of cement
- 2 kg. of foaming agent

A two-stage MONO pump, with a flow rate between 50 and 100 liters per minute, sucks in the mixture and pumps it to the application point through a 40 mm. diameter hose. At around 10 meters before the end of the hose there is an air mixer, which introduces the air into the line with a diffuser with perforations.

Firstly, the mixture must be prepared as explained previously but avoiding waiting more than 30 minutes before application.

Then, open the air supply air to the accelerator pump and the whole circuit will be pressurized. Start the cement grout pump and when the cement grout is close to the end of hose, open the air valve and regulate the airflow to obtain the required foam density normally, the air is regulated at the maximum to maintain a continuous flow of the applied product. Open the inlet accelerator valve to the mixer and introduce the hose in the cavity or bag to be filled. Adjust the pressure of the accelerator pump to obtain the reaction speed required at anytime.



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Once the application has finished flush the system with water.

5. PACKAGING

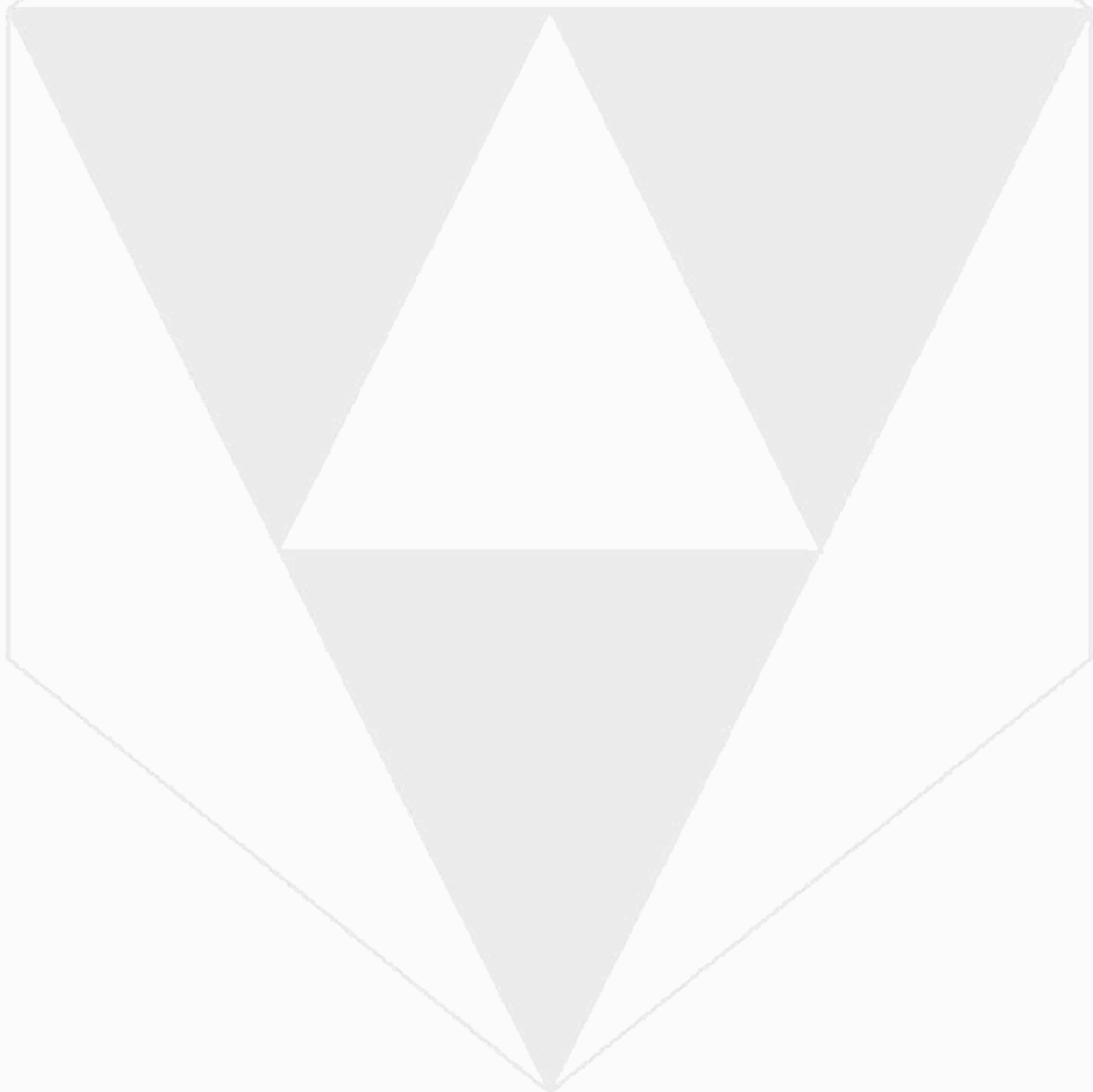
The product is supplied in 25 L PE prismatic containers, 200 L PE cylindrical drums and 1.000 L IBC containers.

6. STORAGE

The products should be stored at temperatures between 0° and +50°C, preferably in the original containers. The foaming agents neither has not expiry date nor needs special precautions for preservation.

7. CAUTIONS

The products should not be used in contact with electrical equipments under voltage. It is recommended to avoid the contact of the products with the skin. In case of eye splashes, wash with plenty of water. In case of ingestion do not induce vomit, drink water and take medical advice.



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