



**DESCAFEINADORA  
COLOMBIANA S.A.S.  
- DESCAFECOL S.A.S. -**

**DC**  
DESCAFECOL



# Decaffeination Info

- **DESCAFECOL applies natural Ethyl Acetate (E.A.) and Water in its process:**
  - DC applies a spring water – natural origin Ethyl Acetate (EA) combined process. The latter substance is naturally present in every coffee bean (as well as many fruits and vegetables), therefore no addition of foreign substances takes place.
  - Our natural EA is obtained from the sugar cane industry around Palmira, Colombia and is, together with spring water, the only other substance the coffee gets in contact with.
  - DC works with this natural origin solvent and fresh spring water for our caffeine stripping process.
  - The water-EA process allows for gentle caffeine extraction from the bean avoiding excessive heat and pressure thus retaining the natural structure of the coffee bean cells.



# Decaffeination Info

- The water-EA process applied by DC therefore allows excellent roasting and yields perfect aroma and taste.
- The process applied by DC is FDA approved, and our residuals of Ethyl Acetate are below 5 ppm, while international norms allow up to 20 ppm.
- A ripe Banana contains about 20 times more EA than our decaffeinated coffee !
- It is also worthwhile mentioning that due to the volatility of the Ethyl Acetate, any residual of it in coffee beans evaporates during any roasting process (E.A. evaporates at 70°C, coffee is roasted around 200°C), leaving no trace at all.



# Decaffeination Info



July 14th, 2016

## TO WHOM IT MAY CONCERN

**Subject:** Raw Material and Natural Ethyl Acetate Specification

**Dear Customer:**

On behalf of Sucroal, and as Alcochemical Quality Director, I declare that the raw materials used are molasses and sugar from the sugar mills, from where ethyl alcohol is obtained; which is the raw material for many of our products including the natural ethyl acetate used by Descafeacol S.A.S. and its specification are:

Minimum assay:	99.5%
Maximum water content:	0.050%
Maximum ethanol content:	100 ppm
Maximum acetic acid content:	0.005%
Maximum impurities content:	0.45 %

This certification is valid for one year from issue date.

If you have any question, please do not hesitate to contact the undersigned

Cordially,

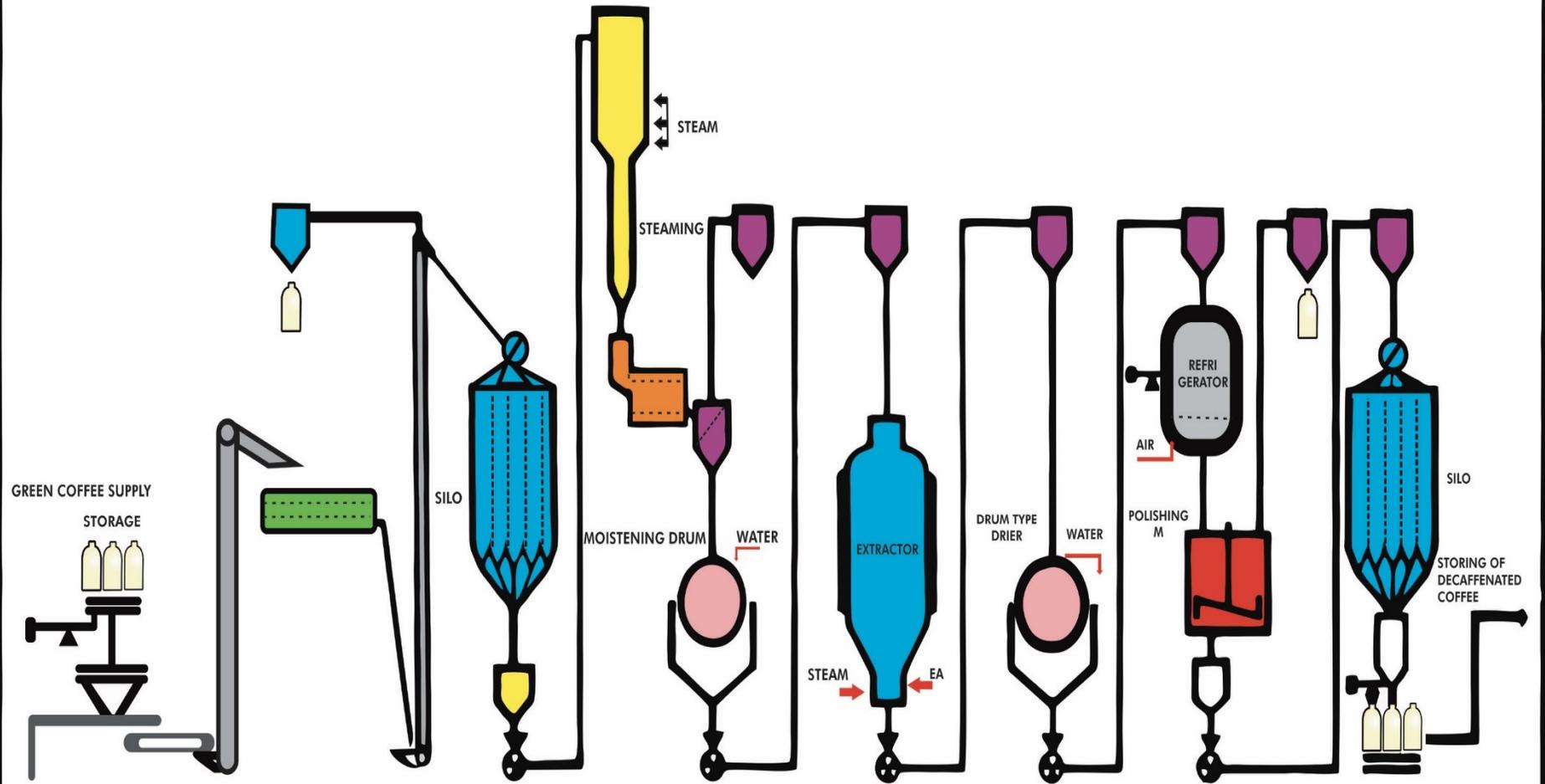
**Hector Ivan Toro L.**  
Alcochemical Quality Director  
Sucroal S.A.  
Phone: (57 2) 43 10 764 / 745  
E-mail: htoro@sucroal.com.co

## The outcome:

- The moisture content of the decaffeinated coffee beans is restablished to a maximum of 12%.
- 97% of caffeine is removed (American norm)
- The residual caffeine is maximum 0,1 %, (European norm)
- We can go as low as 0,03% residual caffeine if desired.



# DECAFFEINATION FLOW CHART





# The process in words

Descafecol SAS uses natural Ethyl Acetate – Water method to decaffeinate green coffee.

Green Coffee beans are first steamed with low pressure steam to remove silver skins. Then coffee is moistened with hot water to swell and soften the beans and start the hydrolysis of caffeine which is bonded to salts of chlorogenic acid inside the beans. This is what we call ***pretreatment step***.

The Extractors are filled with moistened coffee and caffeine removal is done by washing thoroughly the beans with recirculation of solvent (natural Ethyl Acetate - EA) in the extractors. This procedure has to be done several times in order to remove minimum 97 % of the caffeine initially present in coffee beans. This is what we call ***extraction***.

Once the extraction of caffeine is finished, the coffee beans have to be stripped off residual EA and we use a flow of low pressure saturated steam across the bed of coffee in the extractor to remove all remaining traces of EA. Ultimately, there's no more than 5 p.p.m. of EA left in the coffee.

From the extractors, coffee is sent to vacuum drying drums to remove water previously applied in the moistening step in order to adjust the final humidity value between 10 % and 12 %.

Coffee is then cooled quickly to ambient temperature using air fans. After cooling, coffee is polished with carnauba wax to enhance appearance and protection against environment humidity. We call this step ***post treatment***. After polishing, coffee is ready to be packed in jute bags of 70 Kg net weight.



# Our Facility





# The plant





# Decaffeination Info

## The details:

- The minimum batch for extraction is 60 bags (@70 kg) and the process takes no more than 48 hours from arrival when the proper planning has been done and the space has been reserved beforehand.
- The loss of coffee with exportable qualities in the process is 3%- 4% due to loss of caffeine, waxes, silverskins and some minor breakage of beans. With undergrades this loss will be higher.



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