

# Coffee Analysis Report



Environment Friendly  
Engineering Solution Company



**KERONE**

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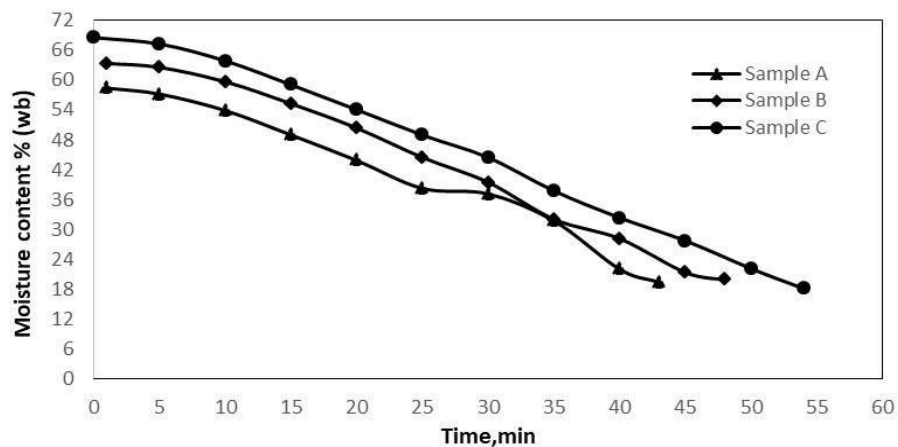
ISO 9001-2008 | ISO 9001-2015 | EMS 14001 | OHSAS 18001

## Coffee Analysis Report

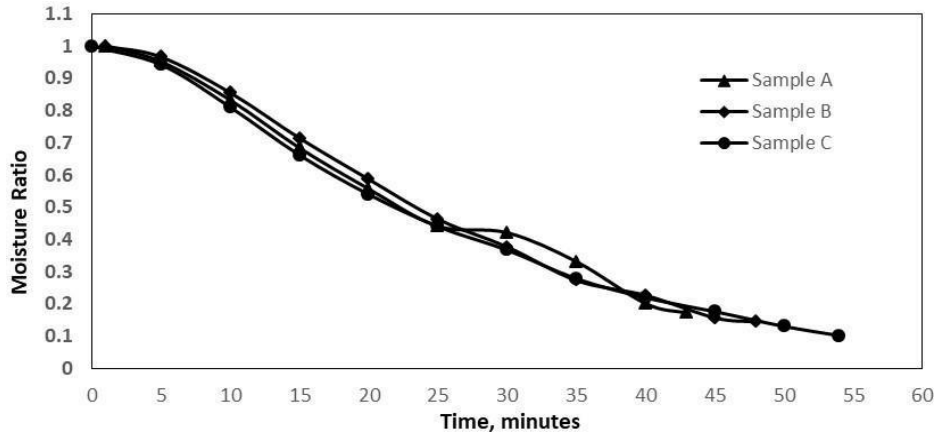
The coffee ground of 15 kg was brewed with 50 liters of distilled water. The brewing process was made by letting distilled water onto coffee grounds held in a muslin cloth tied to a stainless steel container (the container was sterilized before use). Then, the coffee powder that remained on the muslin cloth was stored for 15 days at room temperature. It has been observed that the fungus grows on the sample after the 6<sup>th</sup> day of the storage period. After every five days of storage, 5kg of the sample was taken out and dried using the microwave dryer. Drying was done at a microwave power density of 0.465 W/g.

The drying curves of coffee powder along the drying period on a wet basis are given in Figs. 1 and 2. A reduction in drying time occurred with the decrease in moisture level. The time required for lowering the sample's moisture content to 18% varied between 43 to 54 minutes, depending on the different moisture content of the sample. The moisture content of the sample increases during the storage period. The color parameters of undried and dried coffee powders are given in Table 1 and also images of the sample are shown in Fig. 3. It was found that there was an increase in the L\* value of the dried coffee powder when compared with the undried coffee powder. Microwave drying pushes the liquid to the surface, and the liquid is usually converted into vapor. This process results in drying without causing surface overheating phenomena. Therefore, in terms of surface color degradation, the preservation of the product color was good. Color changes that occur as a result of drying coffee samples are thought to be caused by the degradation of pigments by heat treatment and enzymatic or non-enzymatic (Maillard) browning reactions. It is also observed that there is no significant difference in the darkness value.

Further research is needed to study the change in chemical composition after drying, and microbial analysis with respect to days of storage for the growth of fungus also needs to be checked to improve the quality of the sample. If the wet sample is kept for more than 6 days the microbial growth increases rapidly with visible fungus grown on it. Visibly, it was similar to *Aspergillus* Species. Therefore, microwave treatments at different levels (days) are required to control the quality.



**Fig 1:** Drying curve of microwave dried coffee powder at microwave power density of 0.465 W/g. Sample A- sample collected after storage of 5 days; Sample B- sample collected after storage of 10 days; Sample C- sample collected after storage of 15 days.

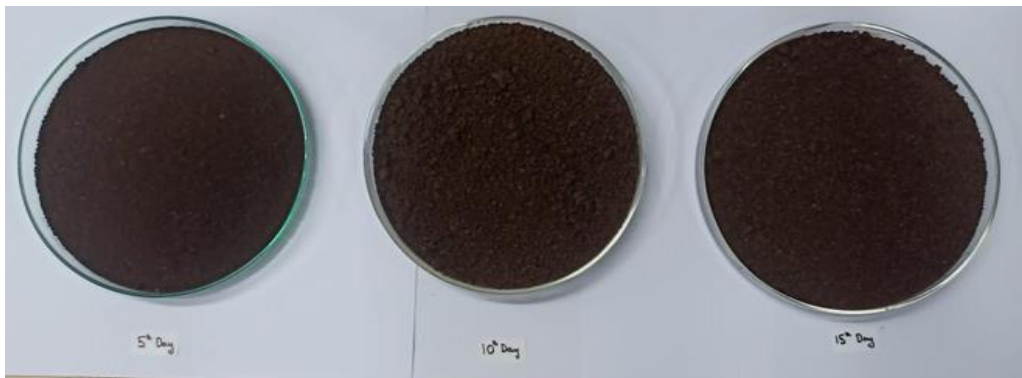


**Fig 2:** Moisture ratio curve of microwave dried coffee powder at microwave power density of 0.465 W/g. Sample A- sample collected after storage of 5 days; Sample B- sample collected after storage of 10 days; Sample C- sample collected after storage of 15 days.

**Table 1:** Color parameters of microwave dried coffee powder

	L*	a*	b*	$\Delta E$	Chroma	Hue	BI	Darkness
Control	10.80	4.12	6.86	-	8.00	1.45	122.49	89.56
5th day	18.06	5.02	6.40	6.80	8.13	1.45	63.33	82.34
10th day	17.53	5.03	7.17	11.25	8.76	1.46	72.55	82.93
15th day	21.48	3.09	3.39	13.44	4.59	1.36	27.31	78.65

BI= browning index;  $\Delta E$  = change in color difference value



**Fig 3:** Images of sample stored and dried for different time periods ( 5, 10 and 15 days)



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