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Determination of the optimal factors for the process of contraction obtained for ceramic electrical insulation way conventional and microwave

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Abstract

From a ceramic (humidity between 15 and 20%) used as electrical insulation, drying and microwave Offline became one dimensional analysis to determine the contraction and the percentage of moisture to build curves Bigot.

Through experimental designs were analyzed the results to identify controllable and uncontrollable factors, to determine the optimal levels of factors in the process. That is to say it determines the most optimal for the contraction in the samples is minimized.

Table 1: Measurement of contraction and moisture in function of time and method of drying.

TRADITIONAL		
Time	**%Contraction**	**% Moisture**
0	25,00	19,77
30	20,02	16,98
60	14,33	14,08
90	13,66	8,84
120	13,37	5,95
150	13,08	4,57
180	12,80	3,21
210	12,28	2,80
240	11,48	1,99
270	9,77	1,06
310	6,38	0,11
340	0,00	0,00

Table 2: Measurement of contraction and moisture in function of time and method of drying

MICROWAVE		
Time	**%Contraction**	**% Moisture**
0	14,91	19,76
30	7,27	13,82
60	6,18	9,55
90	5,82	3,95
150	5,55	1,05
180	5,36	0,57
230	5,08	0,07
290	4,61	0,01
310	0,00	0,00

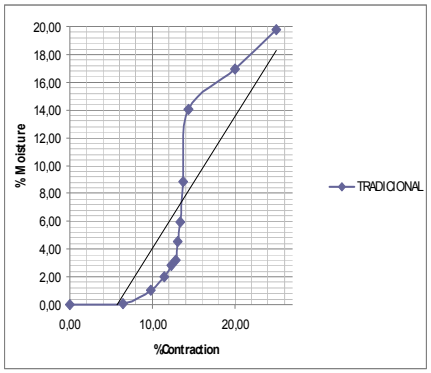

Figure 1: Bigot curves for traditional method

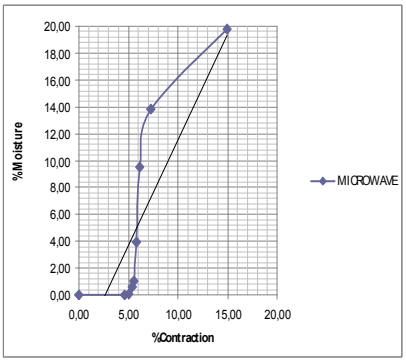

Figure 2: Bigot curves for microwave method

References

[1] Denis A. Brosnan and Gilbert C. Robinson. Introduction to drying of ceramics, (2003) pp 253
[2] Montgomery, Dougals C. Design of analysis of experiments, 5th edition (2001) p 170 – 620
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