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STUDY OF THE DEVELOPMENT OF AN ULTRALOW CEMENT CORDIERITE CASTABLE MIX FOR THE INDUSTRIAL PRODUCTION OF CORDIERITE PLATES.

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Abstract - The refractory cordierite plates are widely used in most of the ceramic process such as pottery, table ware and sanitary ware around the world [1]. Traditionally the manufacturing of the refractory cordierite plates is a very slow process which requires much care, such as, manages of heavy gypsum molds, very long dried periods of time and a high percent of green breakage. A new manufacturing process have been developed using an ultralow cement cordierite castable mix.

Traditionally in México and even in many countries around the world the manufacturing of cordierite plates used for the ceramic firing process is usually prepared from a slurry which mainly contain: calcined kaolins, bauxite, talc, etc [2]. The cordierite plates are formed inside gypsum molds where normally stay for a long period of time (12 to 24 h). This type of production process is very slow and produce high percent of breakage (green and after fired). The main targets of this investigation were to develope an ultralow cement castable mix [3] (ULCCM) to produce in a faster way a refractory cordierite structure with a better performance that the conventional cordierite plate made from a slurry mix. The Industrial manufacturing of cordierite plates manufactured by this new (ULCCM) today showed a very substantial reduction in green and fired breakage, the production productivity increases drastically and the performance of the new cordierite plates with different pottery producers was successful. For this investigation were designed 6 mixes which were evaluated their physical properties after fired at 1260°C, the microstructure phases were studied by X-ray analysis, the glassy phases by IR and microstructure in SEM. The results were compared with commercial cordierite plate mixes.

Table No. 1 Refractory Mixes

	I	II	III	IV
Chinese Flint Clay	56	28		
Mexican Kaolin calcine		28	55.34	63
Chinese Bauxita 200M	14	14	14.22	7
Mullite 70 (100M)	10	10	10.16	10
DB MgO (90%) 200M	10	10	10.16	10
Fume Silica	7.5	7.5	7.62	7.5
Cement 70% Al2O3	2.5	2.5	2.5	2.5
TPN (adit.)	0.15	0.15	0.15	0.15

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[3] R. Fisher, Ceramic Transactions, Advances in Refractories Technology, Volume No.4, The American Ceramic Society Inc.