Material Technical Information - CI02

Ceramics Consultancy Ltd

Document Issue Information				
Document Reference:-	CCCLMTICI02		Casting Application:-	Equiax or Directional Solidification
Issue No:-	5		Suitable Casting Materials:-	Cobalt Based Alloy's or Steel
Issue Date:-	01 /02 /19			
Issued By:-	Mr Kevin Dawson		Typical Core Geometry:-	Simple Geometries with Minor Detail
Authorised By:-	Mr Dennis Dixon		Typical Component Type:-	Any Component Type

Ceramic Core Body Composition		Limits	Typical Result - % of Ceramic Core Body
Silica	SiO_2	+/- 0.50 %	69.41%
Zircozon	$ZrSiO_4$	+/- 0.50 %	21.72%
Alumina	Al_2O_3	+/- 0.50 %	1.62%
Other(s)		+/- 0.50 %	7.25%

Trace Element Analysis		Limits	Typical Result
Bismuth	Bi	+/- 1 ppm	5 ppm
Iron	Fe	+/- 50 ppm	250 ppm
Lead	Pb	+/- 10 ppm	20 ppm
Silver	Ag	+/- 10 ppm	20 ppm
Tin	Sn	+/- 10 ppm	20 ppm
Zinc	Zn	+/- 15 ppm	50 ppm

The following information is typical result's that can be expected using Test Bars (Dimensions 100mm x 12mm x 4mm) produced at Clan Ceramics Consultancy Ltd

Physical Properties	Limits	Fired to 1200°C	Fired to 1500°C
Apparent Porosity	+/- 2.50 %	29 %	29 %
True Porosity	+/- 2.50 %	31 %	31 %
Water Absorption	+/- 2.50 %	16 %	16 %
Apparent Bulk Density	+/- 0.50 %	1.75 gms/cm3	1.75 gms/cm3
Bulk Density	+/- 0.50 %	2.50 gms/cm3	2.50 gms/cm3
Creep Test	+/- 0.10 %	0.10 mm	0.05 mm
Slump Test	+/- 0.10 %	0.10 mm	0.05 mm
Thermal Expansion	+/- 0.10 %	0.30 %	0.25 %
Loss on Ignition	+/- 0.50 %	13.00 %	13.00 %

Chemical Analysis	Limits	Fired to 1200°C	Fired to 1500°C
Cristobalite - Post Process Fired	+/- 5 %	12 %	36 %
Leachability - Moderate Sludge	+/- N/A %	100 %	100 %
Leachability - Break Up Time	+/- 10 %	60 Minutes	90 Minutes

Process Shrink - From Mould to Fired	Limits	Fired to 1200°C	Fired to 1500°C
Free Linear Shrinkage (Tool to Fired)	+/- 10 %	1.00 %	N/A %

Impregnation (Fired to 1200°C)	Limits	Modulus of Rupture - 3 Point Test @ 80mm Spacing			
		Psi	Mpa	Newtons	Deflection - mm
Injected (Green) Strength - Tested @ 20°C	+/- 10 %	580	4.00	4.00	3.00
Fired @ 1200°C & Tested @ 20°C - Not Impregnated	+/- 10 %	2031	14.00	14.00	1.75
PVA Impregnated / Cured @ 185°C & Tested @ 20°C	+/- 10 %	5076	35.00	35.00	0.55
Fired & Tested @ 1500°C - Not Impregnated	+/- N/A %	N/A	N/A	N/A	N/A

Important Information

Test result's in this document are based upon the test's undertaken at Raw Material Suppliers / Test Facilities & Clan Ceramics Consultancy Ltd the results may vary due to:-

< The type and make of the equipment being used

< The environmental conditions within the facility where the tests are being undertaken

< The process settings and general maintenance on the equipment being used

< The operatives personal experience within the process environment . All test results and limits are intended as

All test results and suggested limits are intended as a guideline only and do not form part the basis for inspection criteria as regards the pass or fail of goods supplied which in general would be determined by the customer's own requirements.