

# AzuRe175



**Descrição:** Fragmento de azulejo do século XVIII (1760-1780);  
Dimensões: 54 x 129 x 11 mm; Origem: Coimbra.

**Amostras:** Fragmentos e uma secção semi-polida em depósito  
no *Museu Nacional do Azulejo* em Lisboa.

# Índice

- **Caracterização Morfológica**
  - ✓ Imagens macroscópicas
  - ✓ Imagens de microscopia electrónica (SEM)
- **Caracterização Física**
  - ✓ Propriedades hídricas / Porosidade
- **Caracterização Química/Mineralógica**
  - ✓ Análise por SEM/EDS
  - ✓ Análise por XRD
  - ✓ Análise Térmica por TGA/DTA

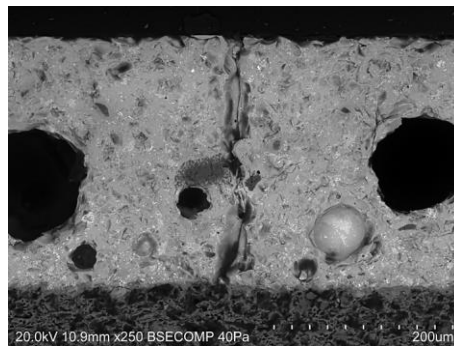
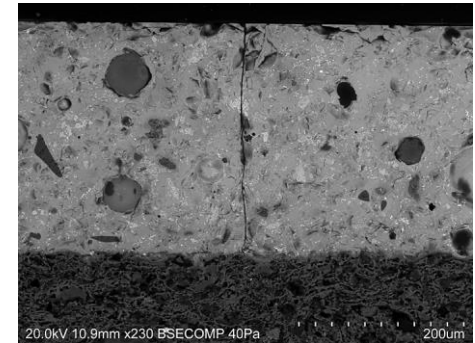
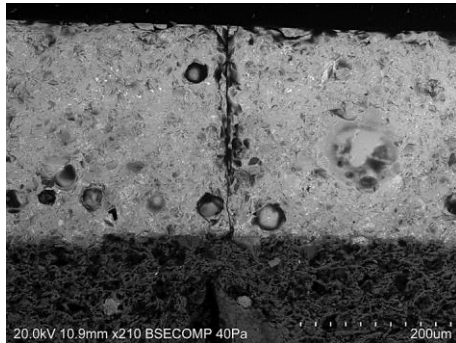
AzuRe175





Fragmento de azulejo em bom estado de conservação. Apresenta craquelé pouco evidente.

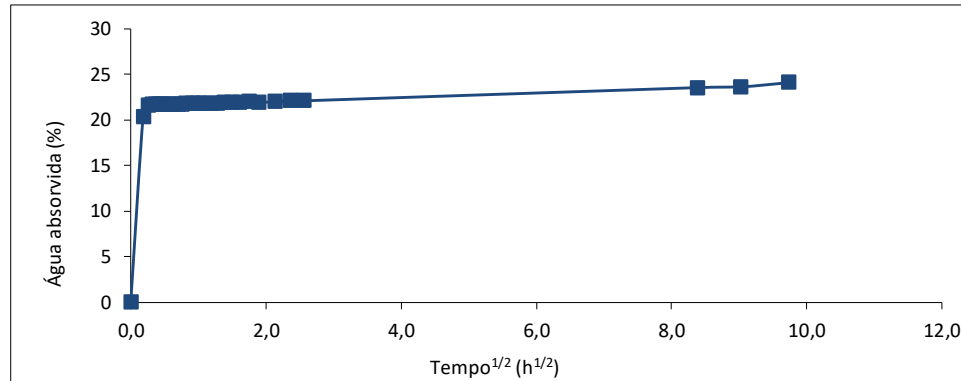
- Espessura do Azulejo = 11 mm



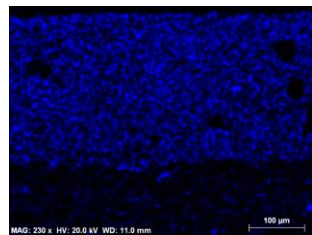
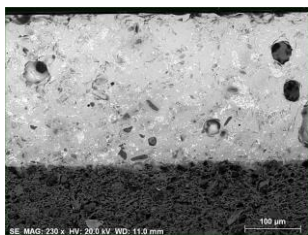
- Espessura do Vidrado = 312-331  $\mu\text{m}$

**Equipamento:** Microscópio eletrónico de varrimento HITACHI 3700N acoplado a um espectrómetro de energia dispersiva de raios-X Bruker Xflash 5010.

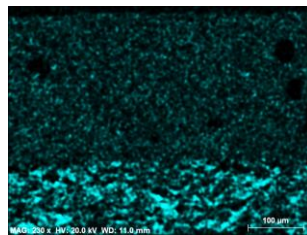
## Curva de Absorção de Água (Chacota)



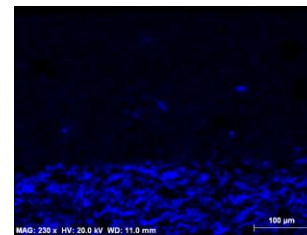
Procedimento: baseado na norma NP EN-13755.



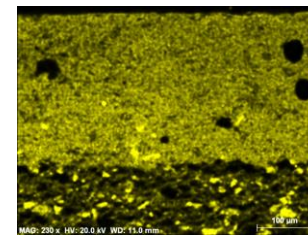
Na



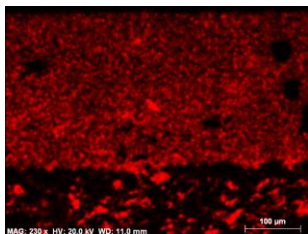
Mg



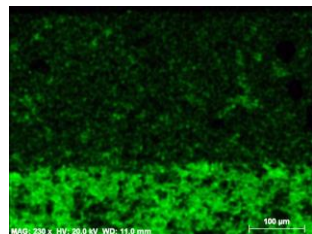
Al



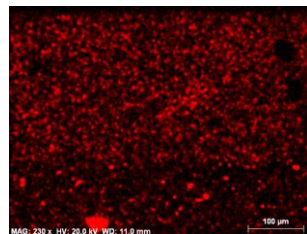
Si



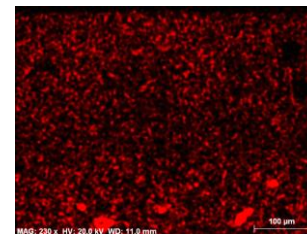
K



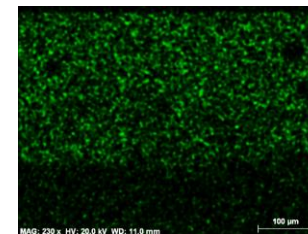
Ca



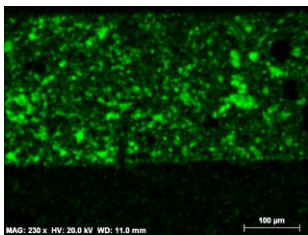
Ti



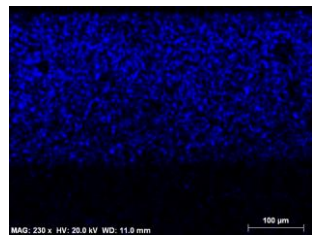
Fe



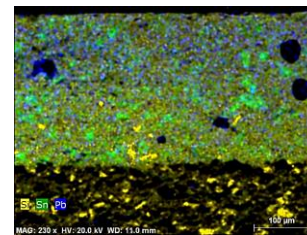
Cu



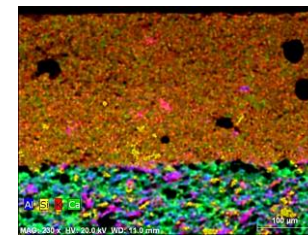
Sn



Pb



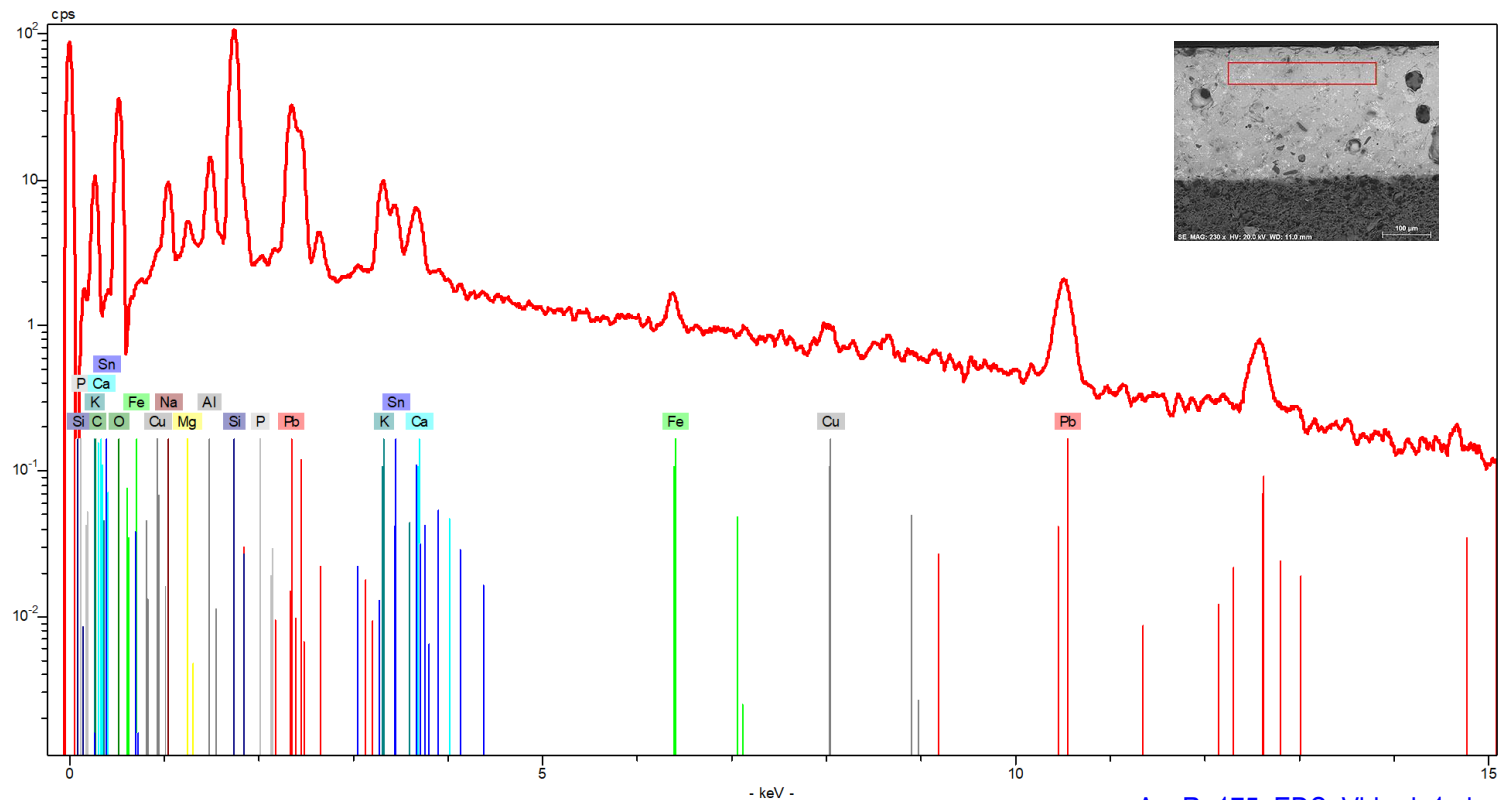
Combinação  
Si\_Sn\_Pb



Combinação  
Al\_Si\_K\_Ca

**Equipamento:** Microscópio eletrónico de varrimento HITACHI 3700N acoplado a um espectrómetro de energia dispersiva de raios-X Bruker Xflash 5010.

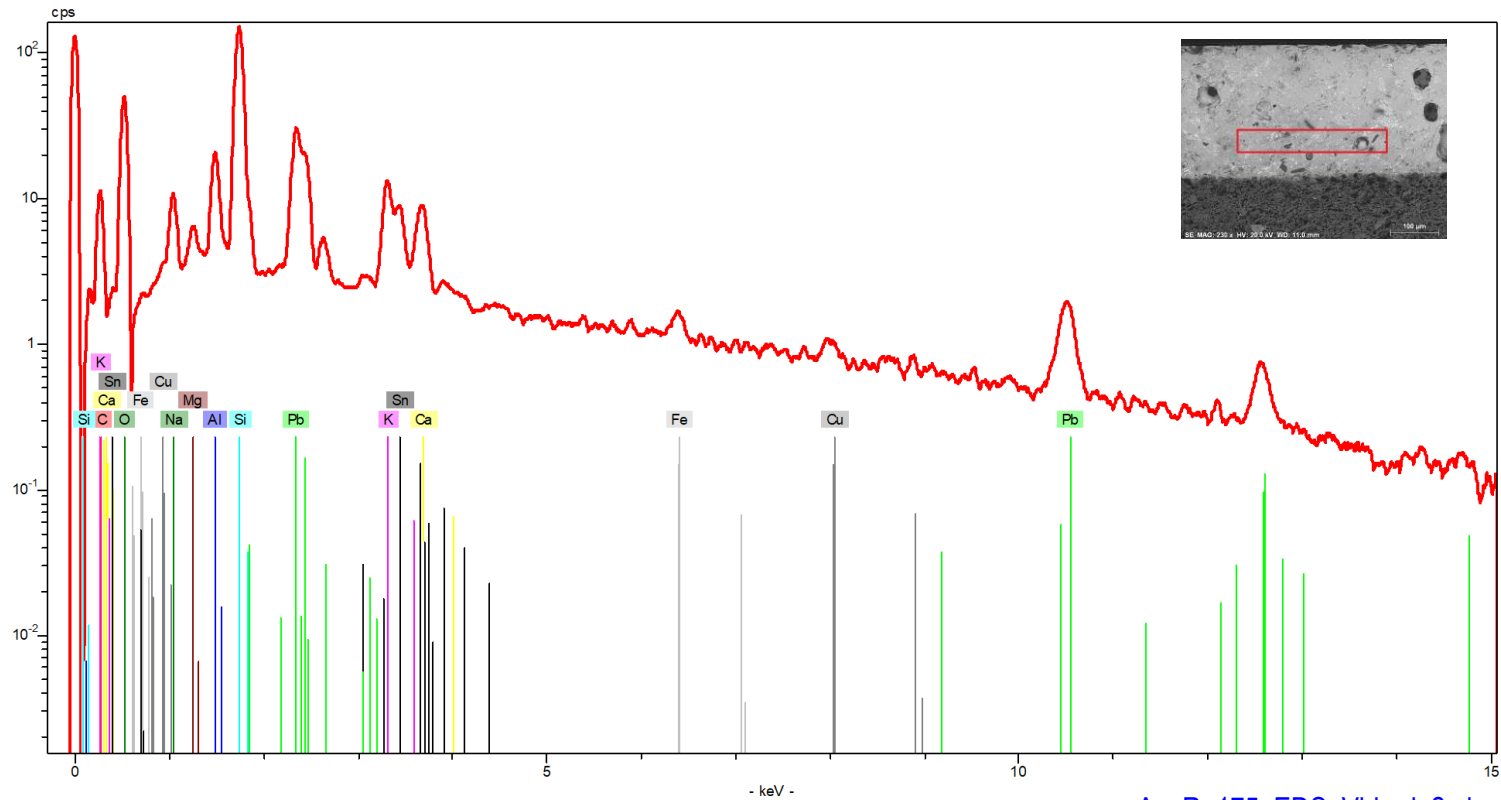
## VIDRADO BRANCO



[AzuRe175 EDS Vidrado1.xls](#)

**Equipamento:** Microscópio eletrônico de varrimento HITACHI 3700N acoplado a um espectrómetro de energia dispersiva de raios-X Bruker Xflash 5010.

## VIDRADO BRANCO

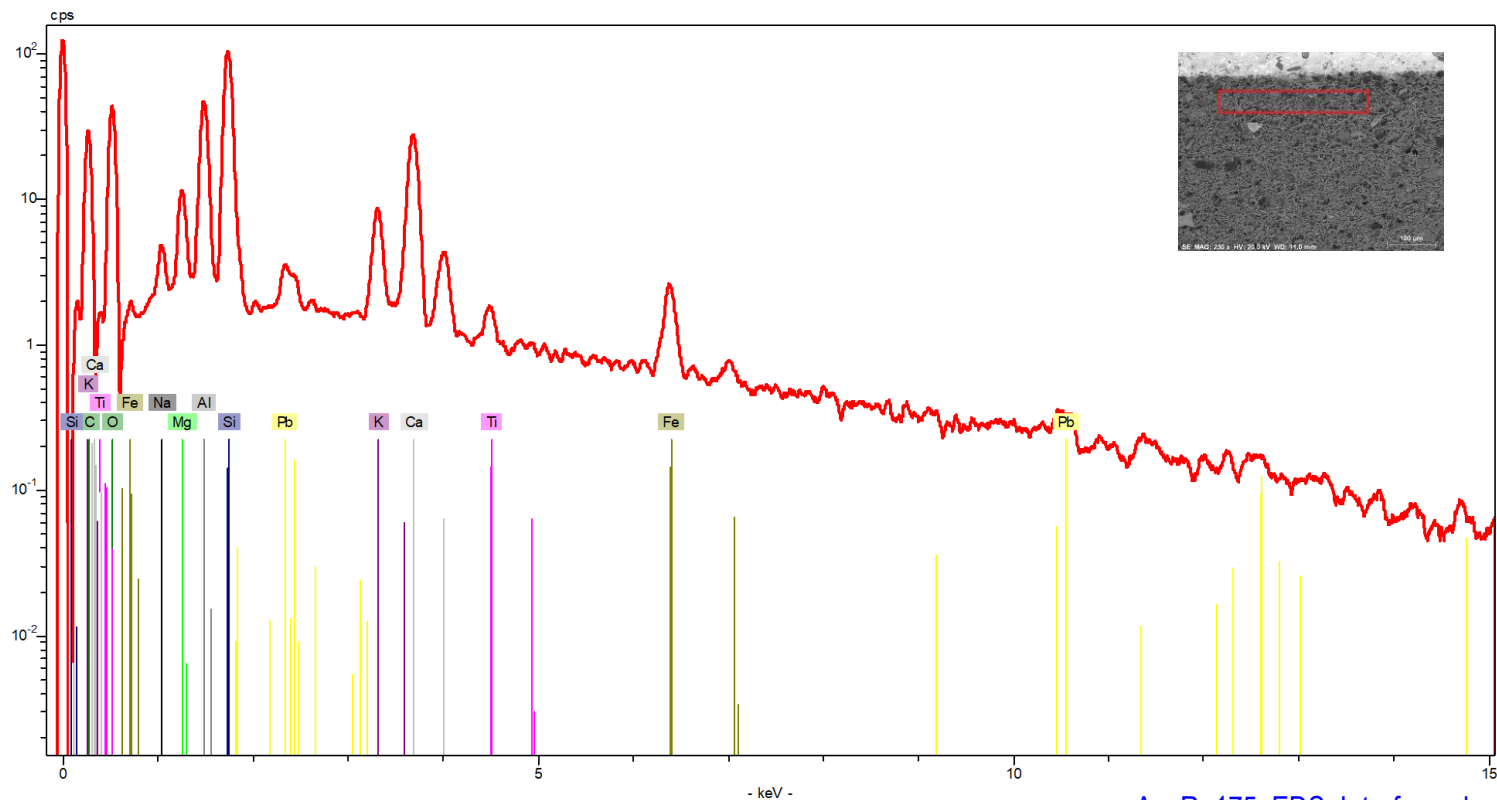


[Azure175 EDS Vidrado2.xls](#)

**Equipamento:** Microscópio eletrónico de varrimento HITACHI 3700N acoplado a um espectrómetro de energia dispersiva de raios-X Bruker Xflash 5010.

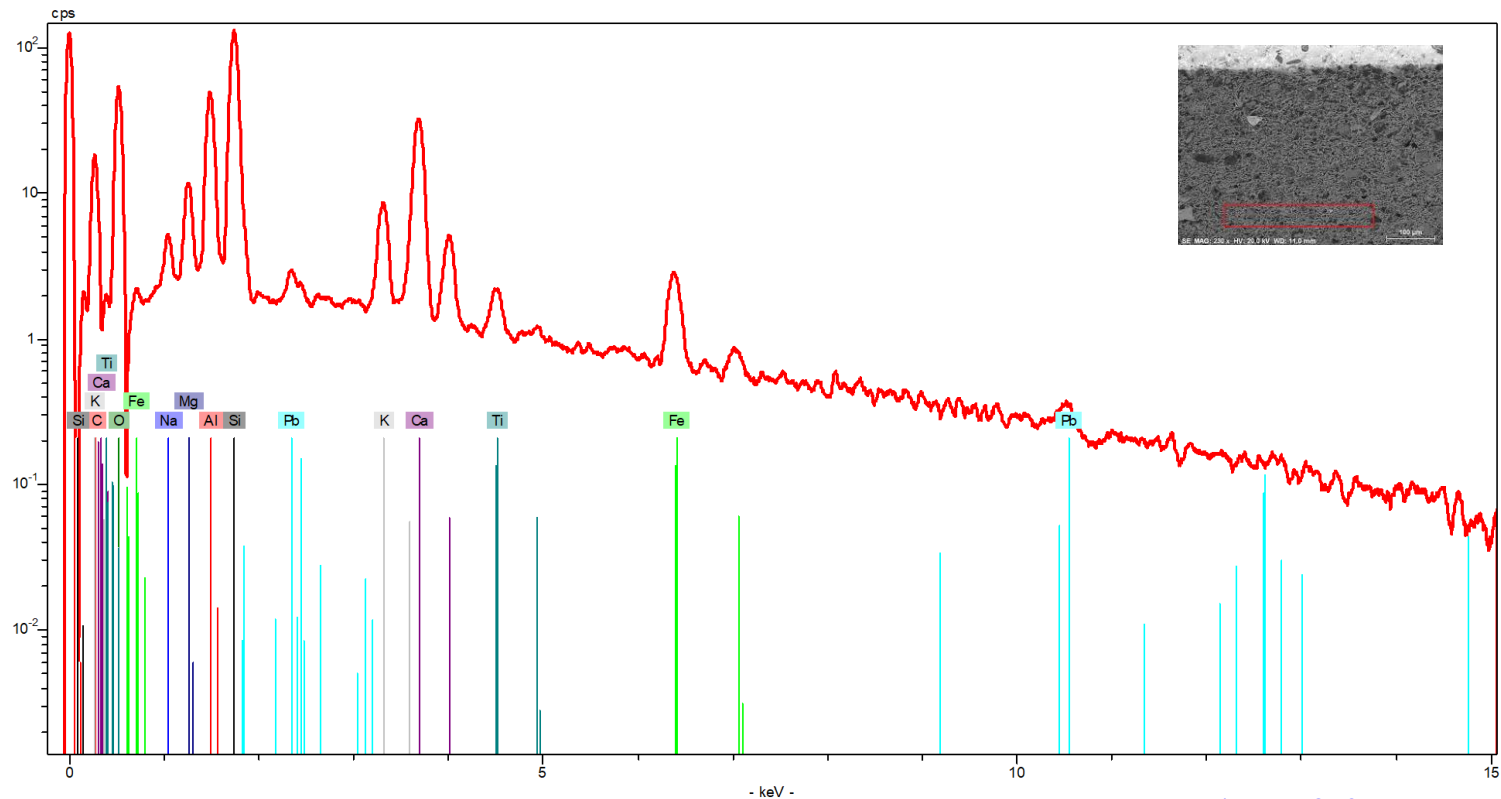


## INTERFACE

[Azure175 EDS Interface.xls](#)

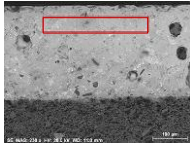
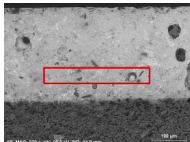
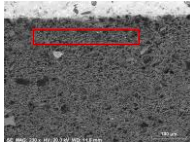
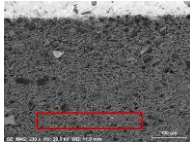
**Equipamento:** Microscópio eletrônico de varrimento HITACHI 3700N acoplado a um espectrómetro de energia dispersiva de raios-X Bruker Xflash 5010.

CHACOTA

[Azure175 EDS Chacota.xls](#)

**Equipamento:** Microscópio eletrónico de varrimento HITACHI 3700N acoplado a um espectrómetro de energia dispersiva de raios-X Bruker Xflash 5010.

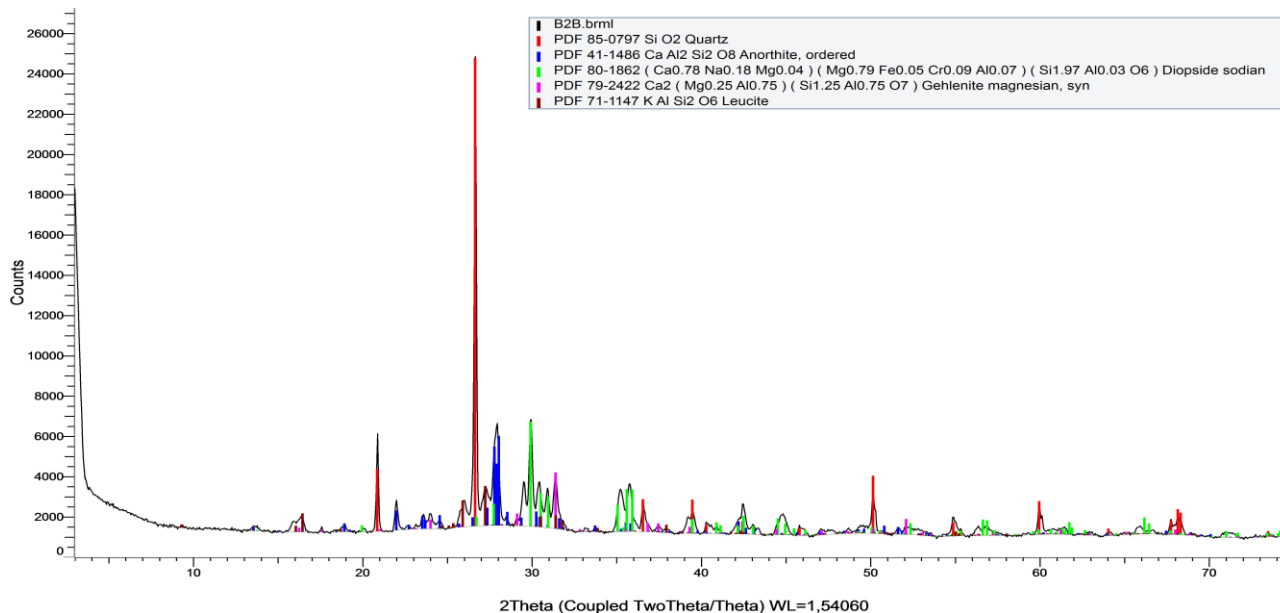
## Composição química (% m/m)\*

Área Analisada	Na	Mg	Al	Si	P	K	Ca	Ti	Fe	Cu	Sn	Pb
 vidrado branco	4,32	1,14	4,14	30,53	0,11	5,44	1,96	--	0,94	0,94	8,51	41,96
 vidrado branco	3,84	1,19	5,18	36,71	--	6,22	2,58	--	0,79	0,76	9,81	32,92
 chacota (próximo interface)	1,53	3,83	17,49	39,03	--	5,22	23,63	1,05	4,01	--	--	4,20
 chacota	1,43	3,37	15,91	42,57	--	4,55	24,02	1,39	4,17	--	--	2,60

\* - Os valores apresentados na tabela correspondem às percentagens mássicas dos elementos detetados na amostra, não considerando o teor de oxigénio e normalizados a 100% ([ver aviso](#)).

**Equipamento:** Microscópio eletrónico de varrimento HITACHI 3700N acoplado a um espectrómetro de energia dispersiva de raios-X Bruker Xflash 5010.

CHACOTA

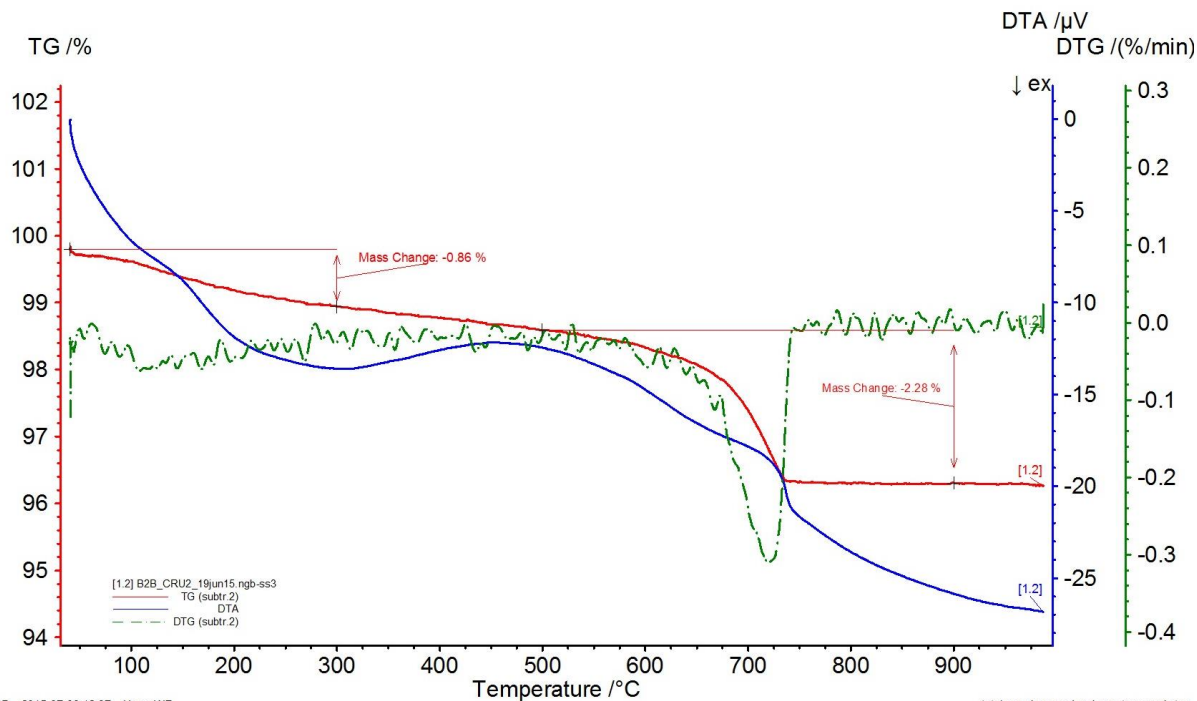


Composição mineralógica semi-quantitativa (% m/m)

Quartzo	Anortite	Diópsido sódico	Gehlenite Magnesia	Leucite
SiO <sub>2</sub>	Ca Al <sub>2</sub> Si <sub>2</sub> O <sub>8</sub>		Ca <sub>2</sub> (Mg <sub>0,25</sub> Al <sub>0,75</sub> )(Al <sub>0,75</sub> Si <sub>1,25</sub> O <sub>7</sub> )	K(AlSi <sub>2</sub> O <sub>6</sub> )
28,5	43,9	17,5	4,6	5,4

Equipamento: Difrátometro de raio-X Bruker AXS-D8 Discover

## CHACOTA



Perda de massa (%)	Teor de carbonatos (%)
2,28	5

B2B 2015-07-03 12:37 User: W7

total com brancosLurdes esteves.ngb-taa

Equipamento: Analisador térmico TGA/DTA Netzsch STA 449 F3 Jupiter.