

Big Red- Δ 6

Lab 2-Flux Capacity

Big Red

Original

070822-1

G200 EU	23.37
Whiting	27.11
EPK	11.17
Flint	12.73
3134	25.62
Chrome Oxide	0.10
Tin Oxide	8.00
Water	60



1-3 Second Dip



2-3 Second Dips



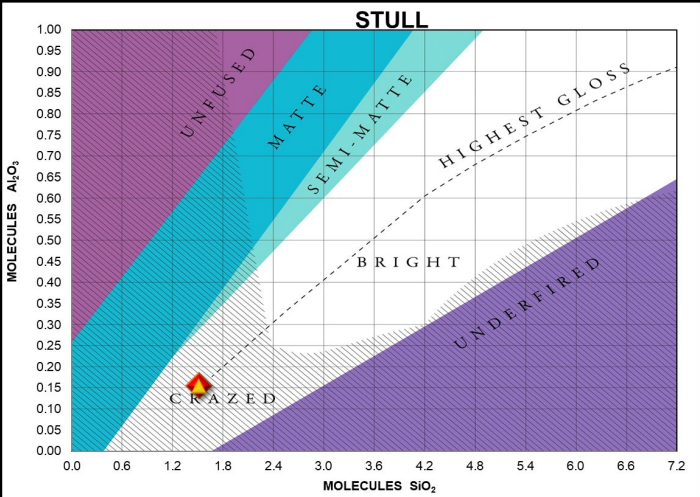
Reduction



Oxidation

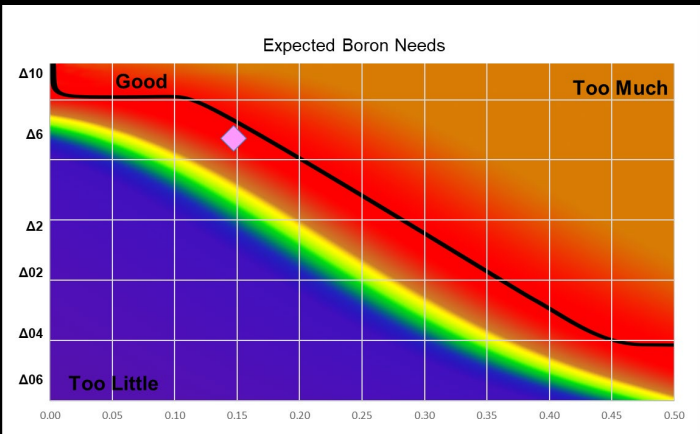
UMF

SiO ₂ :Al ₂ O ₃ Ratio 9.75 : 1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.69	Collective "Al ₂ O ₃ " 0.17	Na ₂ O 0.11	K ₂ O 0.06	MgO 0.00	CaO 0.82
B ₂ O ₃ 0.16	Al ₂ O ₃ 0.17	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.00
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



EUMF

SiO ₂ :Al ₂ O ₃ Ratio 9.75 : 1		Alkali Metals 0.26		Alkaline Earths 0.74	
SiO ₂ 1.52	Collective "Al ₂ O ₃ " 0.16	Na ₂ O 0.10	K ₂ O 0.05	MgO 0.00	CaO 0.74
B ₂ O ₃ 0.15	Al ₂ O ₃ 0.15	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂ 0.10	ZnO	FeO 0.00
Cr ₂ O ₃ 0.00	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



Ceramic
Materials
Workshop

Lab 2-Alkali Metals-Oxidation



070822-1



070822-8



070822-9



070822-10



070822-11



070822-12



Original (G200 EU)



w/Custer



w/Mahavir



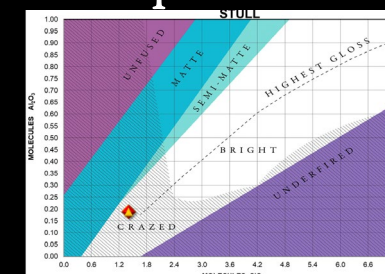
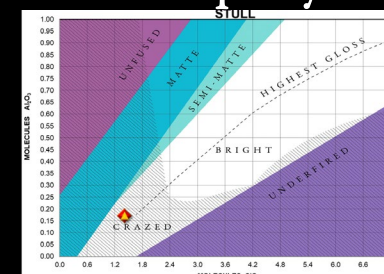
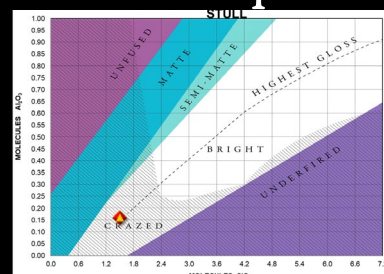
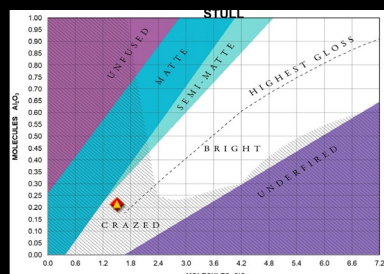
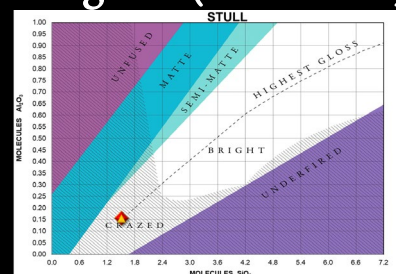
w/Minspar



w/Neph Sy



w/Spodumene



Ceramic
Materials
Workshop

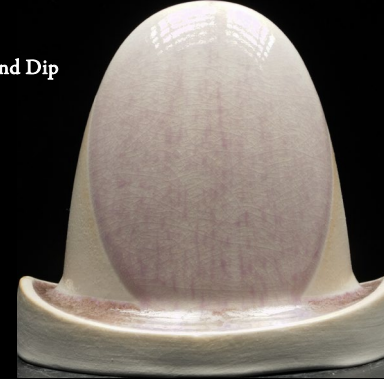
Lab 2-Alkali Metals-Oxidation



070822-1



070822-14



070822-15

1-3 Second Dip



Original

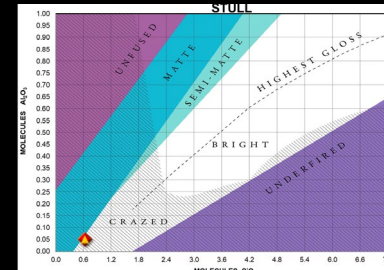
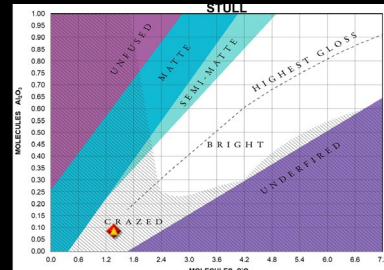
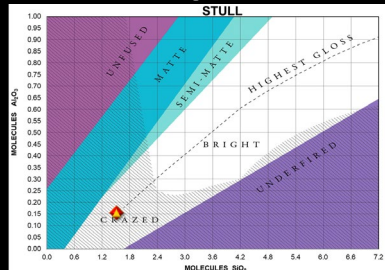


w/Frit 3110



w/Lithium Carbonate

2-3 Second Dips



Ceramic
Materials
Workshop

Lab 2-Alkali Metals-Reduction



070822-1

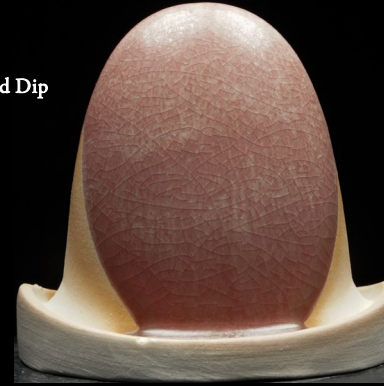


070822-8



070822-9

1-3 Second Dip



070822-10



070822-11



070822-12



Original (G200 EU)

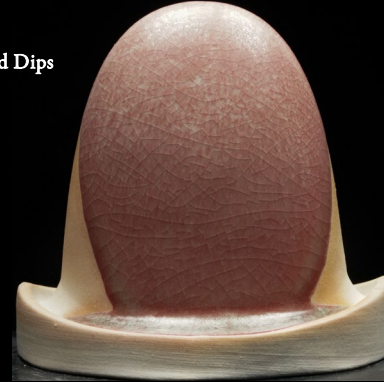


w/Custer



w/Mahavir

2-3 Second Dips



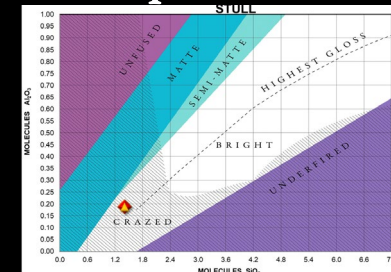
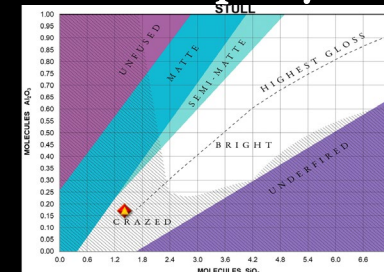
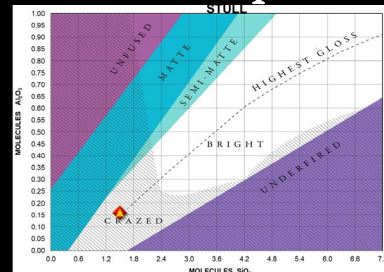
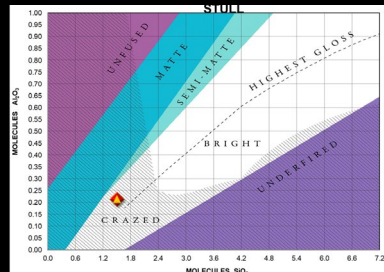
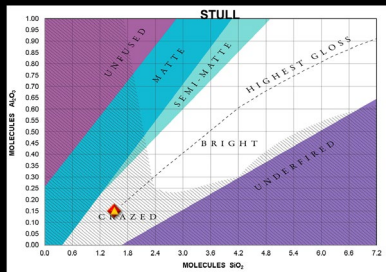
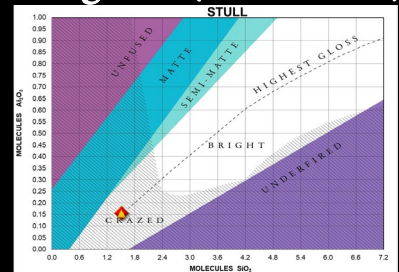
w/Minspar



w/Neph Sy



w/Spodumene



Ceramic
Materials
Workshop

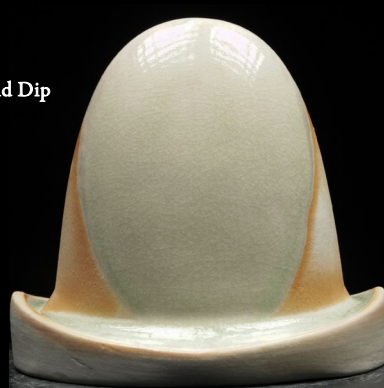
Lab 2-Alkali Metals-Reduction



070822-1



070822-14

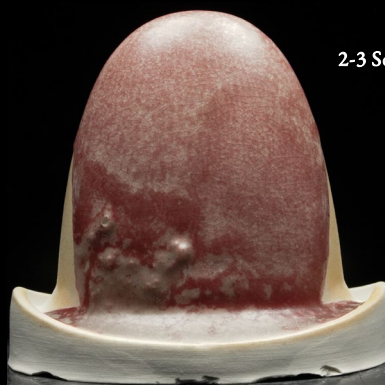


070822-15

1-3 Second Dip



Original

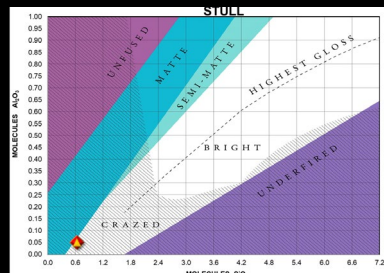
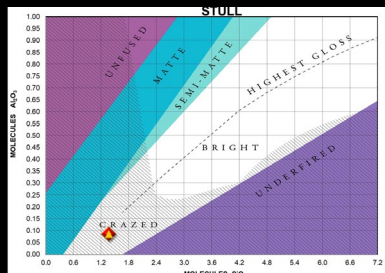
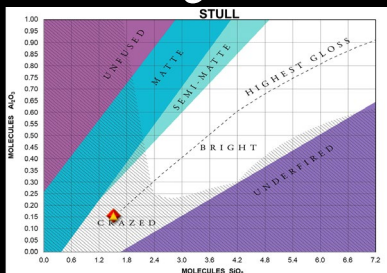


w/Frit 3110



w/Lithium Carbonate

2-3 Second Dips



Ceramic
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Lab 2-Alkaline Earth-Oxidation



070822-1



070822-16



070822-17

1-3 Second Dip



070822-18



070822-19



070822-20



Original (W)

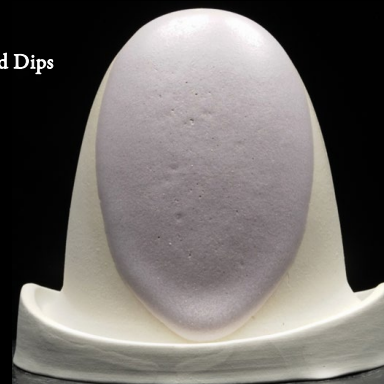


w/Talc



w/Mag Carb

2-3 Second Dips



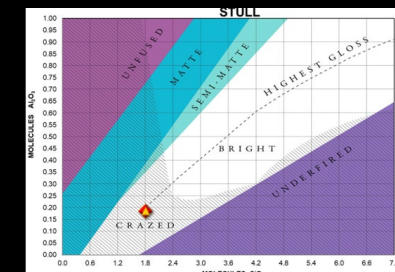
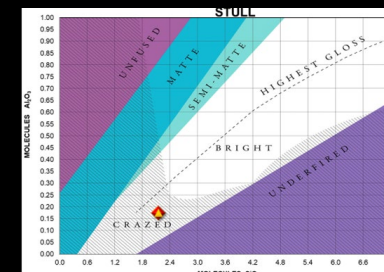
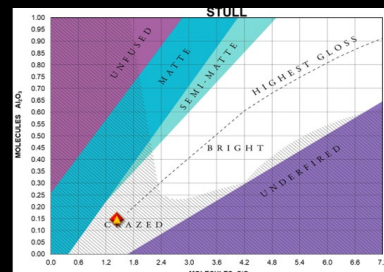
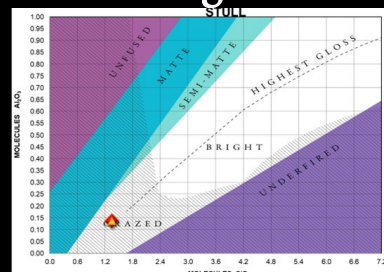
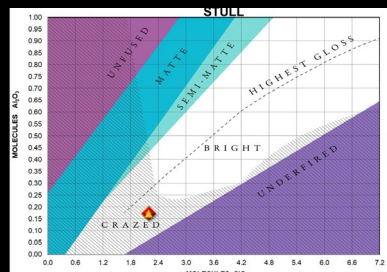
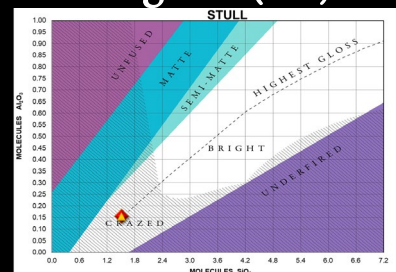
w/Dolomite



w/Wollastonite



w/Strontium Carb



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Lab 2-Alkaline Earth-Oxidation



070422-1



070422-21



070422-22



070422-23

1-3 Second Dip



Original (W)



w/Barium Carb

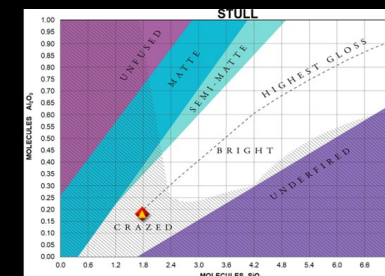
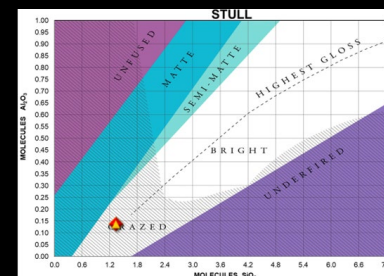
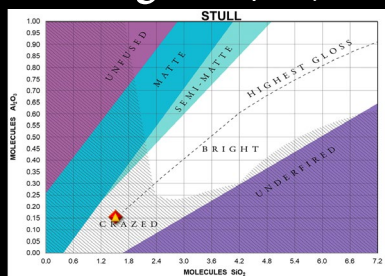


w/Zinc Oxide



w/Bone Ash

2-3 Second Dips



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Lab 2-Alkaline Earth-Reduction



070822-1

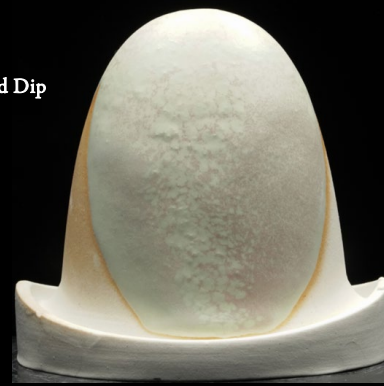


070822-16



070822-17

1-3 Second Dip



070822-18



070822-19



070822-20



Original (W)



w/Talc



w/Mag Carb

2-3 Second Dips



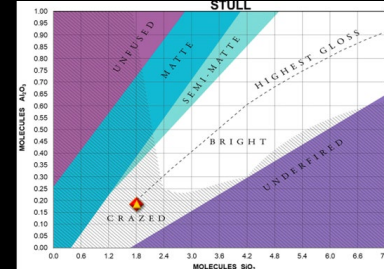
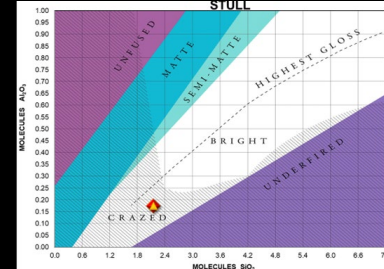
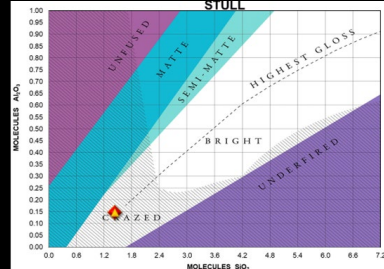
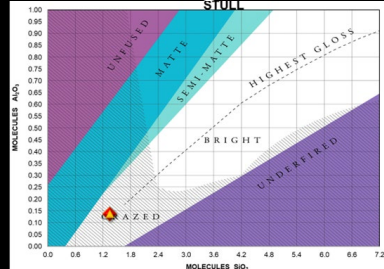
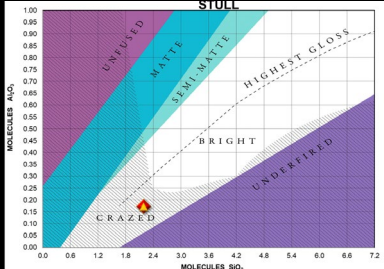
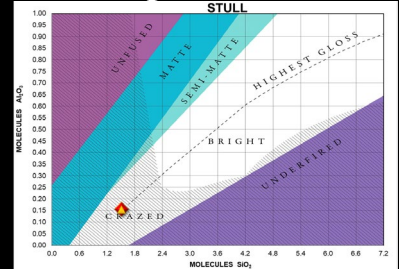
w/Dolomite



w/Wollastonite



w/Strontium Carb



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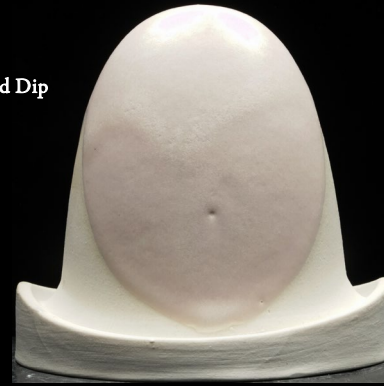
Lab 2-Alkaline Earth-Reduction



070422-1



070422-21



070422-22



070422-23

1-3 Second Dip



Original (W)



w/Barium Carb

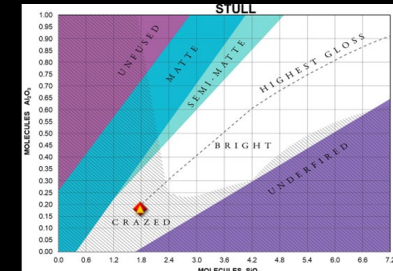
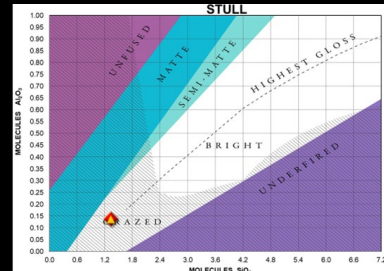
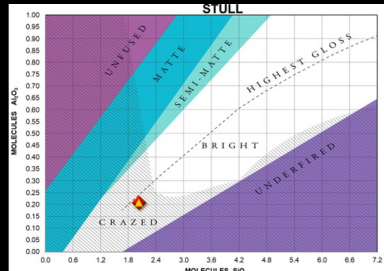
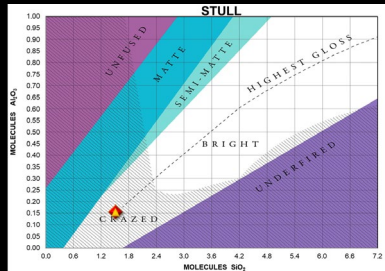


w/Zinc Oxide



w/Bone Ash

2-3 Second Dips



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Big Red

Original

070822-1

G200 EU	23.37
Whiting	27.11
EPK	11.17
Flint	12.73
3134	25.62
Chrome Oxide	0.10
Tin Oxide	8.00
Water	60



1-3 Second Dip



2-3 Second Dips



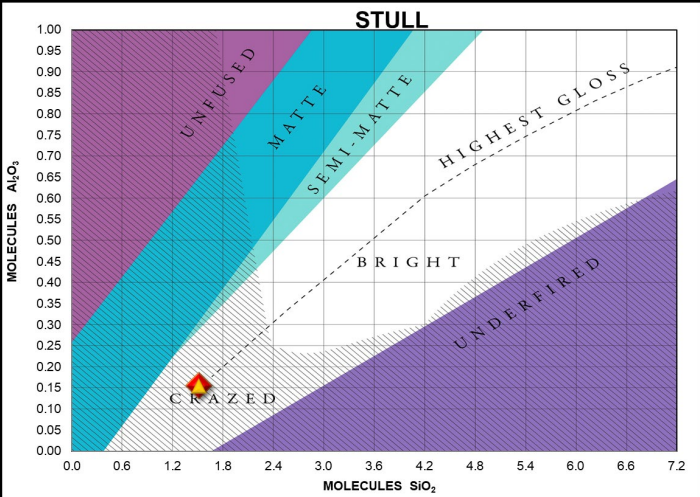
Reduction



Oxidation

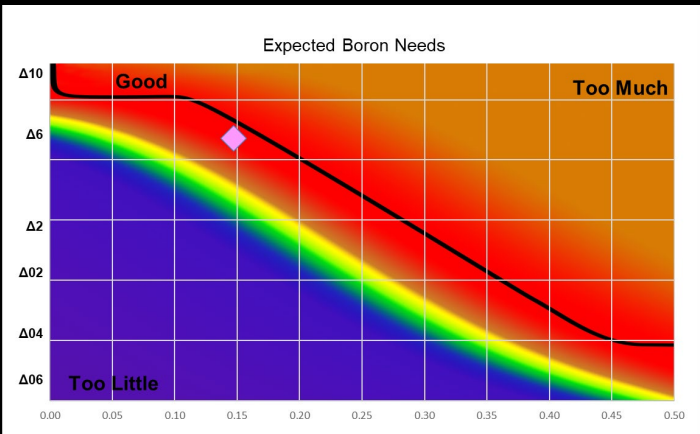
UMF

SiO ₂ :Al ₂ O ₃ Ratio 9.75 : 1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.69	Collective "Al ₂ O ₃ " 0.17	Na ₂ O 0.11	K ₂ O 0.06	MgO 0.00	CaO 0.82
B ₂ O ₃ 0.16	Al ₂ O ₃ 0.17	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.00
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



EUMF

SiO ₂ :Al ₂ O ₃ Ratio 9.75 : 1		Alkali Metals 0.26		Alkaline Earths 0.74	
SiO ₂ 1.52	Collective "Al ₂ O ₃ " 0.16	Na ₂ O 0.10	K ₂ O 0.05	MgO 0.00	CaO 0.74
B ₂ O ₃ 0.15	Al ₂ O ₃ 0.15	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂ 0.10	ZnO	FeO 0.00
Cr ₂ O ₃ 0.00	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



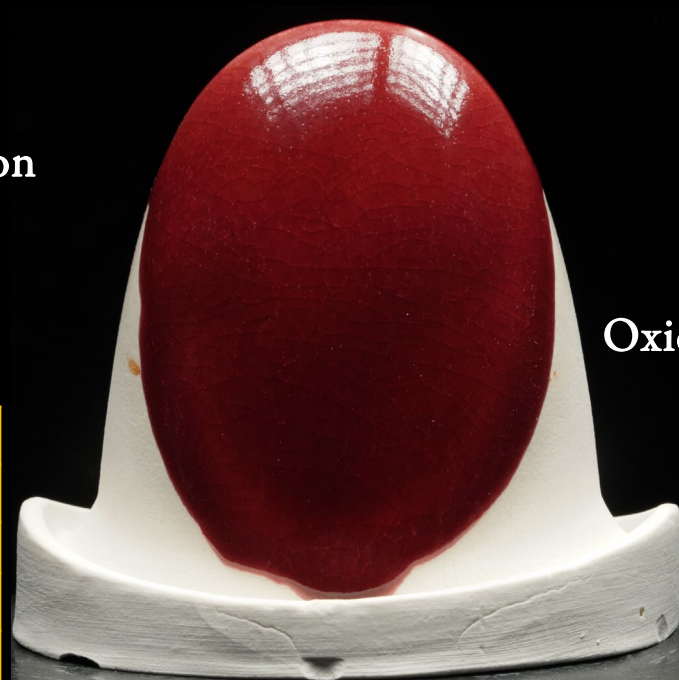
Ceramic
Materials
Workshop

Big Red

Weight Substitution
Custer Feldspar

070822-8

Custer	23.37
Whiting	27.11
EPK	11.17
Flint	12.73
3134	25.62
Chrome Oxide	0.10
Tin Oxide	8.00
Water	65



1-3 Second Dip



2-3 Second Dips

Oxidation



1-3 Second Dip



2-3 Second Dips

Reduction

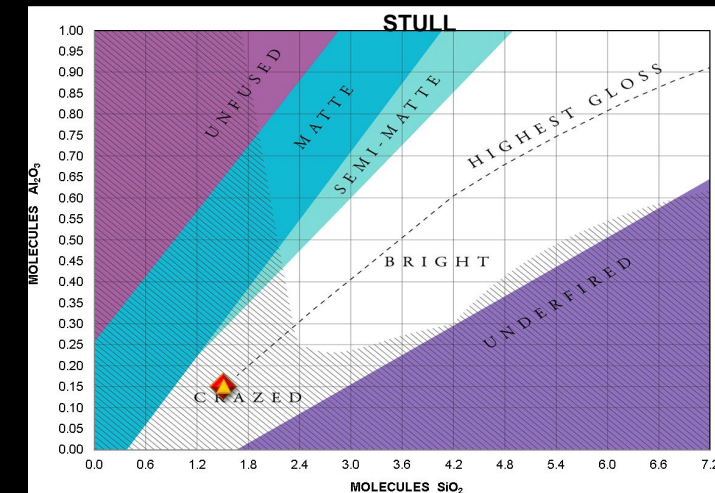


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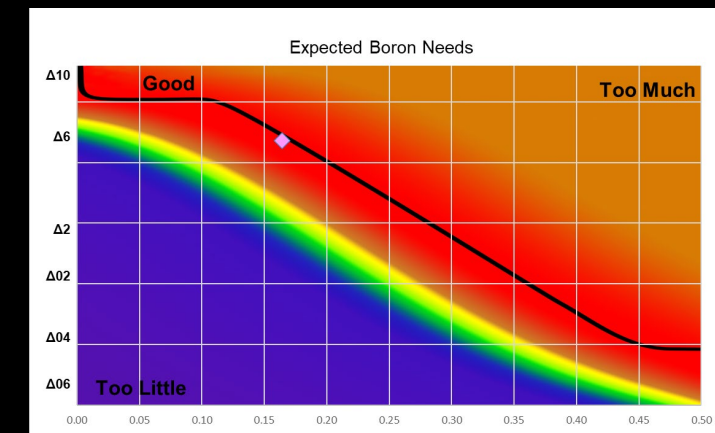
UMF

SiO ₂ :Al ₂ O ₃ Ratio 9.98 :1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.71	Collective "Al ₂ O ₃ " 0.17	Na ₂ O 0.11	K ₂ O 0.06	MgO 0.00	CaO 0.82
B ₂ O ₃ 0.16	Al ₂ O ₃ 0.17	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.01
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



EUMF

SiO ₂ :Al ₂ O ₃ Ratio 9.98 :1		Alkali Metals 0.26		Alkaline Earths 0.74	
SiO ₂ 1.51	Collective "Al ₂ O ₃ " 0.15	Na ₂ O 0.10	K ₂ O 0.05	MgO 0.00	CaO 0.73
B ₂ O ₃ 0.15	Al ₂ O ₃ 0.15	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂ 0.11	ZnO	FeO 0.01
Cr ₂ O ₃ 0.00	ZrO ₂	P ₂ O ₅		MnO ₂	CoO

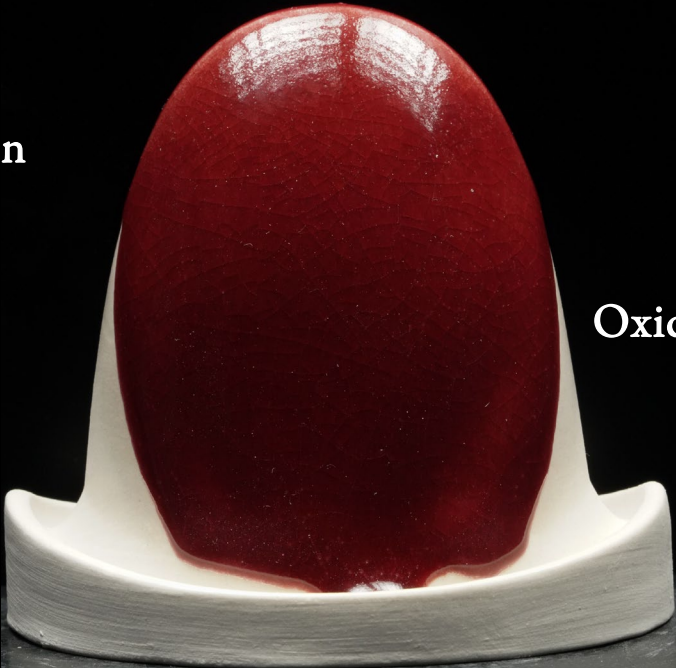


Big Red

Weight Substitution
Mahavir Feldspar

070822-9

Mahavir	23.37
Whiting	27.11
EPK	11.17
Flint	12.73
3134	25.62
Chrome Oxide	0.11
Tin Oxide	8.70
Water	60



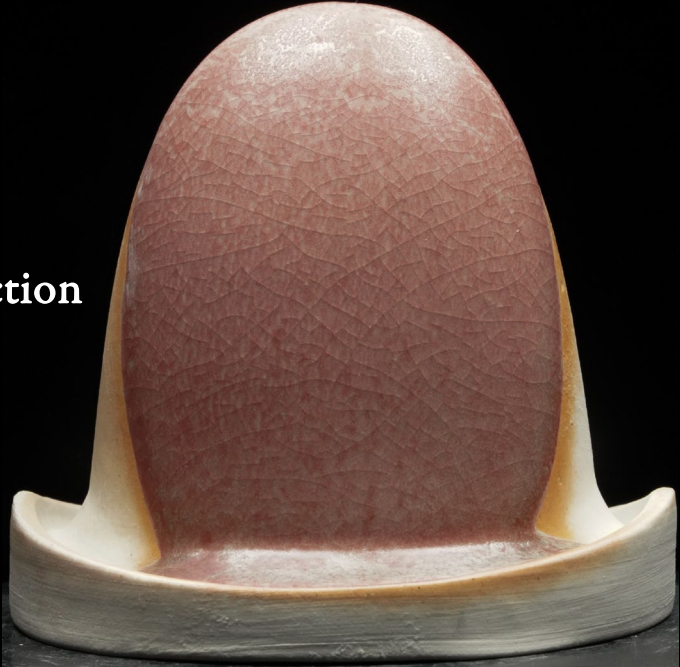
1-3 Second Dip



2-3 Second Dips



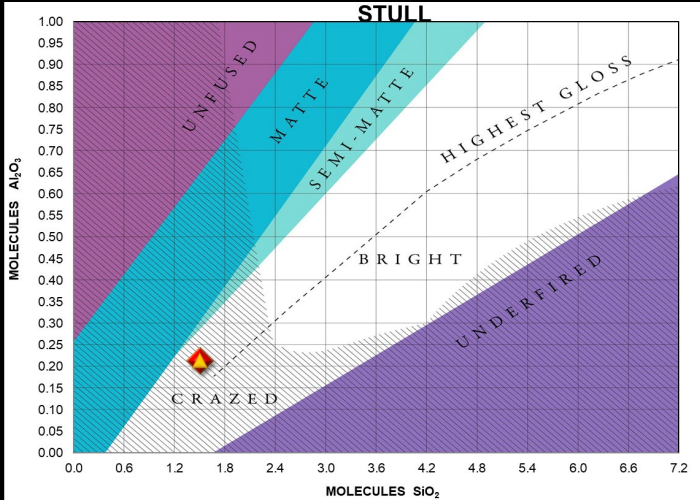
Reduction



Oxidation

UMF

SiO ₂ :Al ₂ O ₃ Ratio 7.01 : 1		Alkali Metals 0.13		Alkaline Earths 0.87	
SiO ₂ 1.78	Collective "Al ₂ O ₃ " 0.25	Na ₂ O 0.04	K ₂ O 0.09	MgO 0.00	CaO 0.86
B ₂ O ₃	Al ₂ O ₃ 0.25	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.01
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



EUMF

SiO ₂ :Al ₂ O ₃ Ratio 7.01 : 1		Alkali Metals 0.26		Alkaline Earths 0.74	
SiO ₂ 1.50	Collective "Al ₂ O ₃ " 0.21	Na ₂ O 0.03	K ₂ O 0.08	MgO 0.00	CaO 0.73
B ₂ O ₃	Al ₂ O ₃ 0.21	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂ 0.15	ZnO	FeO 0.01
Cr ₂ O ₃ 0.00	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



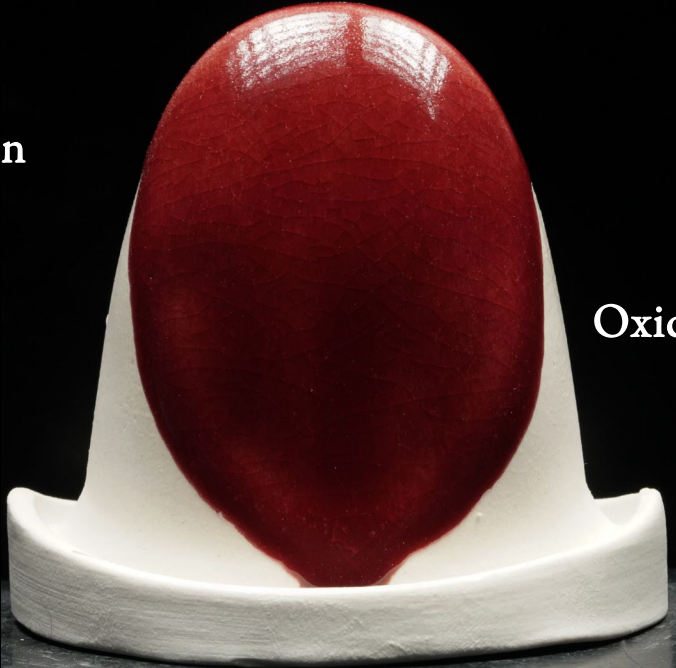
Ceramic
Materials
Workshop

Big Red

Weight Substitution
Minspar Feldspar

070822-10

Minspar	23.37
Whiting	27.11
EPK	11.17
Flint	12.73
3134	25.62
Chrome Oxide	0.11
Tin Oxide	8.70
Water	60



1-3 Second Dip



2-3 Second Dips



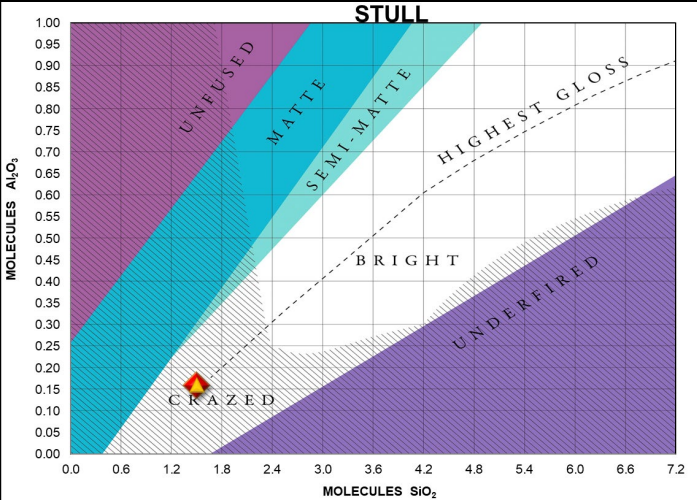
Reduction



Oxidation

UMF

SiO ₂ :Al ₂ O ₃ Ratio 9.33 : 1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.69	Collective "Al ₂ O ₃ " 0.18	Na ₂ O 0.15	K ₂ O 0.02	MgO 0.00	CaO 0.83
B ₂ O ₃ 0.16	Al ₂ O ₃ 0.18	Li ₂ O	CuO	SrO 0.00	BaO 0.00
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂	ZnO 0.00	FeO 0.00
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



EUMF

SiO ₂ :Al ₂ O ₃ Ratio 9.33 : 1		Alkali Metals 0.26		Alkaline Earths 0.74	
SiO ₂ 1.50	Collective "Al ₂ O ₃ " 0.16	Na ₂ O 0.13	K ₂ O 0.02	MgO 0.00	CaO 0.73
B ₂ O ₃ 0.15	Al ₂ O ₃ 0.16	Li ₂ O	CuO	SrO 0.00	BaO 0.00
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂ 0.11	ZnO	FeO 0.00
Cr ₂ O ₃ 0.00	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



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Weight Substitution
Nepheline Syenite

070822-11

Neph Sy	23.37
Whiting	27.11
EPK	11.17
Flint	12.73
3134	25.62
Chrome Oxide	0.11
Tin Oxide	8.70
Water	60



1-3 Second Dip



2-3 Second Dips



Reduction

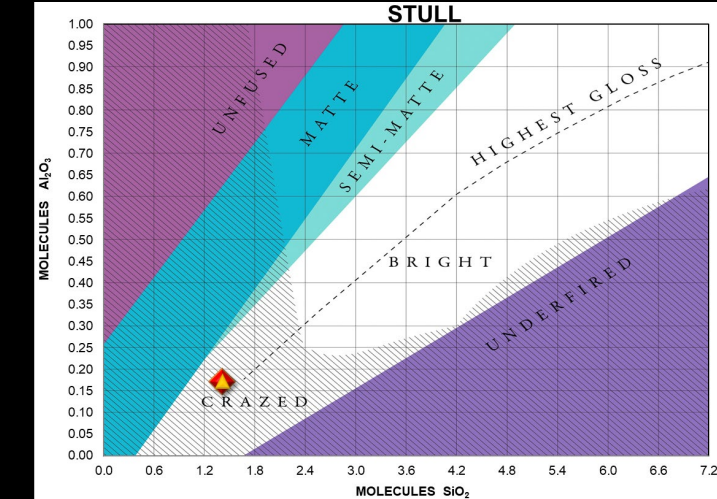


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Oxidation

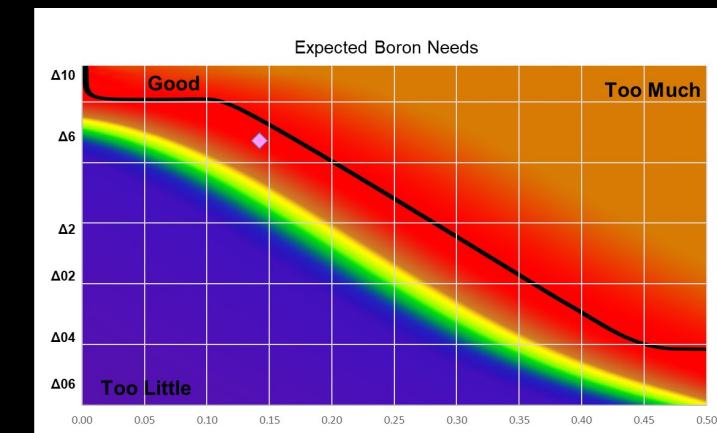
UMF

SiO ₂ :Al ₂ O ₃ Ratio 8.21 : 1		Alkali Metals 0.20		Alkaline Earths 0.80	
SiO ₂ 1.59	Collective "Al ₂ O ₃ " 0.19	Na ₂ O 0.17	K ₂ O 0.02	MgO 0.00	CaO 0.80
B ₂ O ₃ 0.16	Al ₂ O ₃ 0.19	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.00
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



EUMF

SiO ₂ :Al ₂ O ₃ Ratio 8.21 : 1		Alkali Metals 0.29		Alkaline Earths 0.71	
SiO ₂ 1.41	Collective "Al ₂ O ₃ " 0.17	Na ₂ O 0.15	K ₂ O 0.02	MgO 0.00	CaO 0.71
B ₂ O ₃ 0.14	Al ₂ O ₃ 0.17	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂ 0.11	ZnO	FeO 0.00
Cr ₂ O ₃ 0.00	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



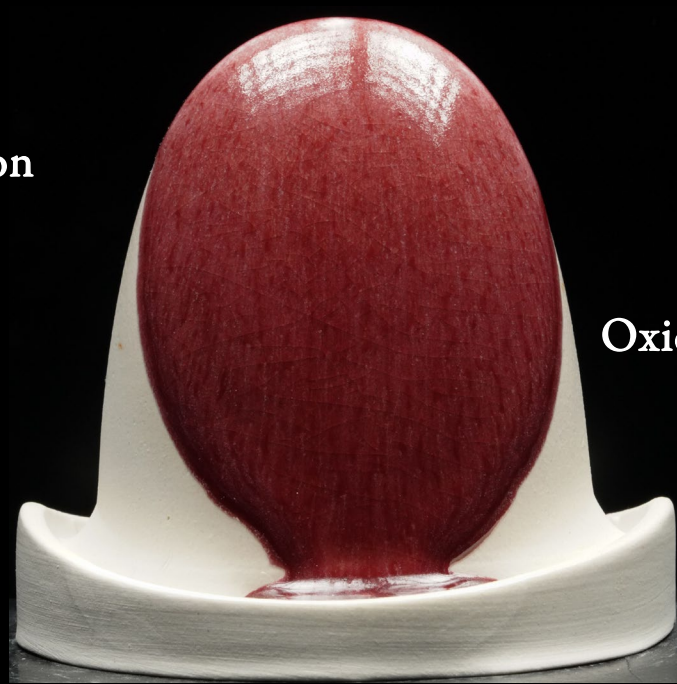
Ceramic
Materials
Workshop

Big Red

Weight Substitution Spodumene

070822-12

Spodumene	23.37
Whiting	27.11
EPK	11.17
Flint	12.73
3134	25.62
Chrome Oxide	0.11
Tin Oxide	8.70
Water	60



1-3 Second Dip



2-3 Second Dips



Reduction



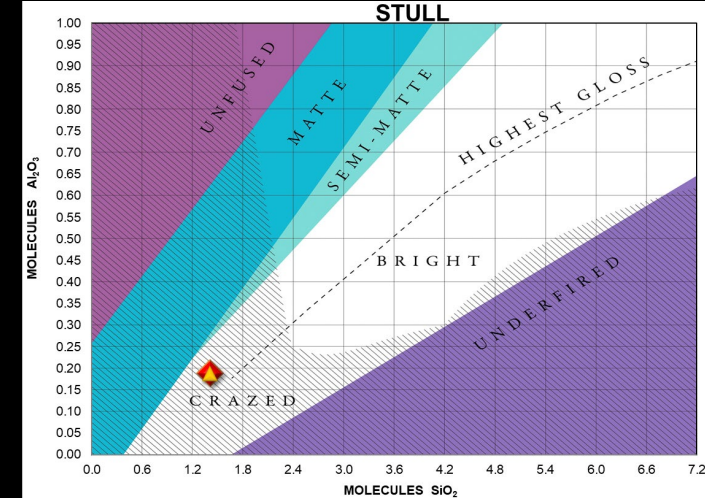
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Oxidation

UMF

SiO ₂ :Al ₂ O ₃ Ratio 7.47 : 1		Alkali Metals 0.22		Alkaline Earths 0.78	
SiO ₂ 1.58	Collective "Al ₂ O ₃ " 0.21	Na ₂ O 0.09	K ₂ O 0.00	MgO 0.00	CaO 0.78
B ₂ O ₃ 0.16	Al ₂ O ₃ 0.21	Li ₂ O 0.13	CuO 0.00	SrO 0.00	BaO 0.00
TiO ₂ 0.00	NiO 0.00	Bi ₂ O ₃ 0.00	SnO ₂ 0.00	ZnO 0.00	FeO 0.00
Cr ₂ O ₃ 0.00	ZrO ₂ 0.00	P ₂ O ₅ 0.00		MnO ₂ 0.00	CoO 0.00



EUMF

SiO ₂ :Al ₂ O ₃ Ratio 7.47 : 1		Alkali Metals 0.30		Alkaline Earths 0.70	
SiO ₂ 1.41	Collective "Al ₂ O ₃ " 0.19	Na ₂ O 0.08	K ₂ O 0.00	MgO 0.00	CaO 0.69
B ₂ O ₃ 0.14	Al ₂ O ₃ 0.19	Li ₂ O 0.11	CuO 0.00	SrO 0.00	BaO 0.00
TiO ₂ 0.00	NiO 0.00	Bi ₂ O ₃ 0.00	SnO ₂ 0.11	ZnO 0.00	FeO 0.00
Cr ₂ O ₃ 0.00	ZrO ₂ 0.00	P ₂ O ₅ 0.00		MnO ₂ 0.00	CoO 0.00



Big Red

Weight Substitution
Frit 3110

070822-14

3110	23.37
Whiting	27.11
EPK	11.17
Flint	12.73
3134	25.62
Chrome Oxide	0.11
Tin Oxide	8.70
Water	60



Ceramic
Materials
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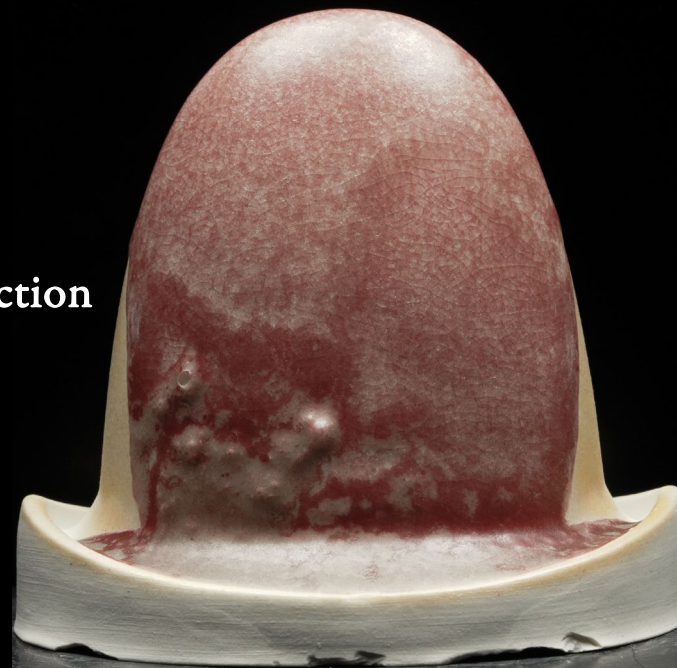
1-3 Second Dip



2-3 Second Dips



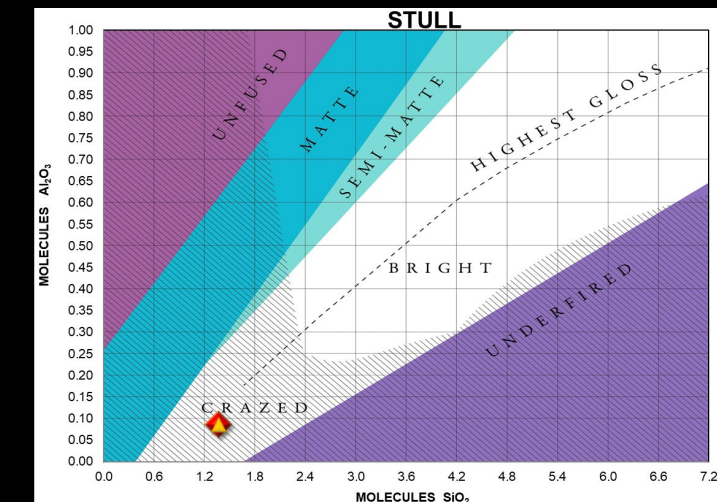
Reduction



Oxidation

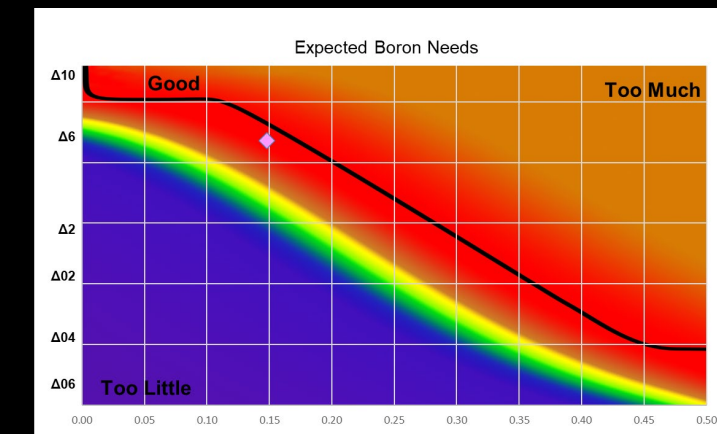
UMF

SiO ₂ :Al ₂ O ₃ Ratio 15.78 : 1		Alkali Metals 0.21		Alkaline Earths 0.79	
SiO ₂ 1.53	Collective "Al ₂ O ₃ " 0.10	Na ₂ O 0.20	K ₂ O 0.01	MgO 0.00	CaO 0.78
B ₂ O ₃ 0.16	Al ₂ O ₃ 0.10	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.00
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



EUMF

SiO ₂ :Al ₂ O ₃ Ratio 15.78 : 1		Alkali Metals 0.29		Alkaline Earths 0.71	
SiO ₂ 1.37	Collective "Al ₂ O ₃ " 0.09	Na ₂ O 0.18	K ₂ O 0.01	MgO 0.00	CaO 0.70
B ₂ O ₃ 0.15	Al ₂ O ₃ 0.09	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂ 0.10	ZnO	FeO 0.00
Cr ₂ O ₃ 0.00	ZrO ₂	P ₂ O ₅		MnO ₂	CoO

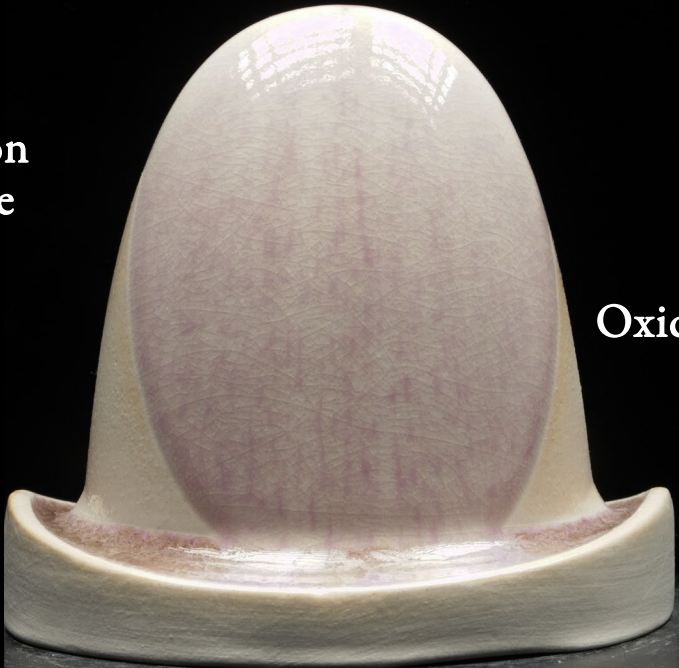


Big Red

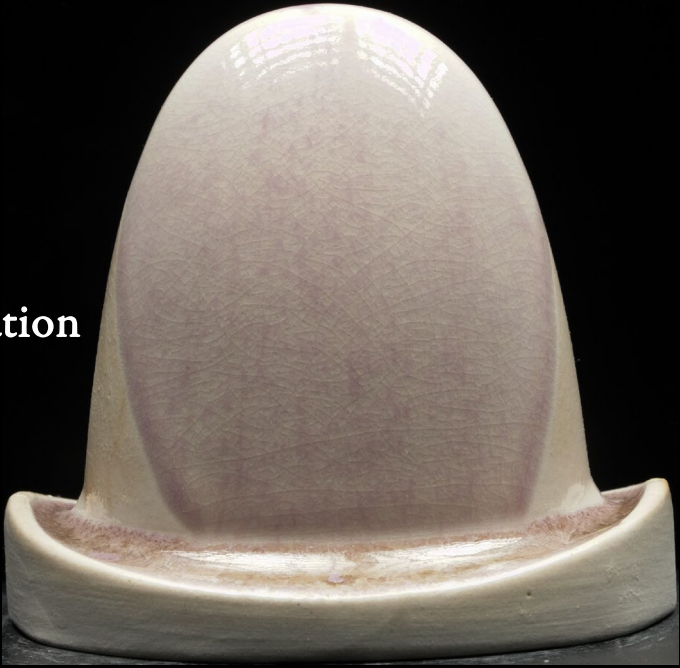
Weight Substitution
Lithium Carbonate

070822-15

Lithium Carb	23.37
Whiting	27.11
EPK	11.17
Flint	12.73
3134	25.62
Chrome Oxide	0.11
Tin Oxide	8.70
Water	60



1-3 Second Dip



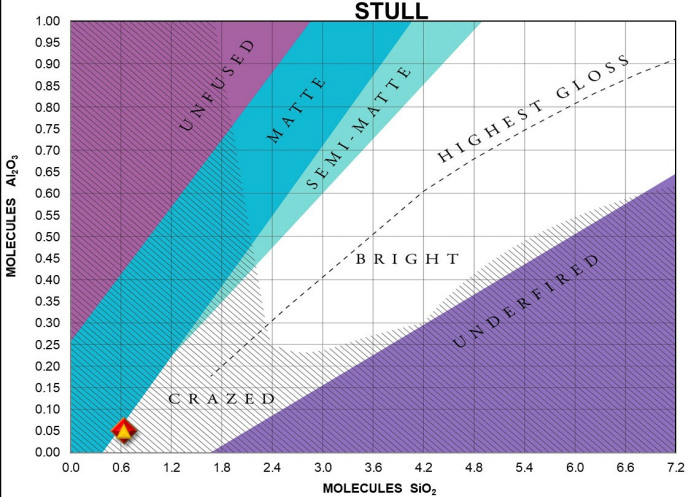
2-3 Second Dips



Reduction

Oxidation

SiO ₂ :Al ₂ O ₃ Ratio 12.57 : 1		Alkali Metals 0.49		Alkaline Earths 0.51	
SiO ₂ 0.69	Collective "Al ₂ O ₃ " 0.05	Na ₂ O 0.06	K ₂ O 0.00	MgO 0.00	CaO 0.51
B ₂ O ₃ 0.10	Al ₂ O ₃ 0.05	Li ₂ O 0.43	CuO 0.00	SrO 0.00	BaO 0.00
TiO ₂ 0.00	NiO 0.00	Bi ₂ O ₃ 0.00	SnO ₂ 0.00	ZnO 0.00	FeO 0.00
Cr ₂ O ₃ 0.00	ZrO ₂ 0.00	P ₂ O ₅ 0.00		MnO ₂ 0.00	CoO 0.00



SiO ₂ :Al ₂ O ₃ Ratio 12.57 : 1		Alkali Metals 0.53		Alkaline Earths 0.47	
SiO ₂ 0.64	Collective "Al ₂ O ₃ " 0.05	Na ₂ O 0.05	K ₂ O 0.00	MgO 0.00	CaO 0.47
B ₂ O ₃ 0.09	Al ₂ O ₃ 0.05	Li ₂ O 0.40	CuO 0.00	SrO 0.00	BaO 0.00
TiO ₂ 0.00	NiO 0.00	Bi ₂ O ₃ 0.00	SnO ₂ 0.07	ZnO 0.00	FeO 0.00
Cr ₂ O ₃ 0.00	ZrO ₂ 0.00	P ₂ O ₅ 0.00		MnO ₂ 0.00	CoO 0.00



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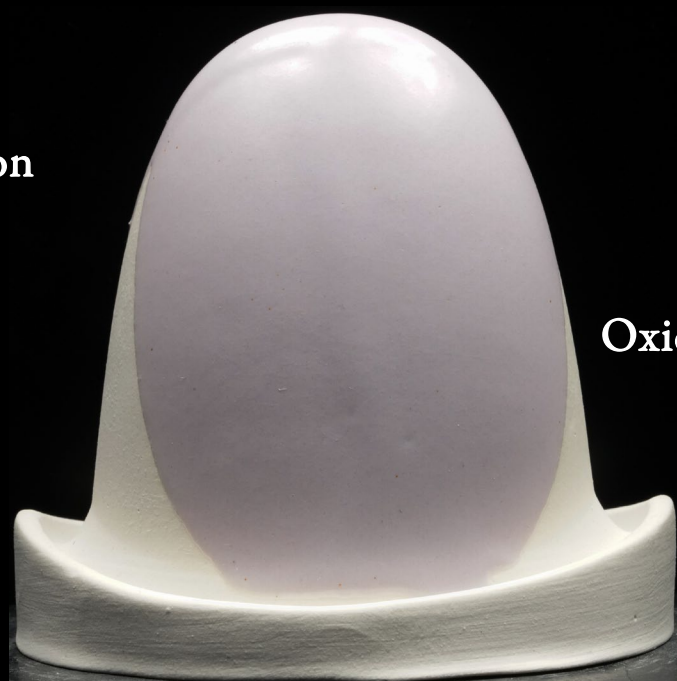
Weight Substitution
Talc

070822-16

G200 EU	23.37
Talc	27.11
EPK	11.17
Flint	12.73
3134	25.62
Chrome Oxide	0.11
Tin Oxide	8.70
Water	75



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1-3 Second Dip



2-3 Second Dips



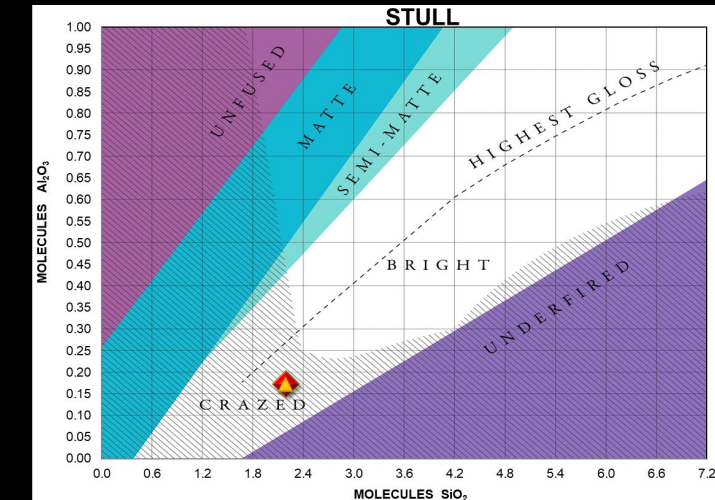
Reduction

Oxidation

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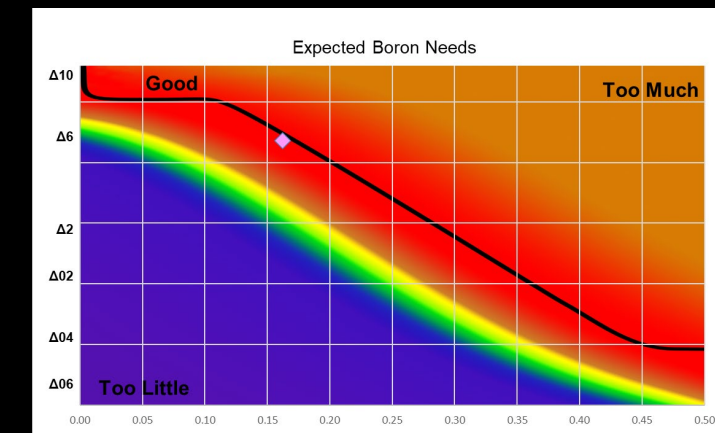
UMF

SiO ₂ :Al ₂ O ₃ Ratio 12.66 : 1		Alkali Metals 0.20		Alkaline Earths 0.80	
SiO ₂ 2.51	Collective "Al ₂ O ₃ " 0.20	Na ₂ O 0.13	K ₂ O 0.07	MgO 0.49	CaO 0.30
B ₂ O ₃ 0.19	Al ₂ O ₃ 0.20	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.01
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



EUMF

SiO ₂ :Al ₂ O ₃ Ratio 12.66 : 1		Alkali Metals 0.30		Alkaline Earths 0.70	
SiO ₂ 2.19	Collective "Al ₂ O ₃ " 0.17	Na ₂ O 0.11	K ₂ O 0.06	MgO 0.43	CaO 0.26
B ₂ O ₃ 0.16	Al ₂ O ₃ 0.17	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂ 0.13	ZnO	FeO 0.01
Cr ₂ O ₃ 0.00	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



Big Red

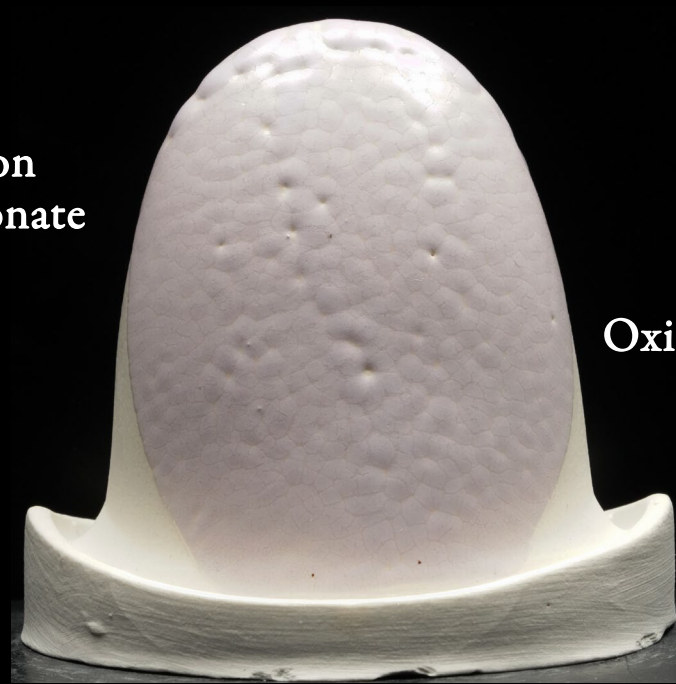
Weight Substitution
Magnesium Carbonate

070822-17

G200 EU	23.37
Mag Carbonate	27.11
EPK	11.17
Flint	12.73
3134	25.62
Chrome Oxide	0.11
Tin Oxide	8.70
Water	150



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1-3 Second Dip



2-3 Second Dips

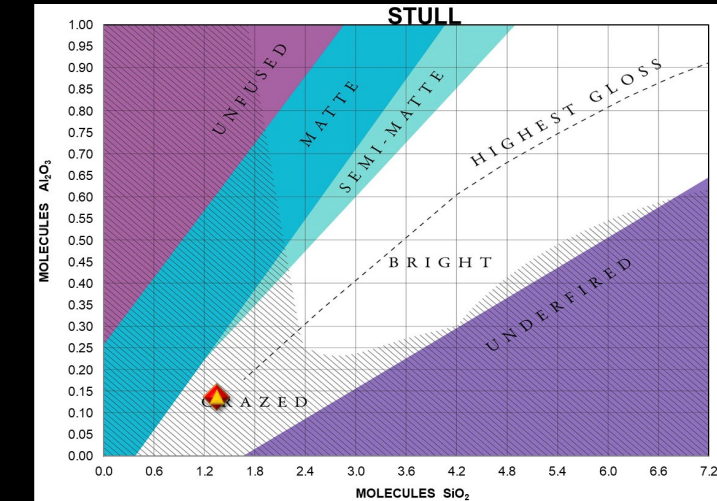


Reduction

Oxidation

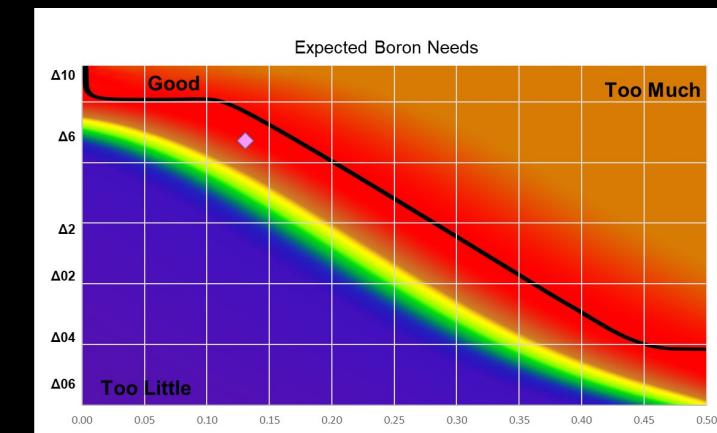
UMF

SiO ₂ :Al ₂ O ₃ Ratio 9.71 : 1		Alkali Metals 0.15		Alkaline Earths 0.85	
SiO ₂ 1.50	Collective "Al ₂ O ₃ " 0.15	Na ₂ O 0.10	K ₂ O 0.05	MgO 0.64	CaO 0.20
B ₂ O ₃ 0.15	Al ₂ O ₃ 0.15	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.00
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



EUMF

SiO ₂ :Al ₂ O ₃ Ratio 9.71 : 1		Alkali Metals 0.24		Alkaline Earths 0.76	
SiO ₂ 1.35	Collective "Al ₂ O ₃ " 0.14	Na ₂ O 0.09	K ₂ O 0.05	MgO 0.58	CaO 0.18
B ₂ O ₃ 0.13	Al ₂ O ₃ 0.14	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂ 0.10	ZnO	FeO 0.00
Cr ₂ O ₃ 0.00	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



Big Red

Weight Substitution
Dolomite

070822-18

G200 EU	23.37
Dolomite	27.11
EPK	11.17
Flint	12.73
3134	25.62
Chrome Oxide	0.11
Tin Oxide	8.70
Water	65



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1-3 Second Dip



2-3 Second Dips

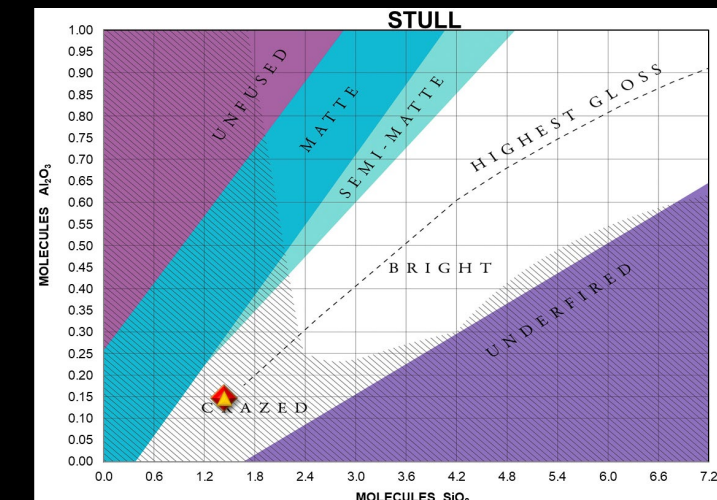
Oxidation



Reduction

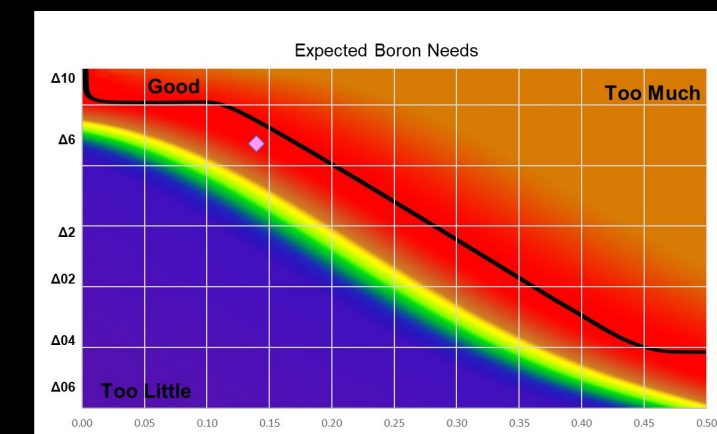
UMF

SiO ₂ :Al ₂ O ₃ Ratio 9.75 : 1		Alkali Metals 0.16		Alkaline Earths 0.84	
SiO ₂ 1.61	Collective "Al ₂ O ₃ " 0.17	Na ₂ O 0.11	K ₂ O 0.06	MgO 0.31	CaO 0.52
B ₂ O ₃ 0.16	Al ₂ O ₃ 0.16	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.00
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



EUMF

SiO ₂ :Al ₂ O ₃ Ratio 9.75 : 1		Alkali Metals 0.25		Alkaline Earths 0.75	
SiO ₂ 1.44	Collective "Al ₂ O ₃ " 0.15	Na ₂ O 0.09	K ₂ O 0.05	MgO 0.28	CaO 0.47
B ₂ O ₃ 0.14	Al ₂ O ₃ 0.15	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂ 0.11	ZnO	FeO 0.00
Cr ₂ O ₃ 0.00	ZrO ₂	P ₂ O ₅		MnO ₂	CoO

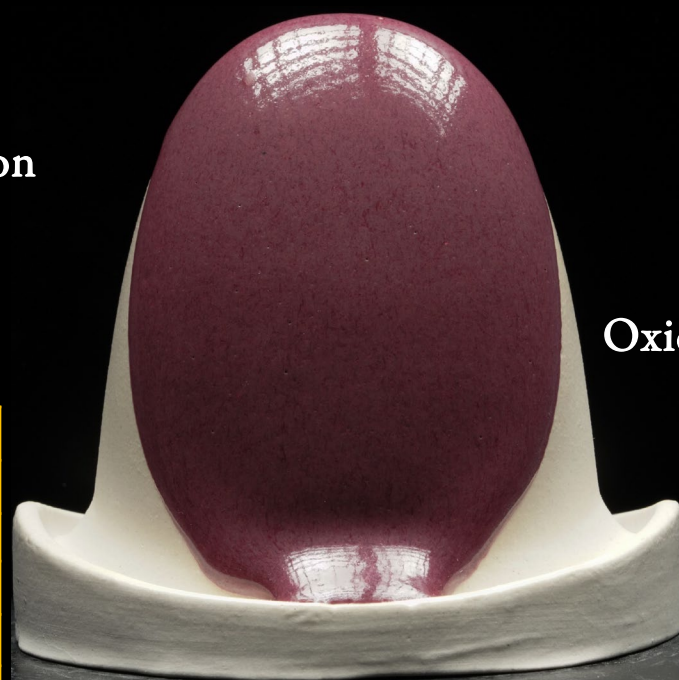


Big Red

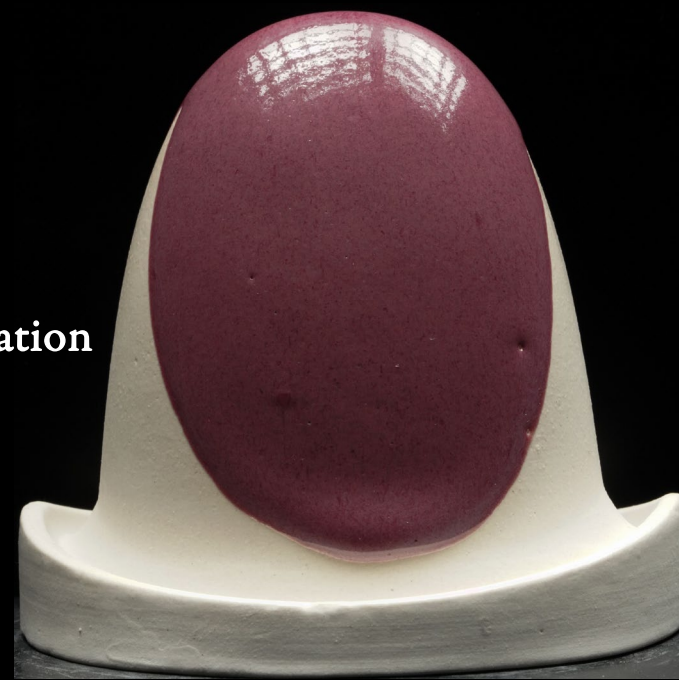
Weight Substitution
Wollastonite

070822-19

G200 EU	23.37
Wollastonite	27.11
EPK	11.17
Flint	12.73
3134	25.62
Chrome Oxide	0.11
Tin Oxide	8.70
Water	75



1-3 Second Dip



2-3 Second Dips

Oxidation



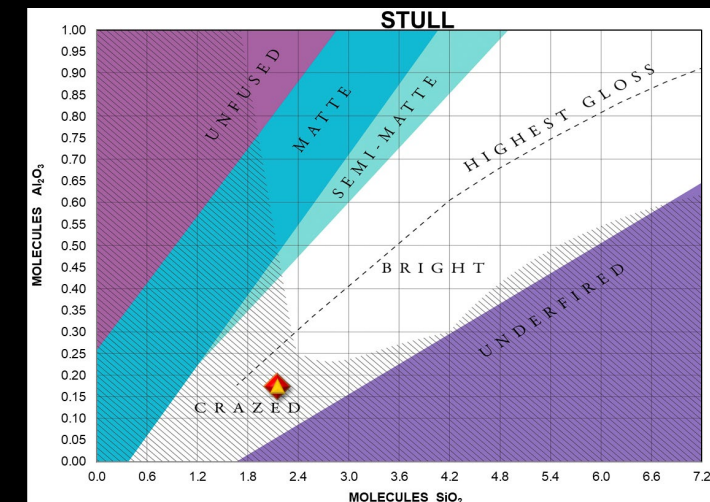
Reduction



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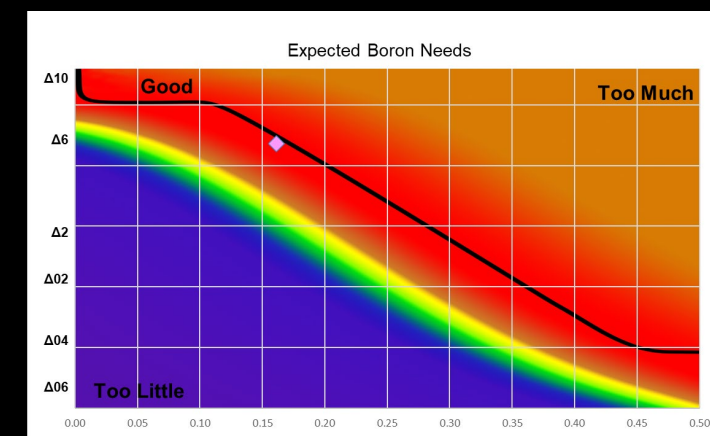
UMF

SiO ₂ :Al ₂ O ₃ Ratio 12.29 : 1		Alkali Metals 0.19		Alkaline Earths 0.81	
SiO ₂ 2.46	Collective "Al ₂ O ₃ " 0.20	Na ₂ O 0.13	K ₂ O 0.07	MgO 0.02	CaO 0.77
B ₂ O ₃ 0.18	Al ₂ O ₃ 0.20	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.01
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



EUMF

SiO ₂ :Al ₂ O ₃ Ratio 12.29 : 1		Alkali Metals 0.30		Alkaline Earths 0.70	
SiO ₂ 2.15	Collective "Al ₂ O ₃ " 0.18	Na ₂ O 0.11	K ₂ O 0.06	MgO 0.02	CaO 0.67
B ₂ O ₃ 0.16	Al ₂ O ₃ 0.17	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂ 0.12	ZnO	FeO 0.01
Cr ₂ O ₃ 0.00	ZrO ₂	P ₂ O ₅		MnO ₂	CoO

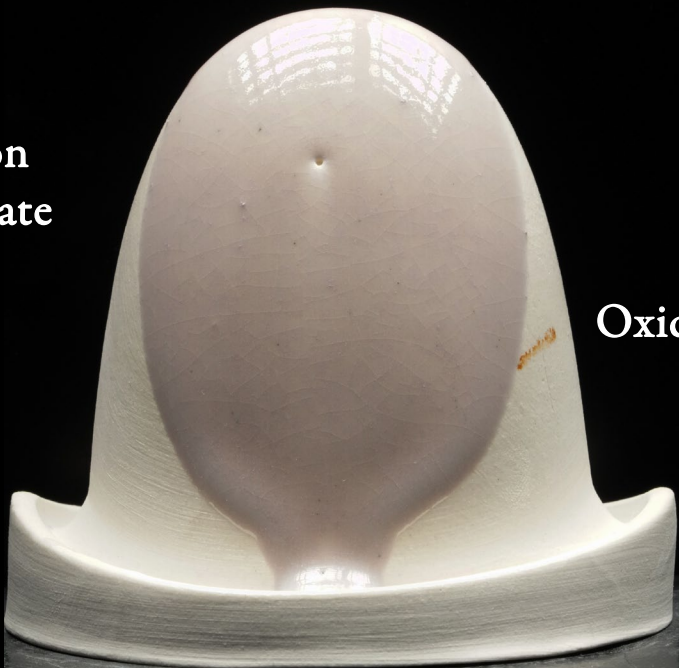


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Big Red

Weight Substitution
Strontium Carbonate
070822-20

G200 EU	23.37
Strontium Carb	27.11
EPK	11.17
Flint	12.73
3134	25.62
Chrome Oxide	0.11
Tin Oxide	8.70
Water	65



1-3 Second Dip



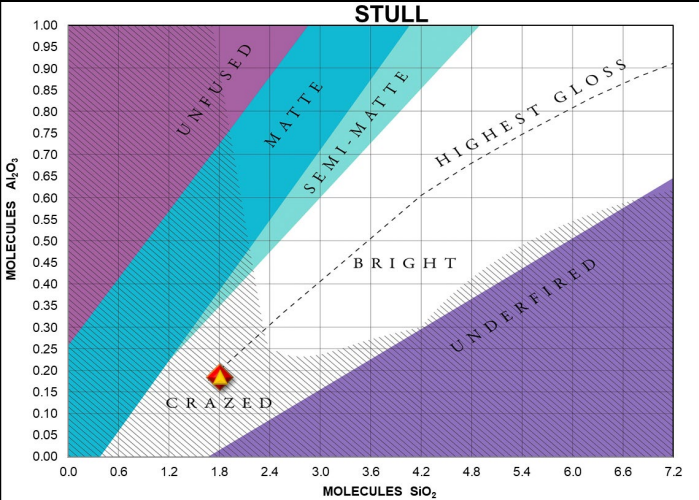
2-3 Second Dips



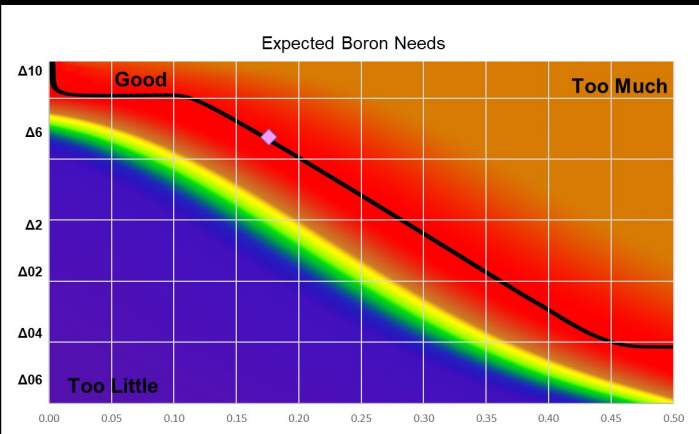
Reduction



SiO ₂ :Al ₂ O ₃ Ratio 9.75 : 1		Alkali Metals 0.21		Alkaline Earths 0.79	
SiO ₂ 2.09	Collective "Al ₂ O ₃ " 0.21	Na ₂ O 0.14	K ₂ O 0.08	MgO 0.00	CaO 0.28
B ₂ O ₃ 0.20	Al ₂ O ₃ 0.21	Li ₂ O	CuO	SrO 0.50	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.01
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



SiO ₂ :Al ₂ O ₃ Ratio 9.75 : 1		Alkali Metals 0.32		Alkaline Earths 0.68	
SiO ₂ 1.81	Collective "Al ₂ O ₃ " 0.19	Na ₂ O 0.12	K ₂ O 0.07	MgO 0.00	CaO 0.24
B ₂ O ₃ 0.18	Al ₂ O ₃ 0.18	Li ₂ O	CuO	SrO 0.43	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂ 0.14	ZnO	FeO 0.01
Cr ₂ O ₃ 0.00	ZrO ₂	P ₂ O ₅		MnO ₂	CoO

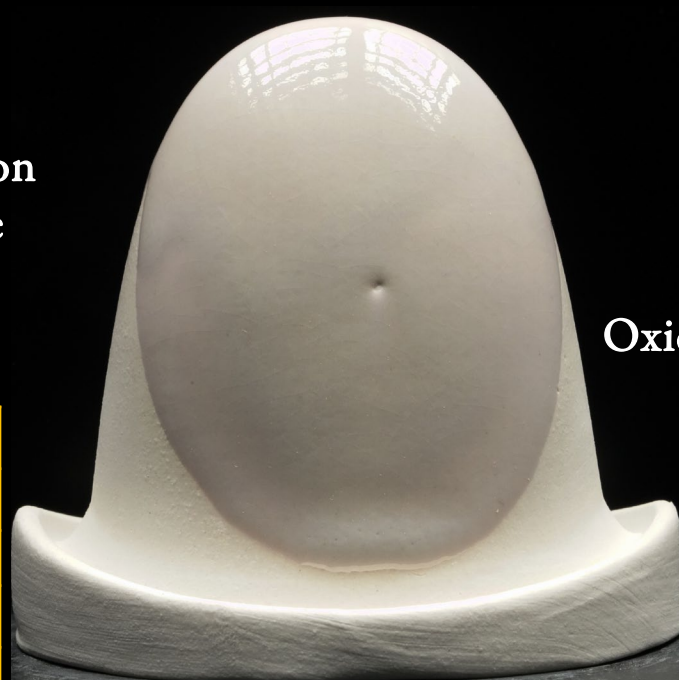


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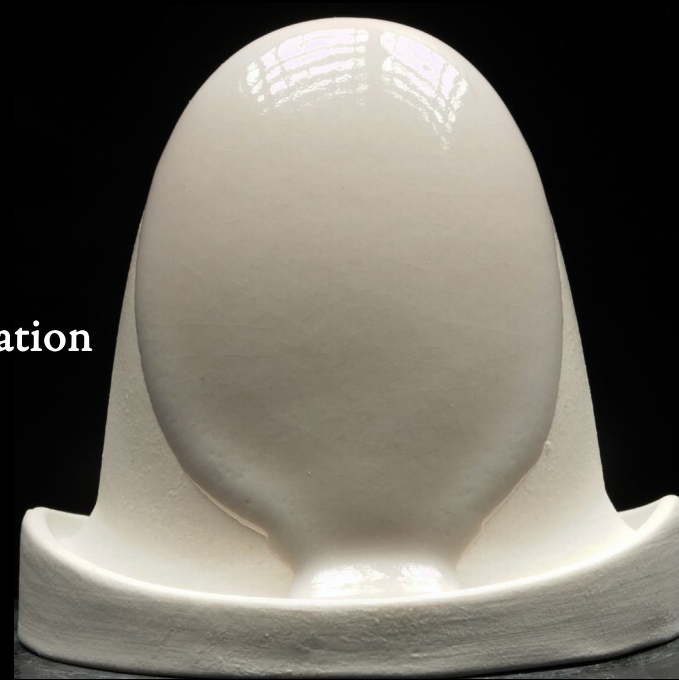
Big Red

Weight Substitution
Barium Carbonate
070822-21

G200 EU	23.37
Barium Carb	27.11
EPK	11.17
Flint	12.73
3134	25.62
Chrome Oxide	0.11
Tin Oxide	8.70
Water	75



1-3 Second Dip



2-3 Second Dips



Reduction



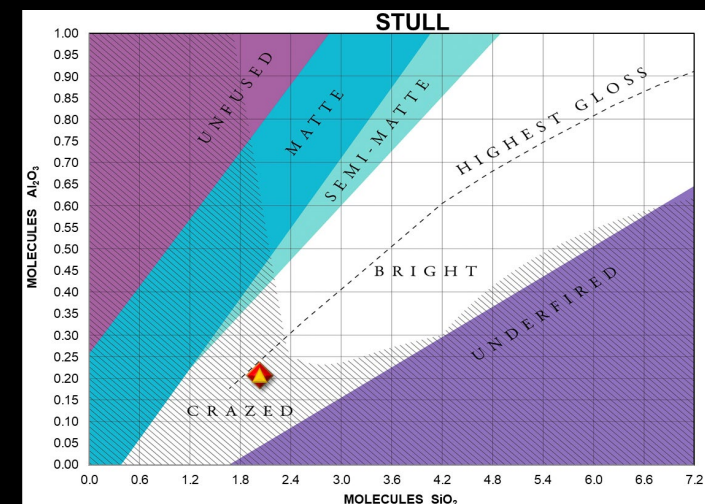
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Oxidation

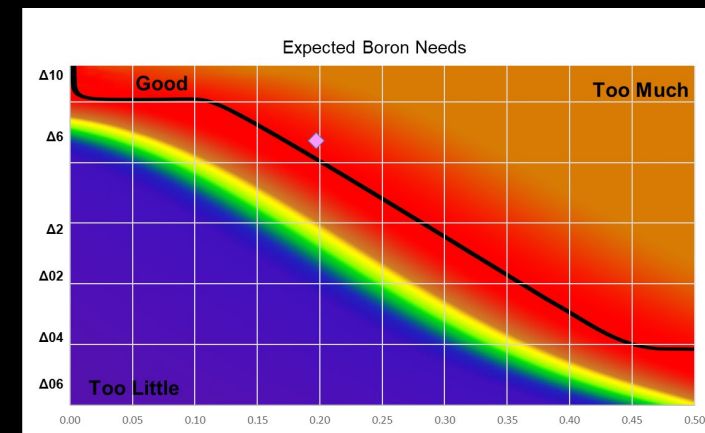
UMF

SiO ₂ :Al ₂ O ₃ Ratio 9.75 : 1		Alkali Metals 0.24		Alkaline Earths 0.76	
SiO ₂ 2.40	Collective "Al ₂ O ₃ " 0.25	Na ₂ O 0.16	K ₂ O 0.09	MgO 0.00	CaO 0.32
B ₂ O ₃ 0.23	Al ₂ O ₃ 0.24	Li ₂ O	CuO	SrO	BaO 0.43
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.01
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



EUMF

SiO ₂ :Al ₂ O ₃ Ratio 9.75 : 1		Alkali Metals 0.36		Alkaline Earths 0.64	
SiO ₂ 2.03	Collective "Al ₂ O ₃ " 0.21	Na ₂ O 0.13	K ₂ O 0.07	MgO 0.00	CaO 0.27
B ₂ O ₃ 0.20	Al ₂ O ₃ 0.21	Li ₂ O	CuO	SrO	BaO 0.36
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂ 0.15	ZnO	FeO 0.01
Cr ₂ O ₃ 0.00	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



Big Red

Weight Substitution
Zinc Oxide
070822-22

G200 EU	23.37
Zinc Oxide	27.11
EPK	11.17
Flint	12.73
3134	25.62
Chrome Oxide	0.11
Tin Oxide	8.70
Water	75



1-3 Second Dip



2-3 Second Dips



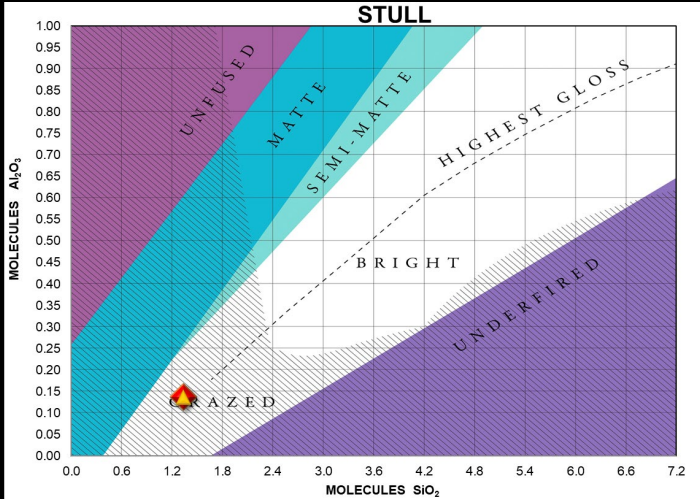
Reduction



Oxidation

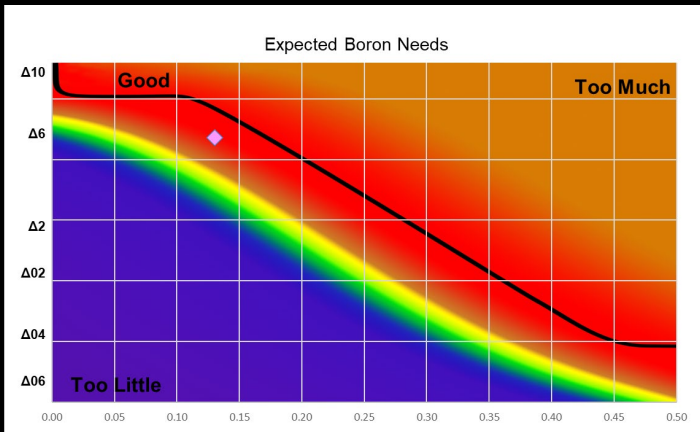
UMF

SiO ₂ :Al ₂ O ₃ Ratio 9.75 : 1		Alkali Metals 0.15		Alkaline Earths 0.85	
SiO ₂ 1.49	Collective "Al ₂ O ₃ " 0.15	Na ₂ O 0.10	K ₂ O 0.05	MgO 0.00	CaO 0.20
B ₂ O ₃ 0.14	Al ₂ O ₃ 0.15	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂	ZnO 0.64	FeO 0.00
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



EUMF

SiO ₂ :Al ₂ O ₃ Ratio 9.75 : 1		Alkali Metals 0.24		Alkaline Earths 0.76	
SiO ₂ 1.34	Collective "Al ₂ O ₃ " 0.14	Na ₂ O 0.09	K ₂ O 0.05	MgO 0.00	CaO 0.18
B ₂ O ₃ 0.13	Al ₂ O ₃ 0.14	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂ 0.10	ZnO 0.58	FeO 0.00
Cr ₂ O ₃ 0.00	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



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Big Red

Weight Substitution
Bone Ash

070822-23

G200 EU	23.37
Bone Ash	27.11
EPK	11.17
Flint	12.73
3134	25.62
Chrome Oxide	0.11
Tin Oxide	8.70
Water	85



1-3 Second Dip



2-3 Second Dips



Reduction



Oxidation

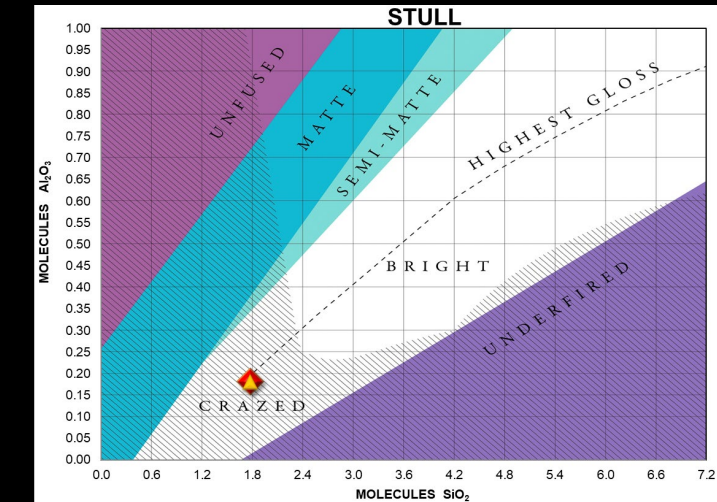


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UMF

SiO ₂ :Al ₂ O ₃ Ratio 9.76 : 1		Alkali Metals 0.21		Alkaline Earths 0.79	
SiO ₂ 2.04	Collective "Al ₂ O ₃ " 0.21	Na ₂ O 0.13	K ₂ O 0.07	MgO 0.00	CaO 0.78
B ₂ O ₃ 0.20	Al ₂ O ₃ 0.21	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.01
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅ 0.28		MnO ₂	CoO



EUMF

SiO ₂ :Al ₂ O ₃ Ratio 9.76 : 1		Alkali Metals 0.31		Alkaline Earths 0.69	
SiO ₂ 1.77	Collective "Al ₂ O ₃ " 0.18	Na ₂ O 0.12	K ₂ O 0.06	MgO 0.00	CaO 0.68
B ₂ O ₃ 0.17	Al ₂ O ₃ 0.18	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂ 0.13	ZnO	FeO 0.01
Cr ₂ O ₃ 0.00	ZrO ₂	P ₂ O ₅ 0.24		MnO ₂	CoO

