

Big Red- Δ 6

Lab 5a-Color Wheel



Ceramic
Materials
Workshop

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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



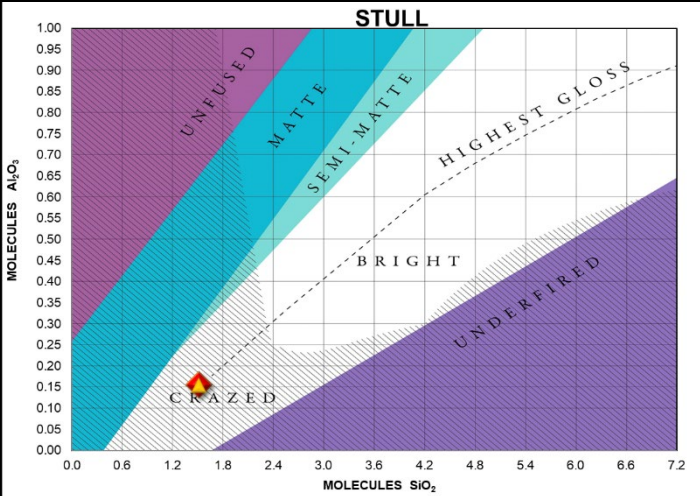
Reduction



Oxidation

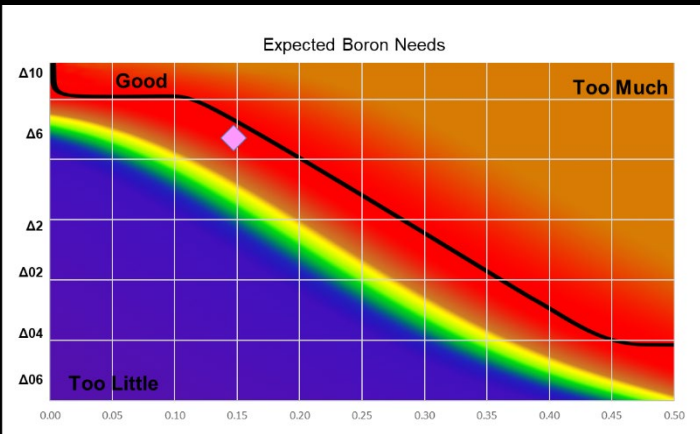
UMF

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



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Chrome Oxide

0.5%

Oxidation

Reduction

1-3 Second Dip

2-3 Second Dips

1-3 Second Dip

2-3 Second Dips

2%



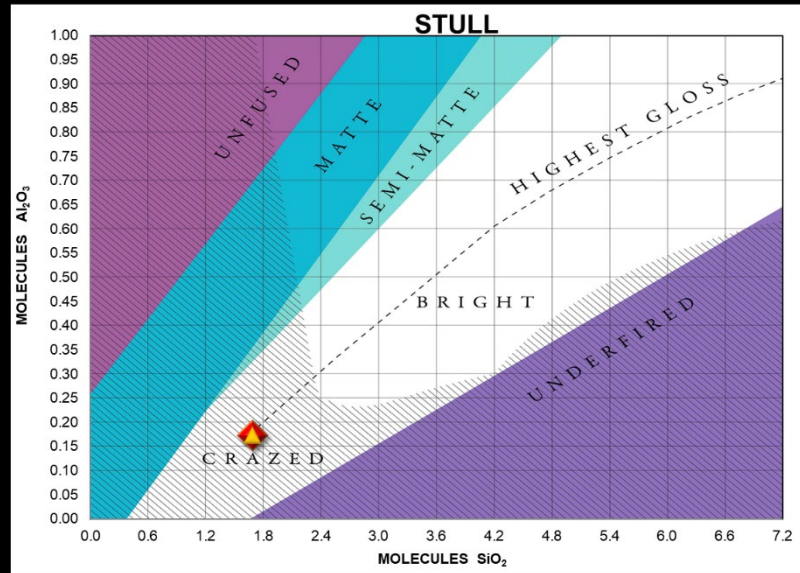
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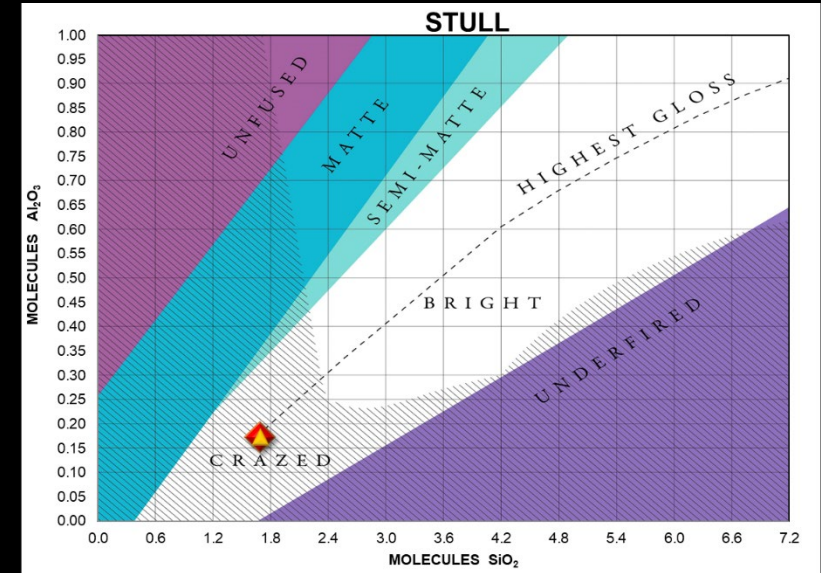
Chrome Oxide

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 0.01	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



0.5%

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 0.03	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



2%



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Cobalt Carbonate

0.5%

Oxidation

Reduction

1-3 Second Dip

2-3 Second Dips

1-3 Second Dip

2-3 Second Dips

2%



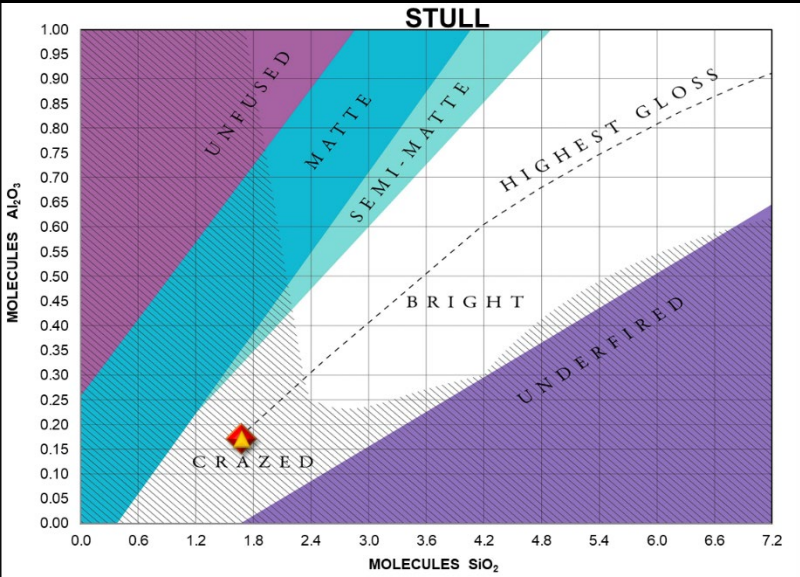
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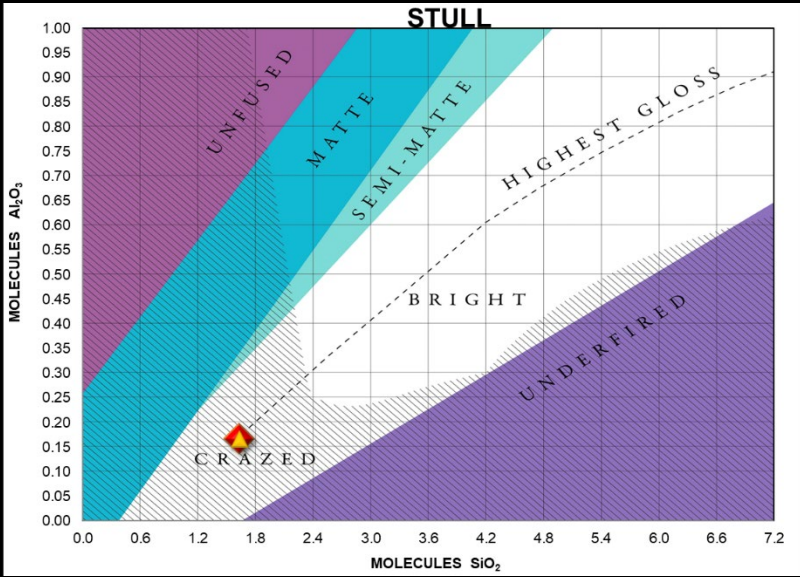
Cobalt Carbonate

SiO ₂ :Al ₂ O ₃ Ratio 9.75 :1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.68	Collective "Al ₂ O ₃ " 0.17	Na ₂ O 0.11	K ₂ O 0.06	MgO 0.00	CaO 0.81
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 0.01

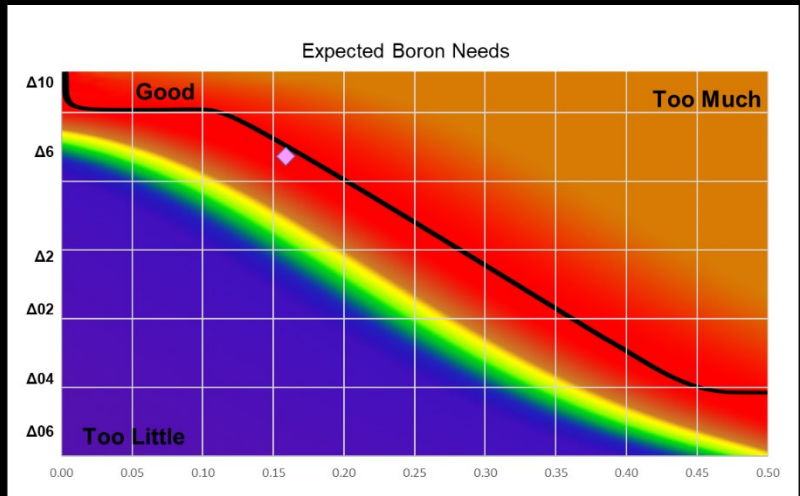
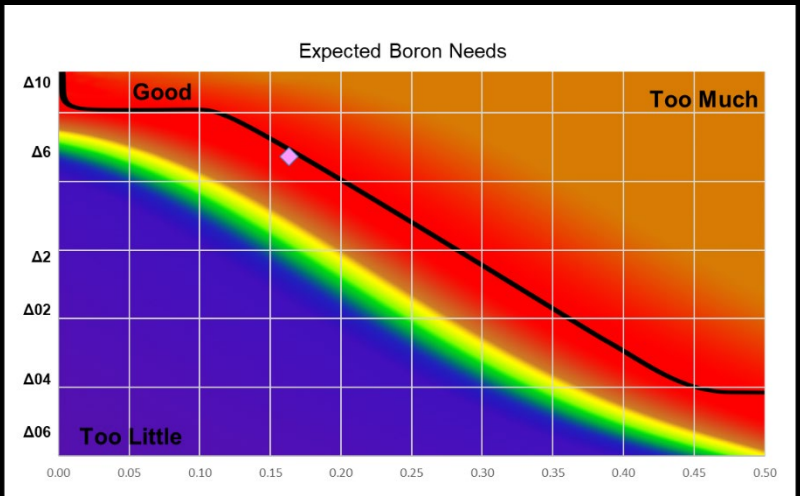


0.5%

SiO ₂ :Al ₂ O ₃ Ratio 9.75 :1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.63	Collective "Al ₂ O ₃ " 0.17	Na ₂ O 0.11	K ₂ O 0.06	MgO 0.00	CaO 0.79
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 0.04



2%



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Cobalt Oxide

0.5%

Oxidation

Reduction

1-3 Second Dip

2-3 Second Dips

1-3 Second Dip

2-3 Second Dips

2%



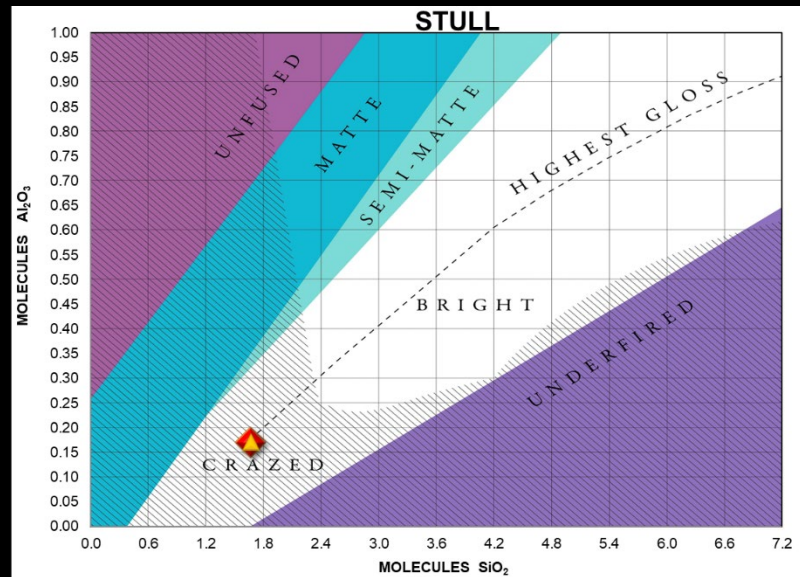
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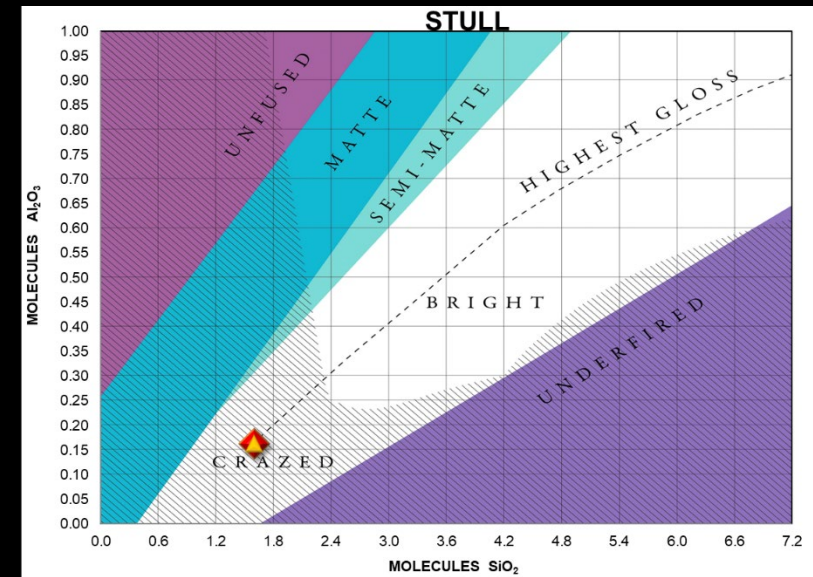
Cobalt Oxide

SiO ₂ :Al ₂ O ₃ Ratio 9.75 :1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.67	Collective "Al ₂ O ₃ " 0.17	Na ₂ O 0.11	K ₂ O 0.06	MgO 0.00	CaO 0.81
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 0.01

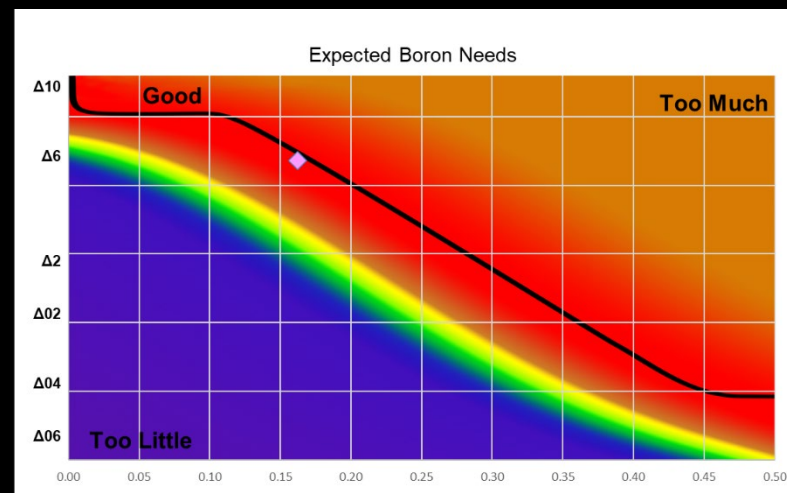


0.5%

SiO ₂ :Al ₂ O ₃ Ratio 9.75 :1		Alkali Metals 0.16		Alkaline Earths 0.84	
SiO ₂ 1.60	Collective "Al ₂ O ₃ " 0.16	Na ₂ O 0.11	K ₂ O 0.06	MgO 0.00	CaO 0.78
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 0.06



2%



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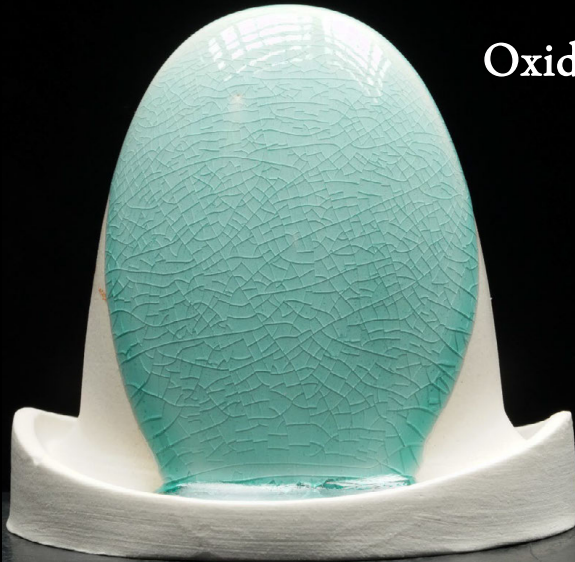
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Copper Carbonate

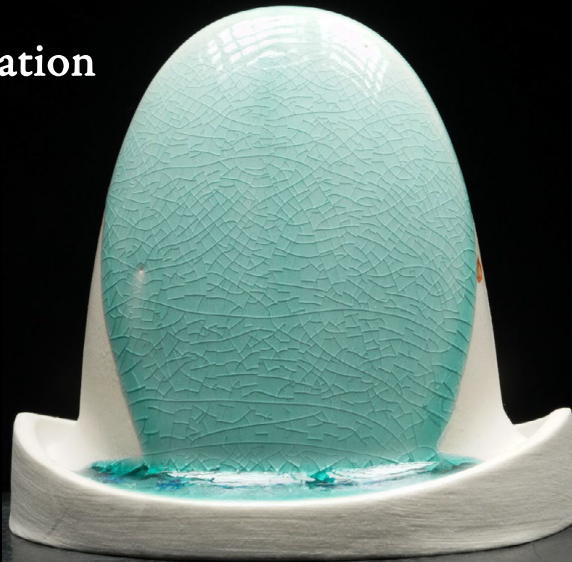
Oxidation

Reduction

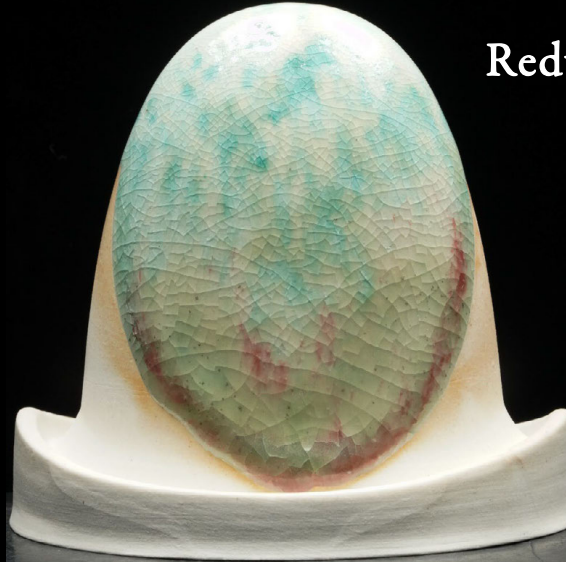
1%



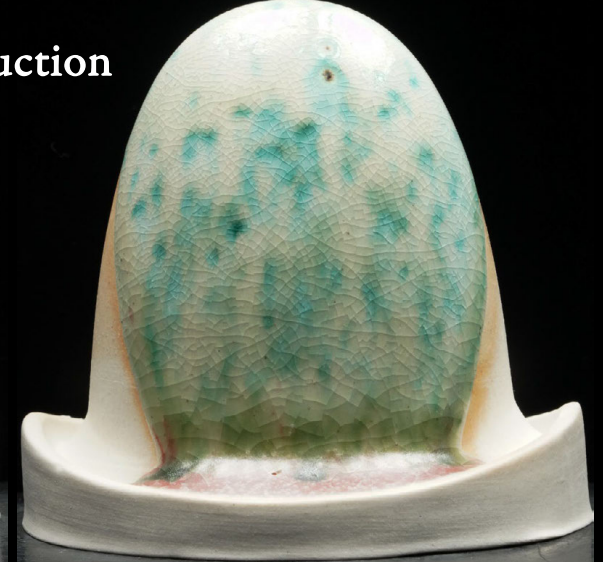
1-3 Second Dip



2-3 Second Dips



1-3 Second Dip



2-3 Second Dips

4%



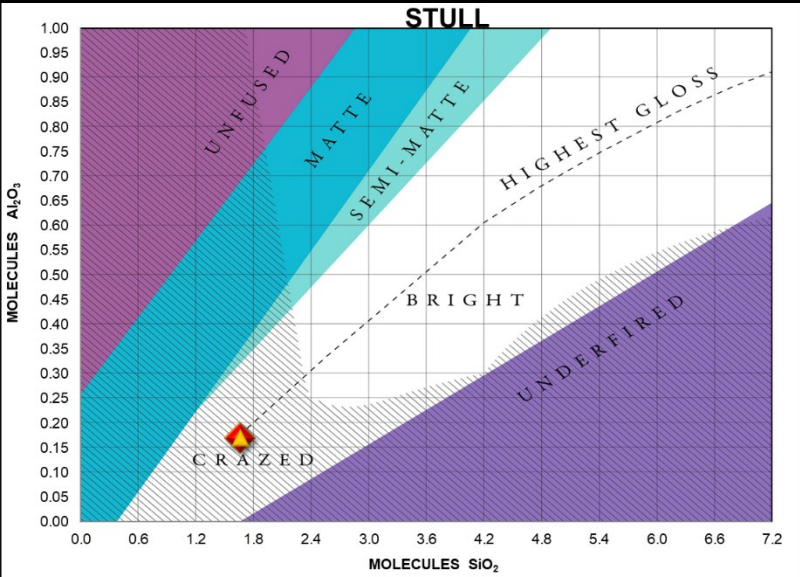
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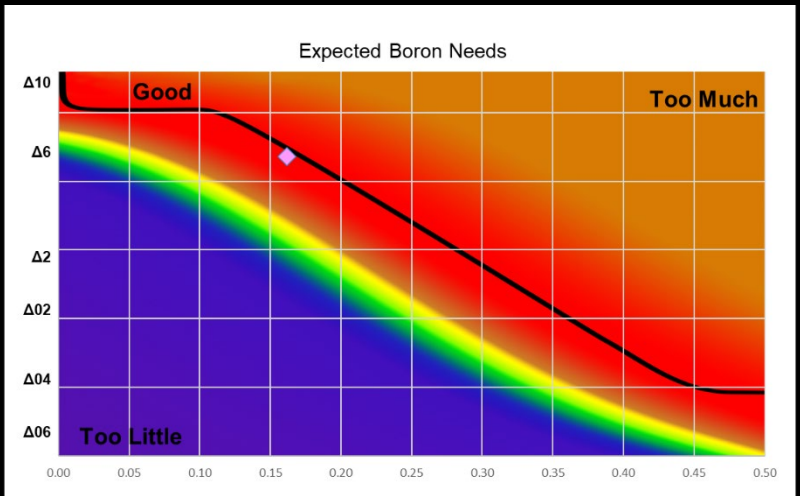
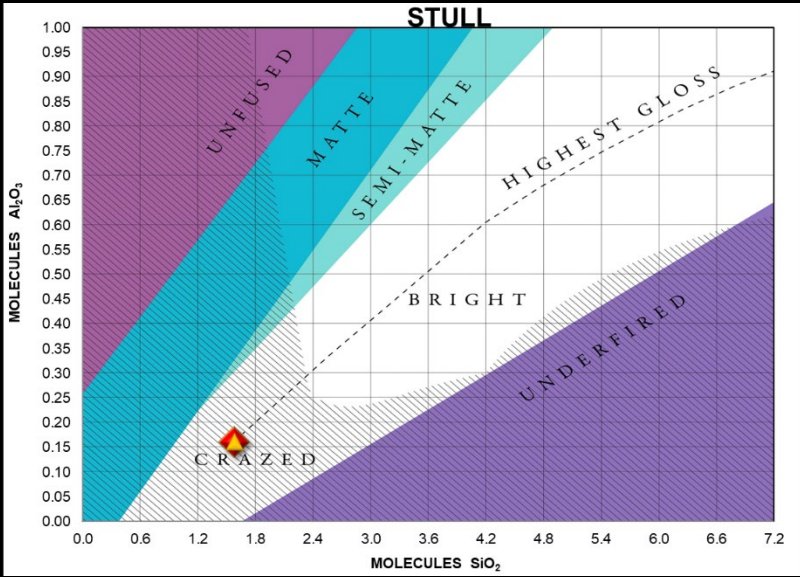
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Copper Carbonate

SiO ₂ :Al ₂ O ₃ Ratio 9.75 :1		Alkali Metals 0.19		Alkaline Earths 0.81	
SiO ₂ 1.66	Collective "Al ₂ O ₃ " 0.17	Na ₂ O 0.11	K ₂ O 0.06	MgO 0.00	CaO 0.81
B ₂ O ₃ 0.16	Al ₂ O ₃ 0.17	Li ₂ O	CuO 0.02	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



SiO ₂ :Al ₂ O ₃ Ratio 9.75 :1		Alkali Metals 0.23		Alkaline Earths 0.77	
SiO ₂ 1.58	Collective "Al ₂ O ₃ " 0.16	Na ₂ O 0.10	K ₂ O 0.06	MgO 0.00	CaO 0.77
B ₂ O ₃ 0.15	Al ₂ O ₃ 0.16	Li ₂ O	CuO 0.07	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

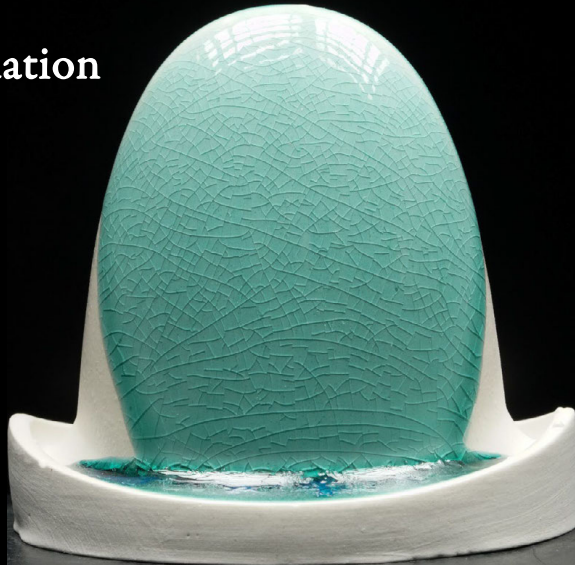
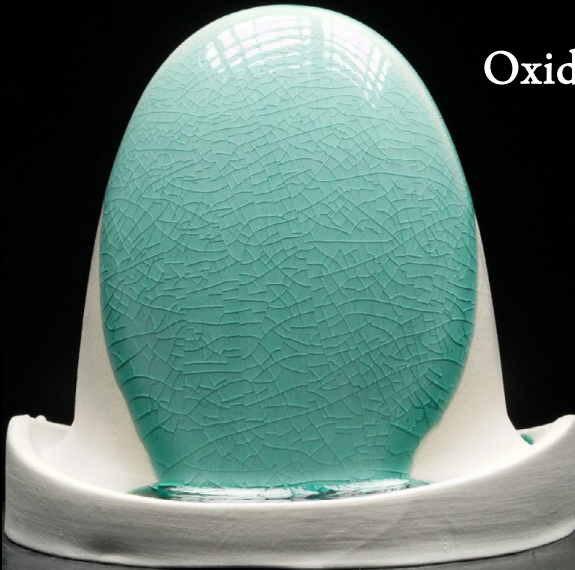


Copper Oxide-Black

Oxidation

Reduction

1%



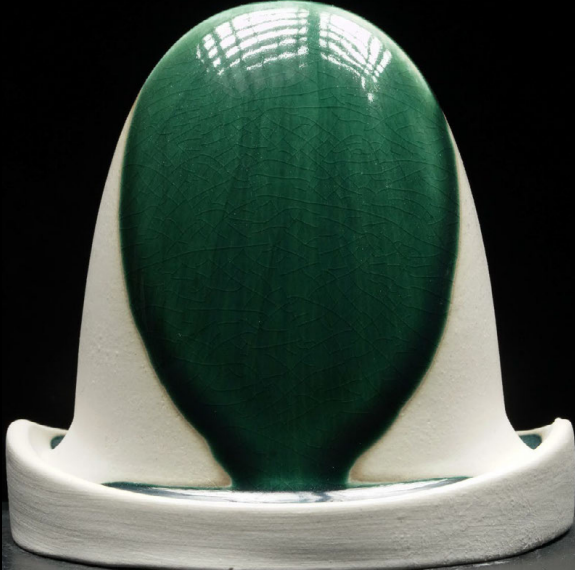
1-3 Second Dip

2-3 Second Dips

1-3 Second Dip

2-3 Second Dips

4%



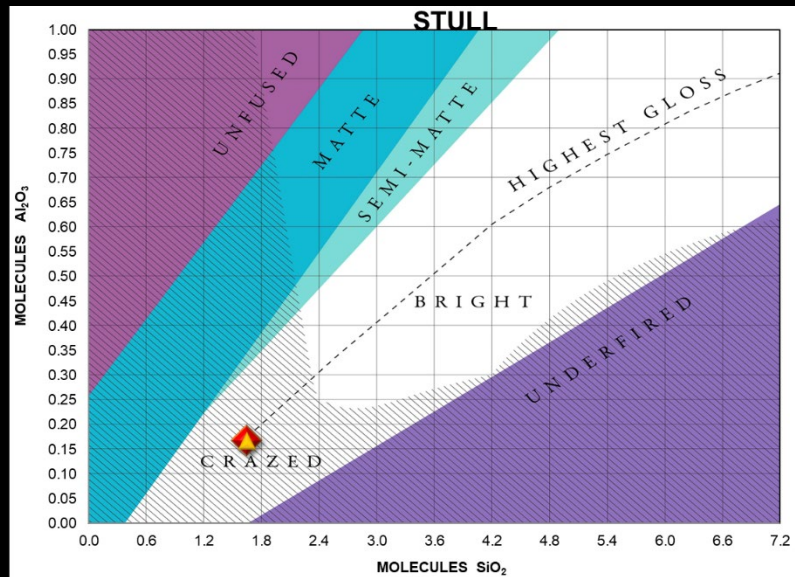
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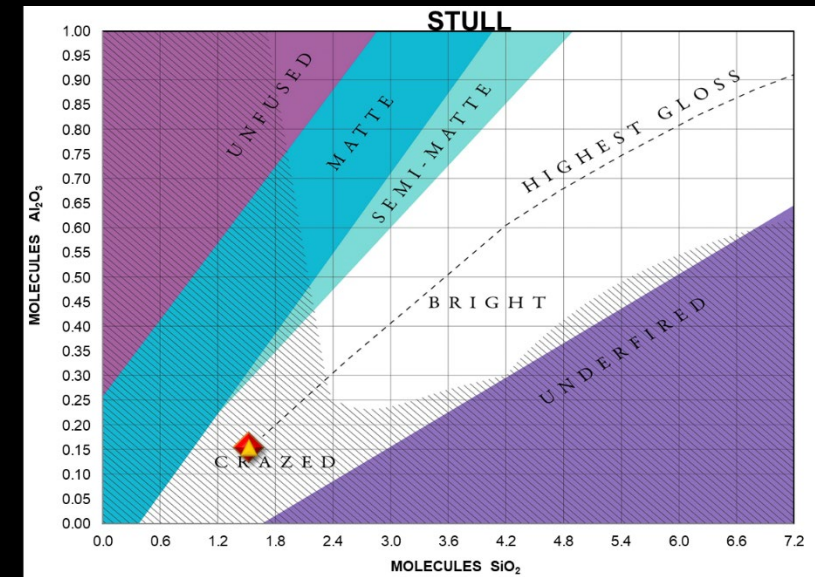
Copper Oxide-Black

SiO ₂ :Al ₂ O ₃ Ratio 9.75 :1		Alkali Metals 0.19		Alkaline Earths 0.81	
SiO ₂ 1.65	Collective "Al ₂ O ₃ " 0.17	Na ₂ O 0.11	K ₂ O 0.06	MgO 0.00	CaO 0.80
B ₂ O ₃ 0.16	Al ₂ O ₃ 0.17	Li ₂ O	CuO 0.03	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

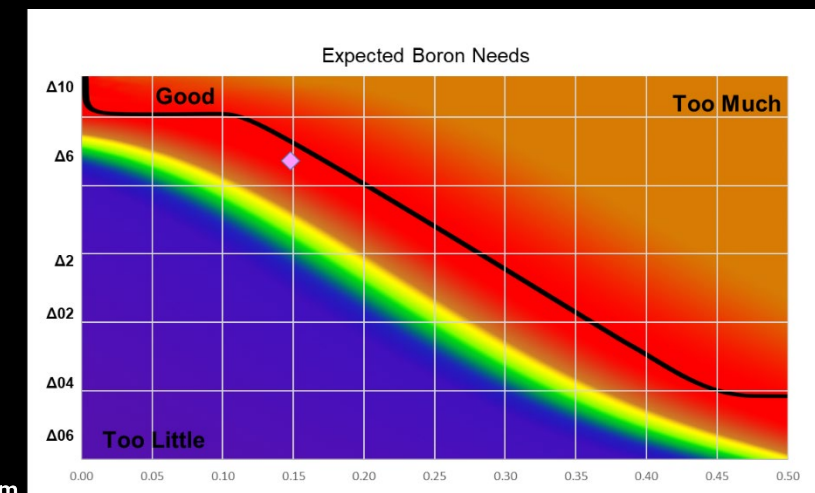
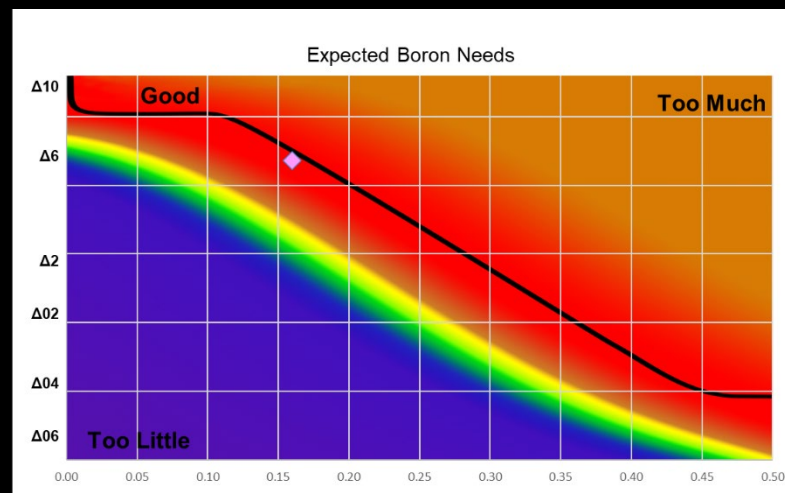


1%

SiO ₂ :Al ₂ O ₃ Ratio 9.75 :1		Alkali Metals 0.25		Alkaline Earths 0.75	
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 0.16	Li ₂ O	CuO 0.10	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



4%



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Red Iron Oxide

Oxidation

Reduction

3%



1-3 Second Dip

2-3 Second Dips

1-3 Second Dip

2-3 Second Dips

9%



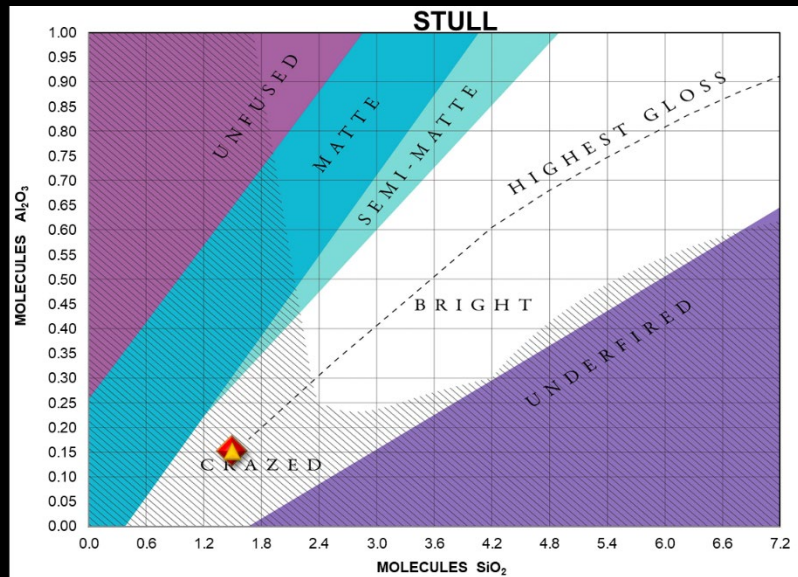
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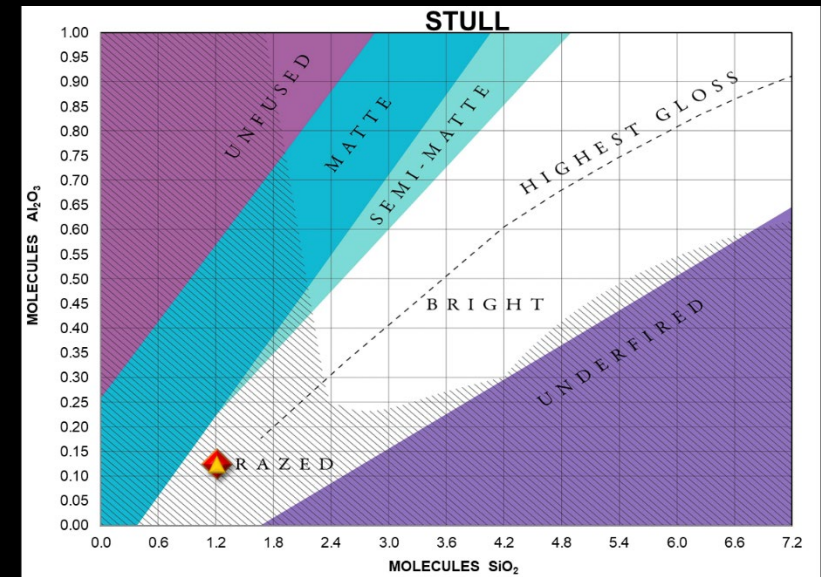
Red Iron Oxide

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 0.73
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	ZnO	FeO 0.12
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO

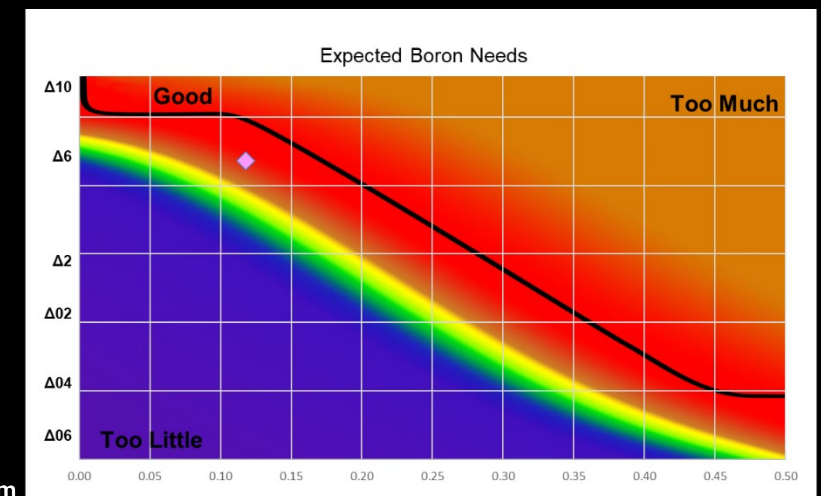


3%

SiO ₂ :Al ₂ O ₃ Ratio 9.75 :1		Alkali Metals 0.12		Alkaline Earths 0.88	
SiO ₂ 1.21	Collective "Al ₂ O ₃ " 0.12	Na ₂ O 0.08	K ₂ O 0.04	MgO 0.00	CaO 0.59
B ₂ O ₃ 0.12	Al ₂ O ₃ 0.12	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.29
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



9%



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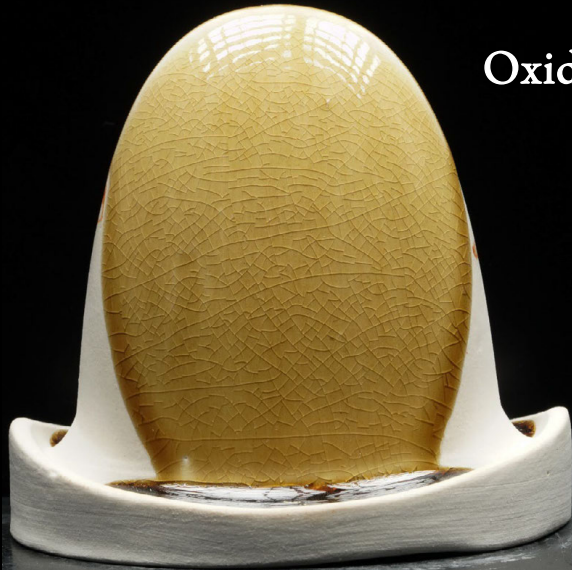
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Black Iron Oxide

Oxidation

Reduction

3%



1-3 Second Dip



2-3 Second Dips



1-3 Second Dip



2-3 Second Dips

9%



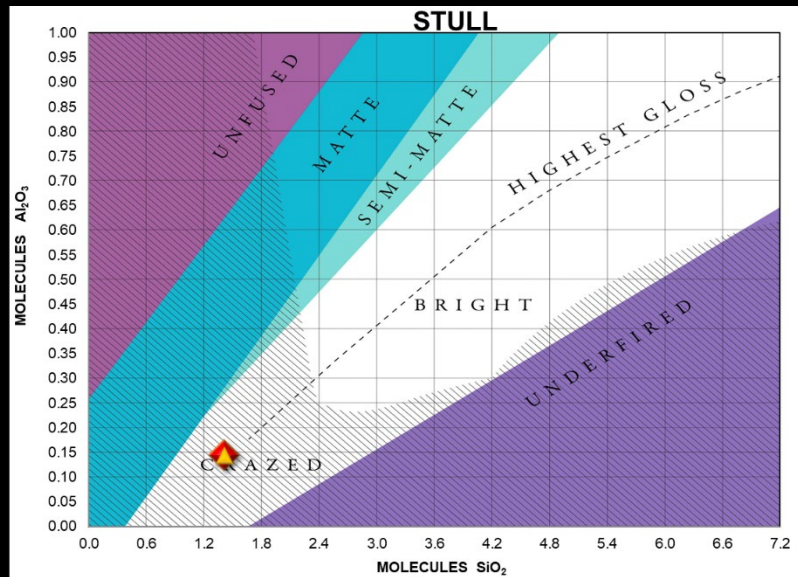
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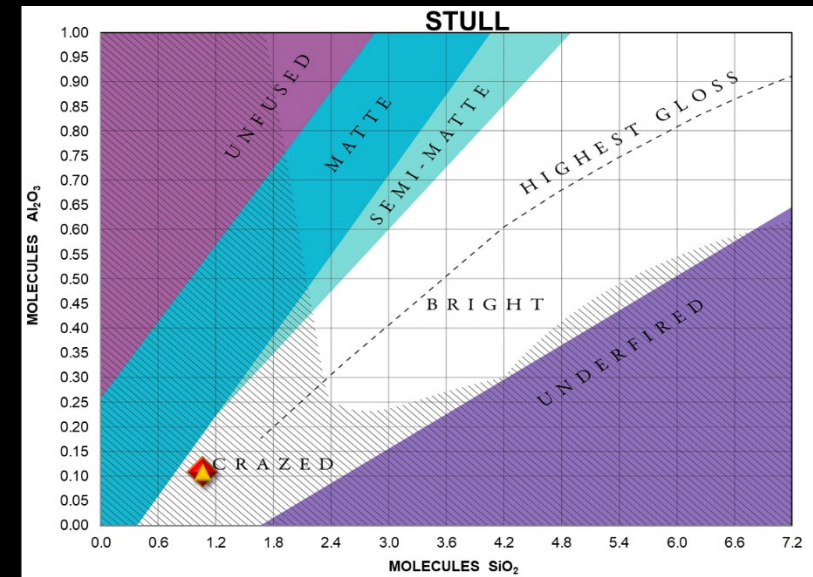
Black Iron Oxide

SiO ₂ :Al ₂ O ₃ Ratio 9.75 :1		Alkali Metals 0.14		Alkaline Earths 0.86	
SiO ₂ 1.41	Collective "Al ₂ O ₃ " 0.14	Na ₂ O 0.09	K ₂ O 0.05	MgO 0.00	CaO 0.69
B ₂ O ₃ 0.14	Al ₂ O ₃ 0.14	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.17
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO

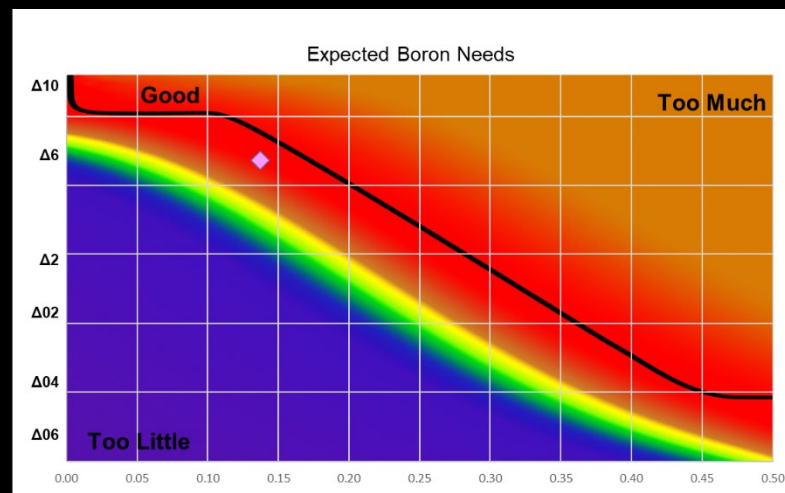


3%

SiO ₂ :Al ₂ O ₃ Ratio 9.75 :1		Alkali Metals 0.11		Alkaline Earths 0.89	
SiO ₂ 1.06	Collective "Al ₂ O ₃ " 0.11	Na ₂ O 0.07	K ₂ O 0.04	MgO 0.00	CaO 0.52
B ₂ O ₃ 0.10	Al ₂ O ₃ 0.11	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.38
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



9%



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Yellow Iron Oxide

Oxidation

Reduction

3%



1-3 Second Dip

2-3 Second Dips

1-3 Second Dip

2-3 Second Dips

9%



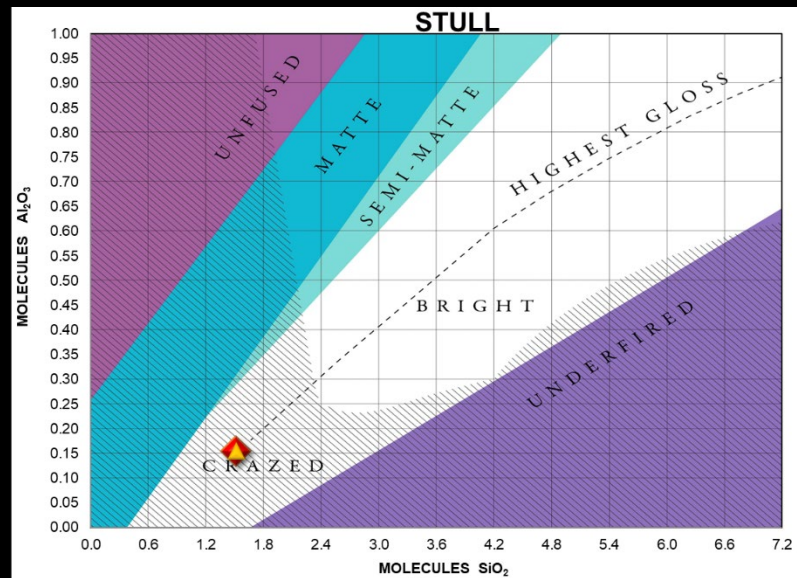
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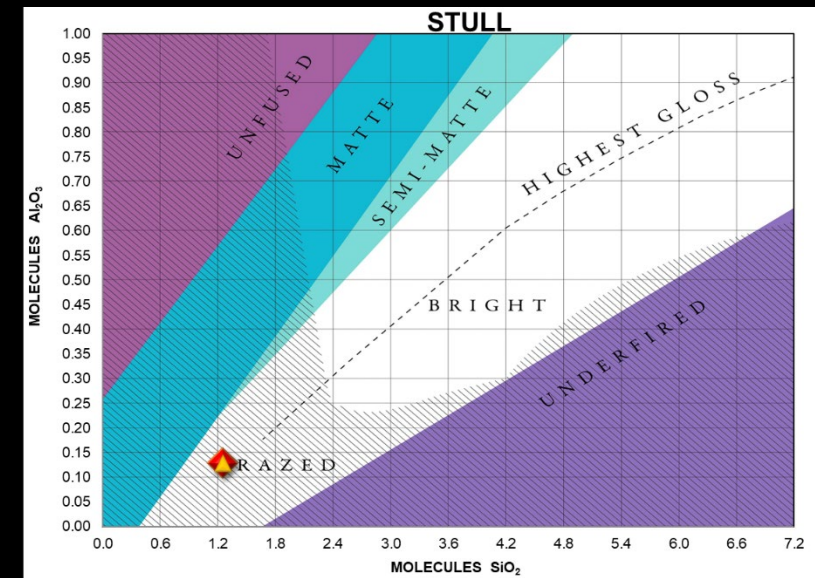
Yellow Iron Oxide

SiO ₂ :Al ₂ O ₃ Ratio 9.75 :1		Alkali Metals 0.15		Alkaline Earths 0.85	
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	ZnO	FeO 0.11
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO

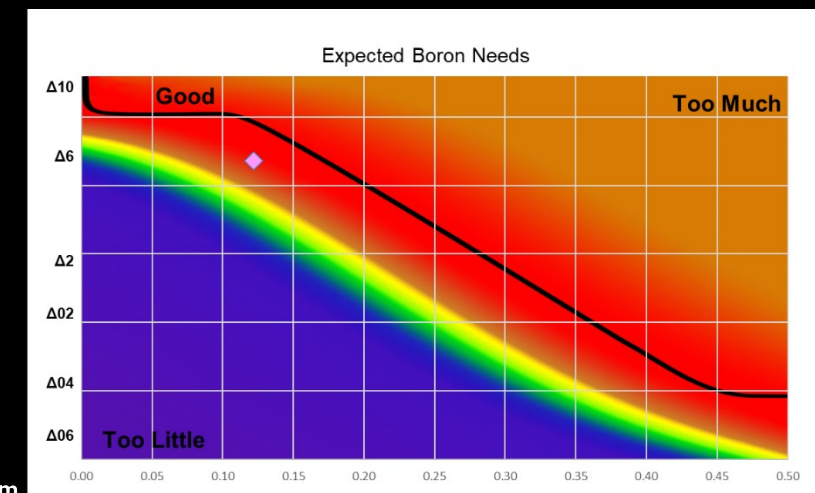
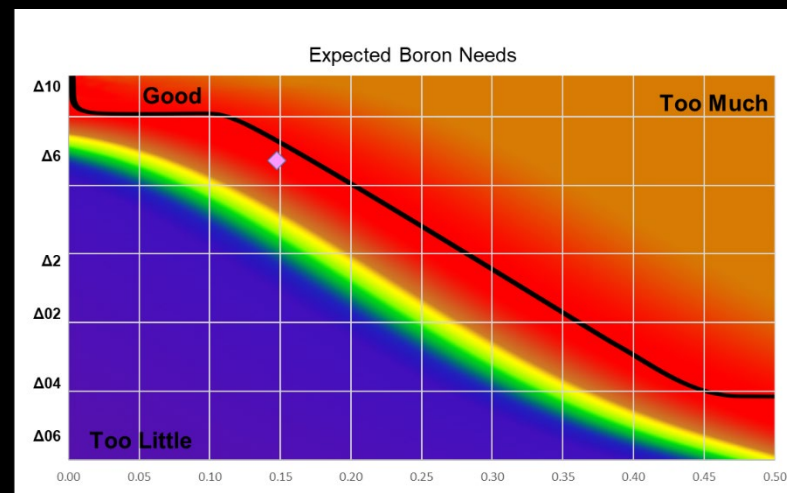


3%

SiO ₂ :Al ₂ O ₃ Ratio 9.75 :1		Alkali Metals 0.13		Alkaline Earths 0.87	
SiO ₂ 1.25	Collective "Al ₂ O ₃ " 0.13	Na ₂ O 0.08	K ₂ O 0.05	MgO 0.00	CaO 0.61
B ₂ O ₃ 0.12	Al ₂ O ₃ 0.13	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.26
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



9%



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Manganese Dioxide

Oxidation

Reduction

1%



1-3 Second Dip



2-3 Second Dips



1-3 Second Dip



2-3 Second Dips

4%



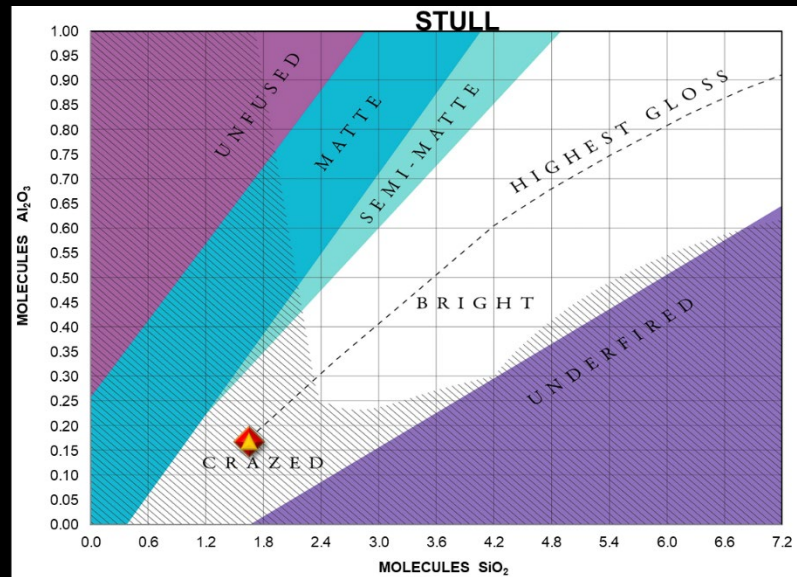
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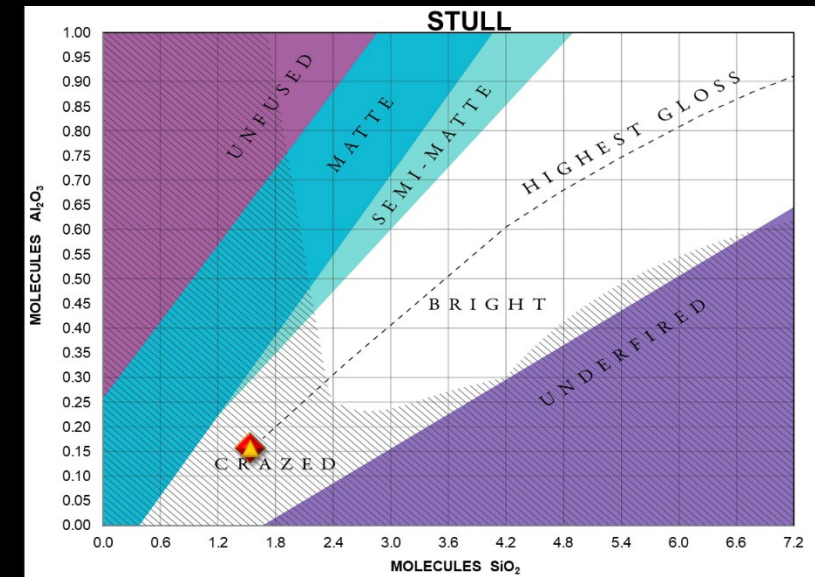
Manganese Dioxide

SiO ₂ :Al ₂ O ₃ Ratio 9.75 :1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.65	Collective "Al ₂ O ₃ " 0.17	Na ₂ O 0.11	K ₂ O 0.06	MgO 0.00	CaO 0.80
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 0.02	CoO

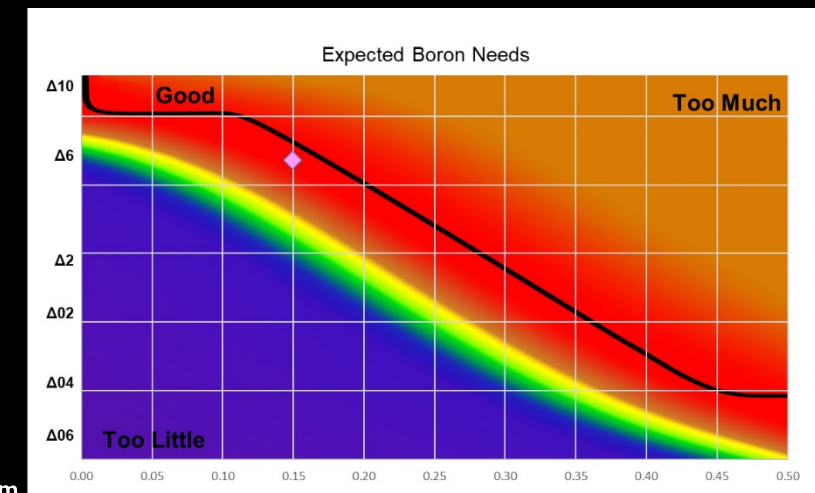
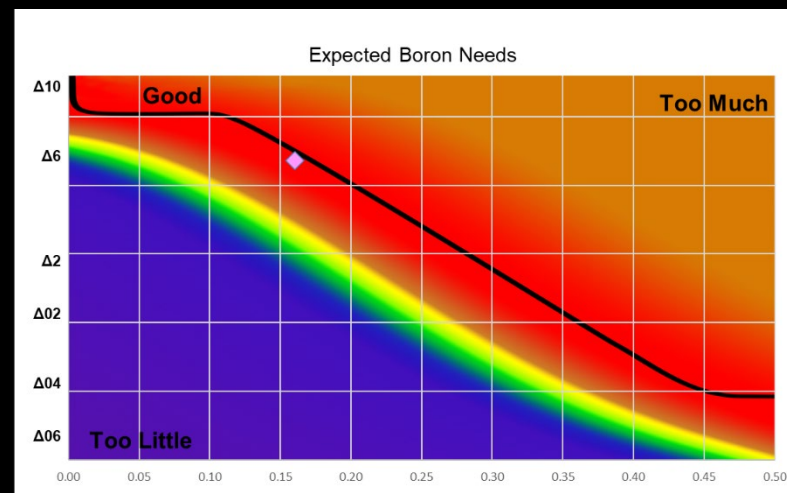


1%

SiO ₂ :Al ₂ O ₃ Ratio 9.75 :1		Alkali Metals 0.16		Alkaline Earths 0.84	
SiO ₂ 1.54	Collective "Al ₂ O ₃ " 0.16	Na ₂ O 0.10	K ₂ O 0.06	MgO 0.00	CaO 0.75
B ₂ O ₃ 0.15	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 0.09	CoO



4%



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Vanadium Pentoxide

Oxidation

Reduction

3%



1-3 Second Dip



2-3 Second Dips



1-3 Second Dip



2-3 Second Dips

9%



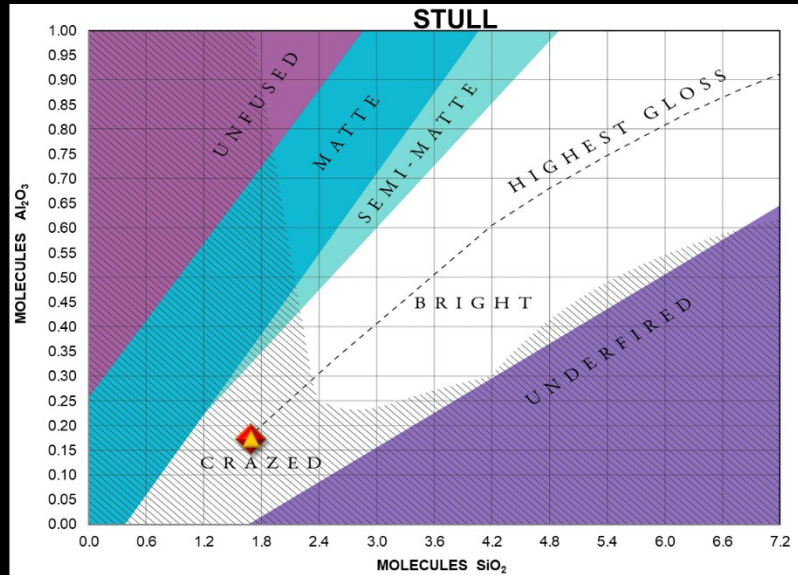
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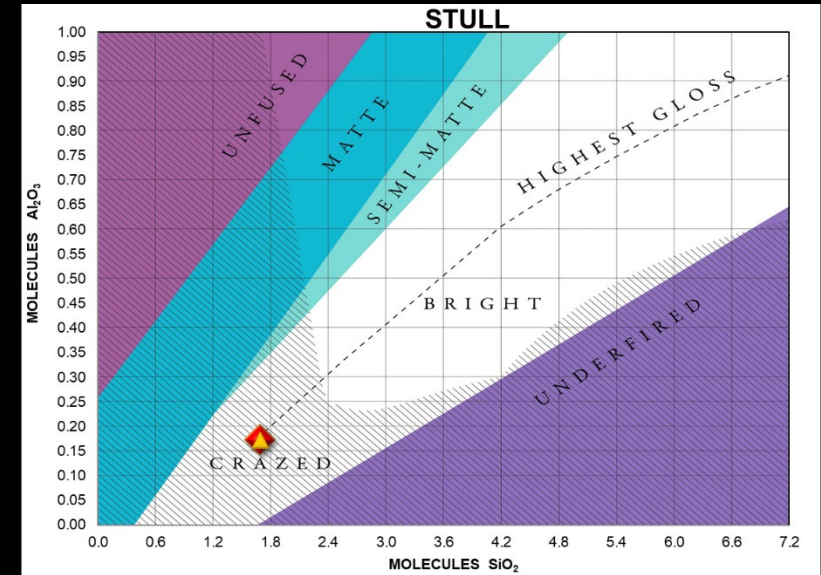
Vanadium Pentoxide

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

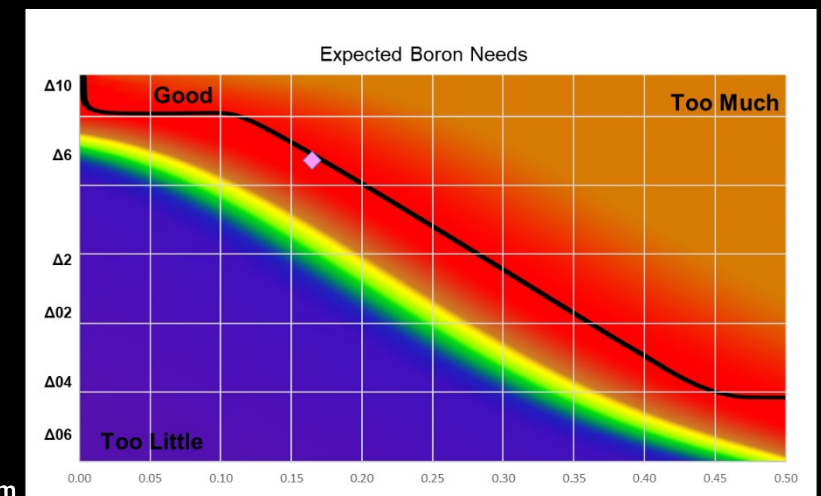


3%

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



9%



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Dark Rutile

Oxidation

Reduction

3%



1-3 Second Dip



2-3 Second Dips



1-3 Second Dip



2-3 Second Dips

9%



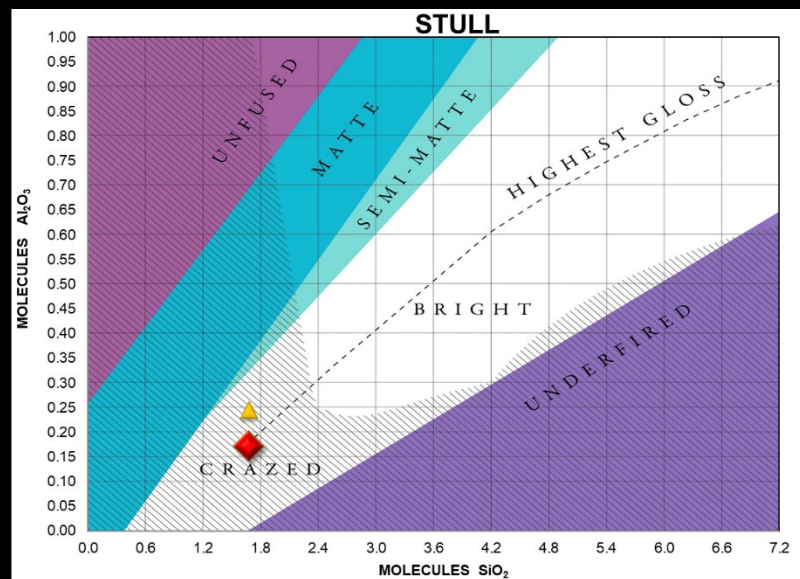
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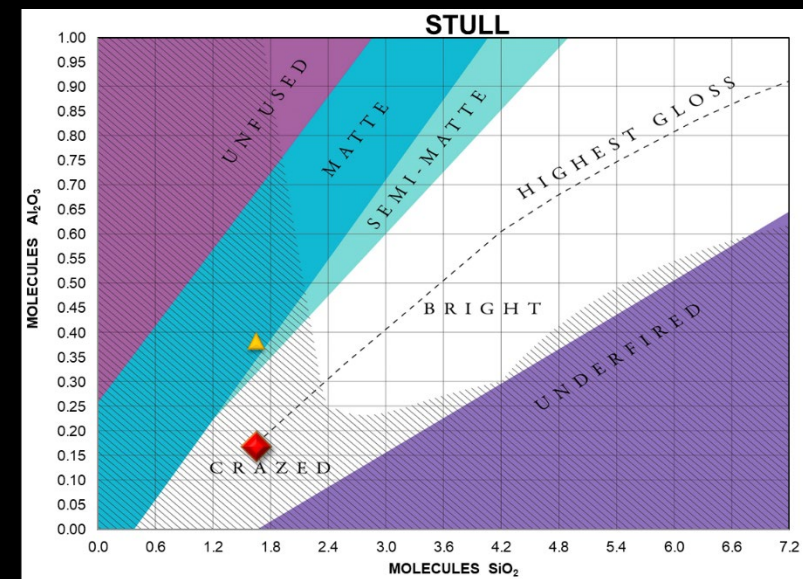
Dark Rutile

SiO ₂ :Al ₂ O ₃ Ratio 6.85 :1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.68	Collective "Al ₂ O ₃ " 0.24	Na ₂ O 0.11	K ₂ O 0.06	MgO 0.00	CaO 0.81
B ₂ O ₃ 0.16	Al ₂ O ₃ 0.17	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.07	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.01
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO

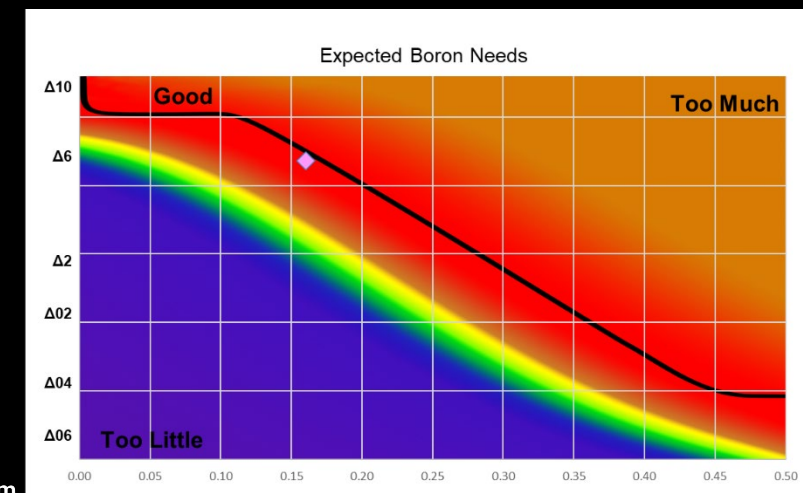
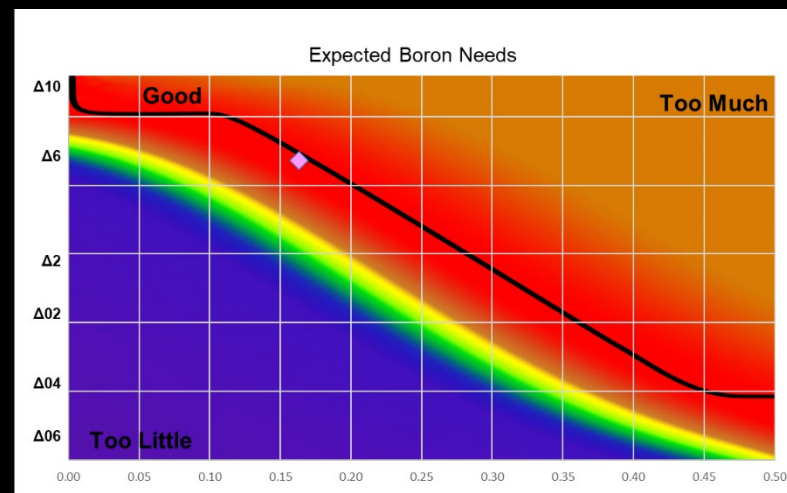


3%

SiO ₂ :Al ₂ O ₃ Ratio 4.30 :1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.65	Collective "Al ₂ O ₃ " 0.38	Na ₂ O 0.11	K ₂ O 0.06	MgO 0.00	CaO 0.80
B ₂ O ₃ 0.16	Al ₂ O ₃ 0.17	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.22	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.03
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



9%



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Light Rutile

Oxidation

Reduction

3%



1-3 Second Dip



2-3 Second Dips



1-3 Second Dip



2-3 Second Dips

9%



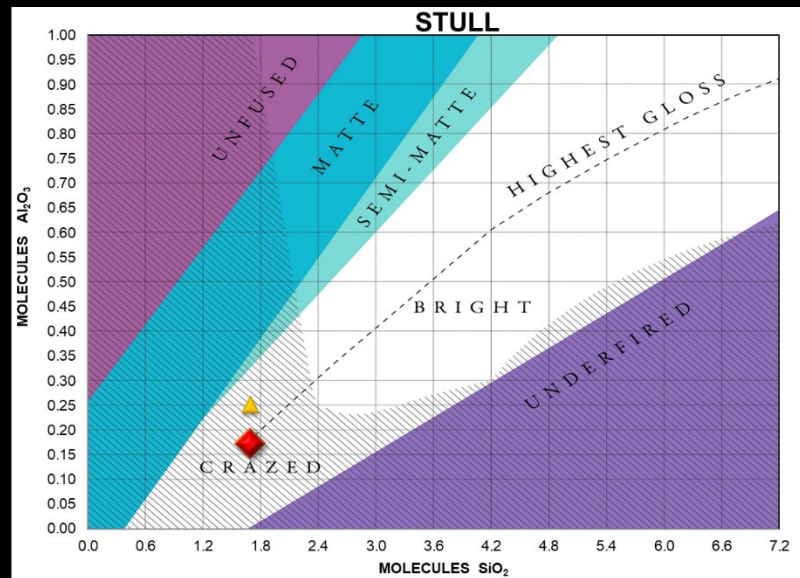
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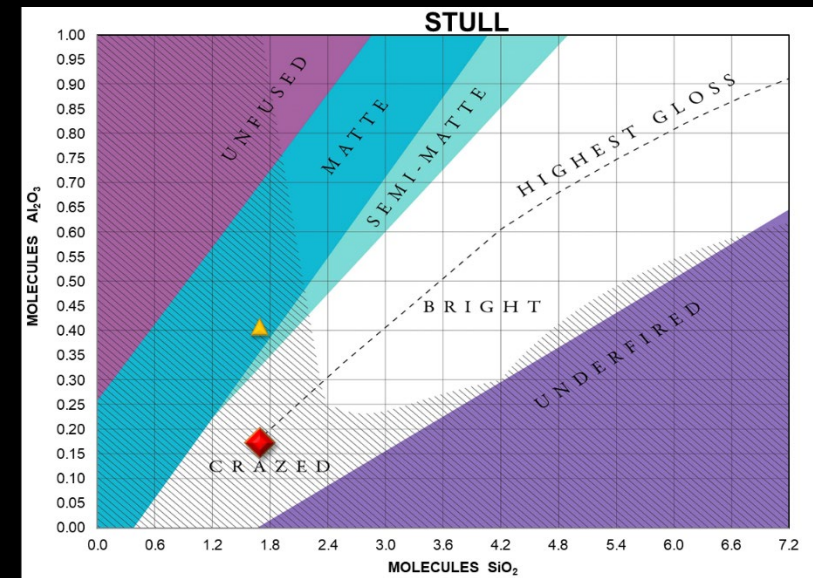
Light Rutile

SiO ₂ :Al ₂ O ₃ Ratio 6.71 :1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.69	Collective "Al ₂ O ₃ " 0.25	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 0.08	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.01
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



3%

SiO ₂ :Al ₂ O ₃ Ratio 4.14 :1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.69	Collective "Al ₂ O ₃ " 0.41	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 0.24	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.01
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



9%



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Titanium Dioxide

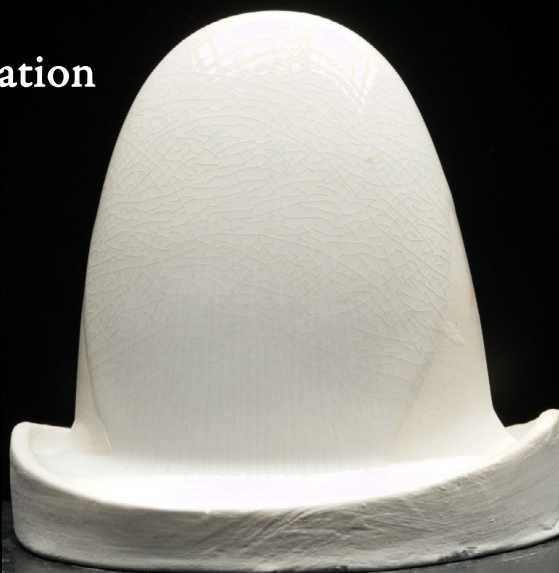
Oxidation

Reduction

3%



1-3 Second Dip



2-3 Second Dips



1-3 Second Dip



2-3 Second Dips

9%



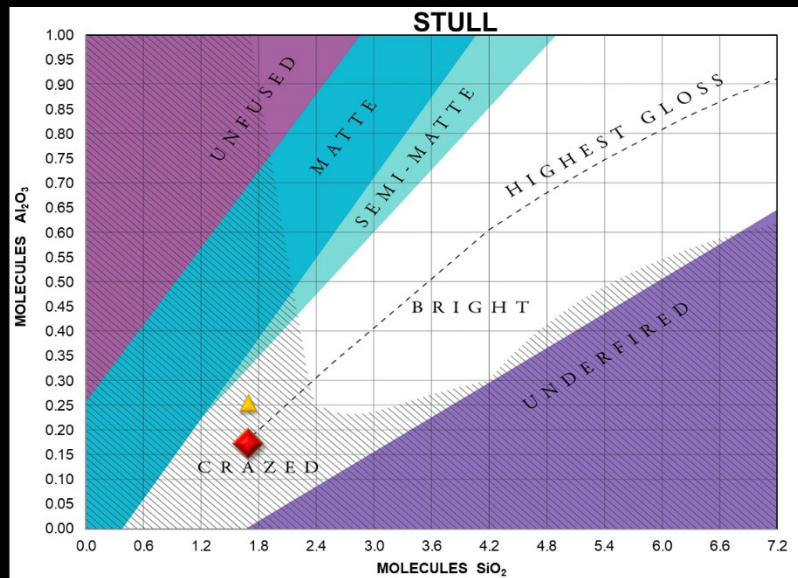
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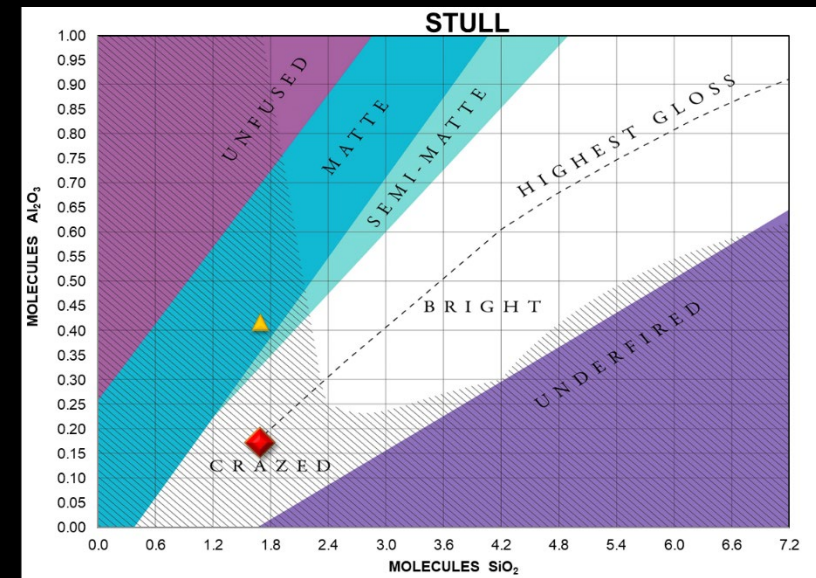
Titanium Dioxide

SiO ₂ :Al ₂ O ₃ Ratio 6.63 :1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.69	Collective "Al ₂ O ₃ " 0.26	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 0.08	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.00
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



3%

SiO ₂ :Al ₂ O ₃ Ratio 4.05 :1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.69	Collective "Al ₂ O ₃ " 0.42	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 0.25	NiO	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.00
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



9%



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Nickel Carbonate

Oxidation

Reduction

2%



1-3 Second Dip



2-3 Second Dips



1-3 Second Dip



2-3 Second Dips

6%



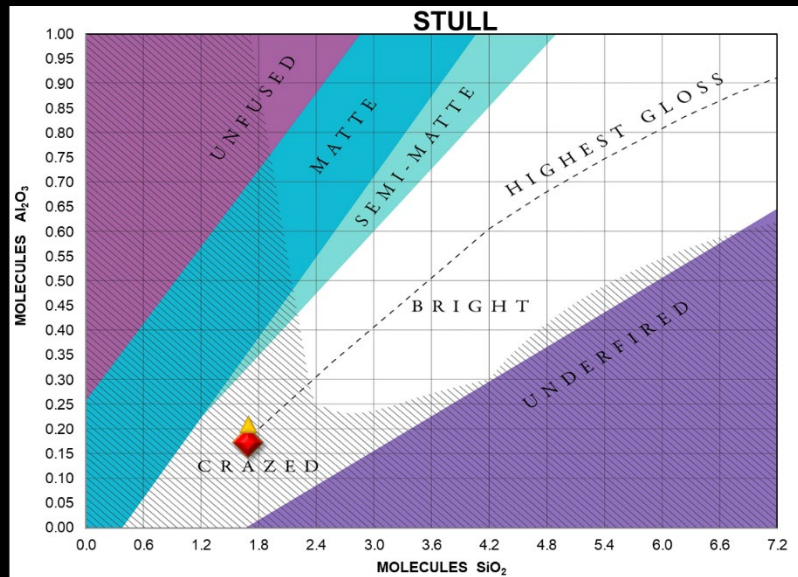
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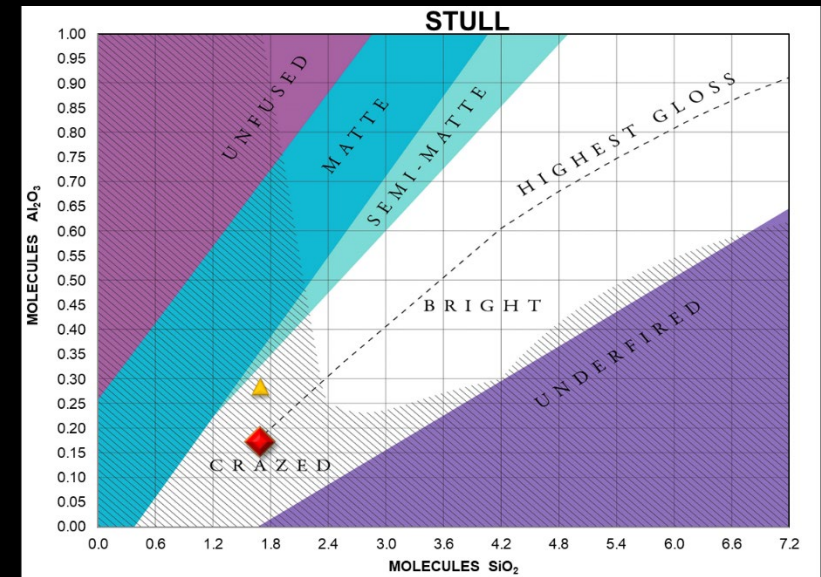
Nickel Carbonate

SiO ₂ :Al ₂ O ₃ Ratio 8.03 :1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.69	Collective "Al ₂ O ₃ " 0.21	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 0.04	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.00
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO

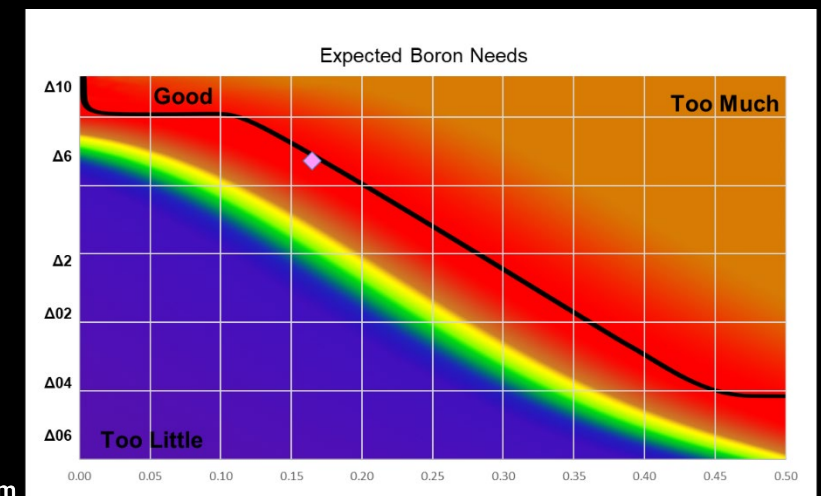


2%

SiO ₂ :Al ₂ O ₃ Ratio 5.94 :1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.69	Collective "Al ₂ O ₃ " 0.28	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 0.11	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.00
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



6%



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Nickel Oxide-Black

Oxidation

Reduction

2%



1-3 Second Dip



2-3 Second Dips



1-3 Second Dip



2-3 Second Dips

6%



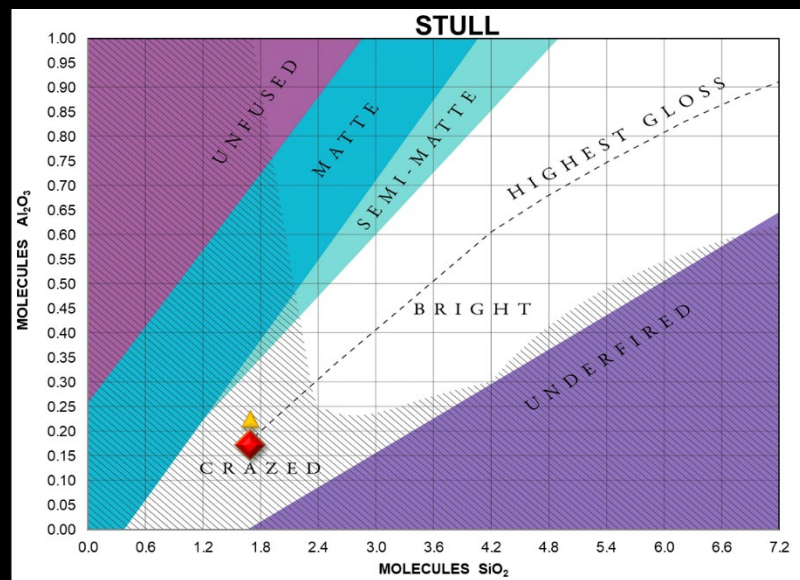
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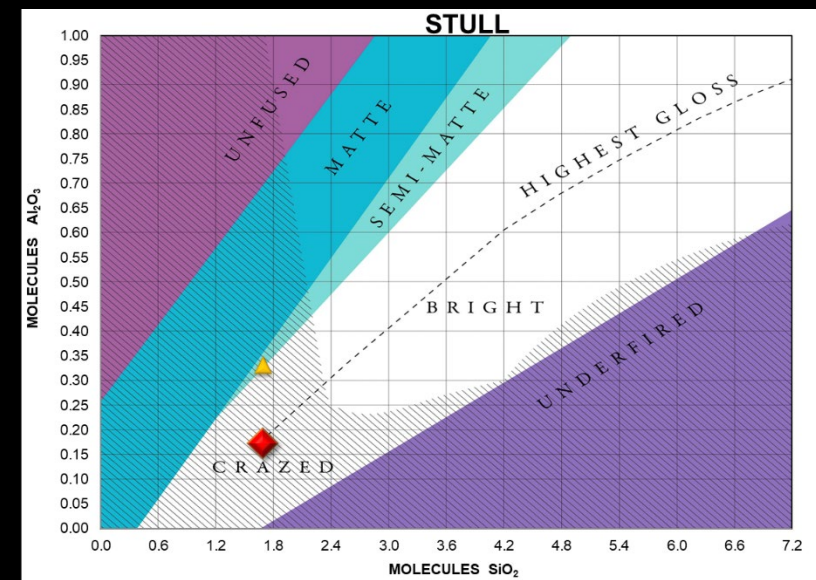
Nickel Oxide-Black

SiO ₂ :Al ₂ O ₃ Ratio 7.47 :1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.69	Collective "Al ₂ O ₃ " 0.23	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 0.05	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.00
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



2%

SiO ₂ :Al ₂ O ₃ Ratio 5.09 :1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.69	Collective "Al ₂ O ₃ " 0.33	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 0.16	Bi ₂ O ₃	SnO ₂	ZnO	FeO 0.00
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



6%



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Tin Oxide

Oxidation

Reduction

3%

1-3 Second Dip

2-3 Second Dips

1-3 Second Dip

2-3 Second Dips

6%



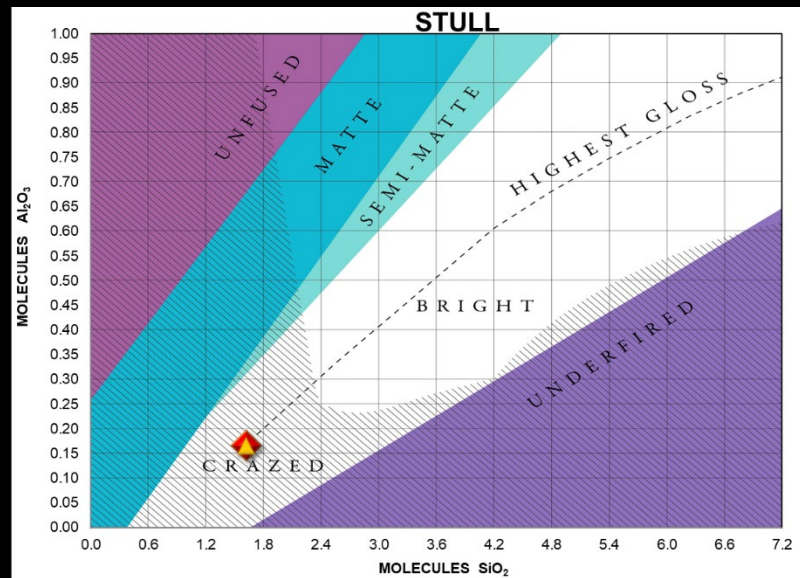
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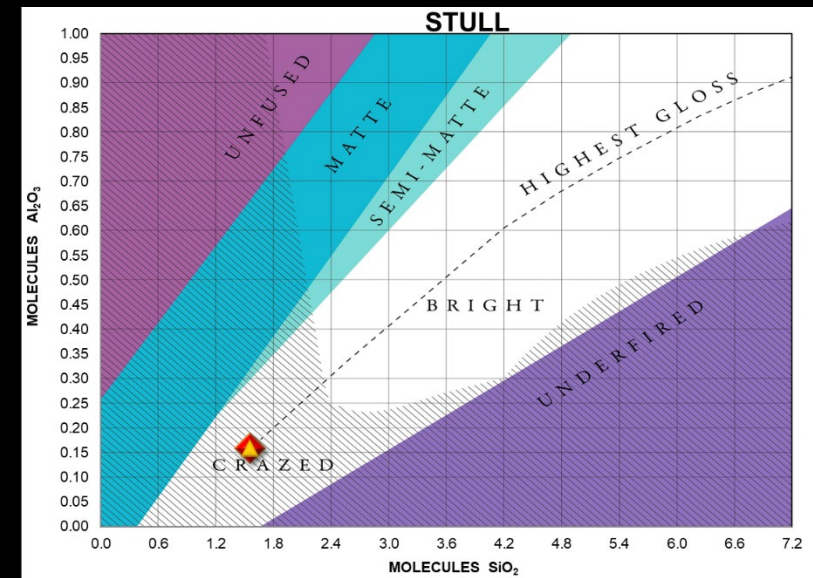
Tin Oxide

SiO ₂ :Al ₂ O ₃ Ratio 9.75 :1		Alkali Metals 0.21		Alkaline Earths 0.79	
SiO ₂ 1.62	Collective "Al ₂ O ₃ " 0.17	Na ₂ O 0.11	K ₂ O 0.06	MgO 0.00	CaO 0.79
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 0.04	ZnO	FeO 0.00
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



3%

SiO ₂ :Al ₂ O ₃ Ratio 9.75 :1		Alkali Metals 0.24		Alkaline Earths 0.76	
SiO ₂ 1.56	Collective "Al ₂ O ₃ " 0.16	Na ₂ O 0.10	K ₂ O 0.06	MgO 0.00	CaO 0.75
B ₂ O ₃ 0.15	Al ₂ O ₃ 0.16	Li ₂ O	CuO	SrO	BaO
TiO ₂ 0.00	NiO	Bi ₂ O ₃	SnO ₂ 0.08	ZnO	FeO 0.00
Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO



6%



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Zirconium Silicate

Oxidation

Reduction

5%



1-3 Second Dip



2-3 Second Dips



1-3 Second Dip



2-3 Second Dips

10%



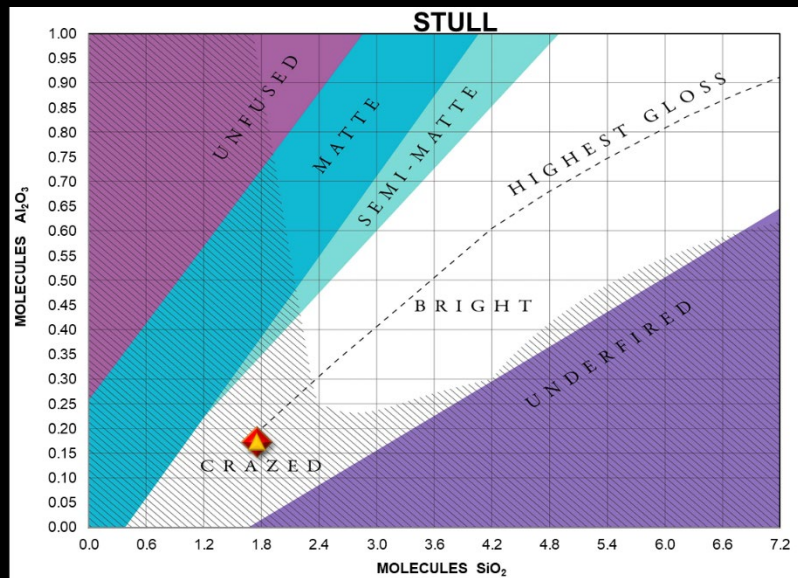
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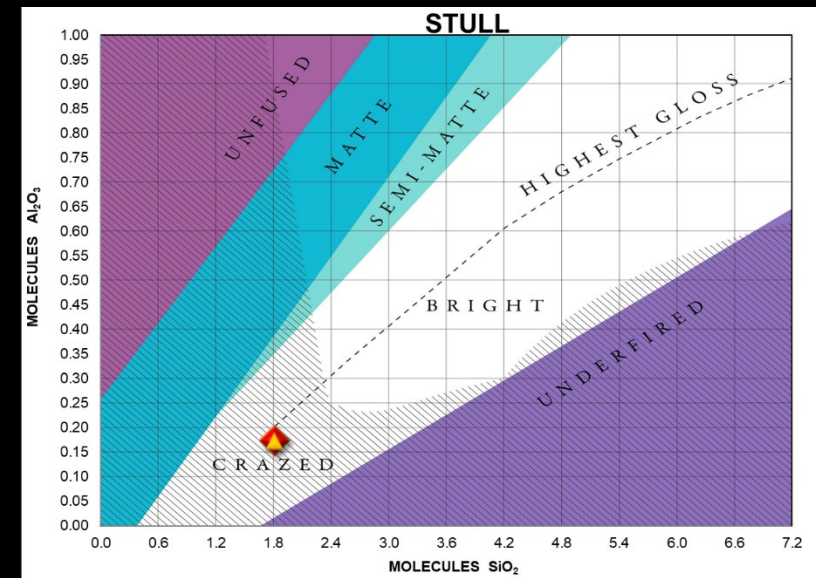
Zirconium Silicate

SiO ₂ :Al ₂ O ₃ Ratio 10.09 : 1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.75	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

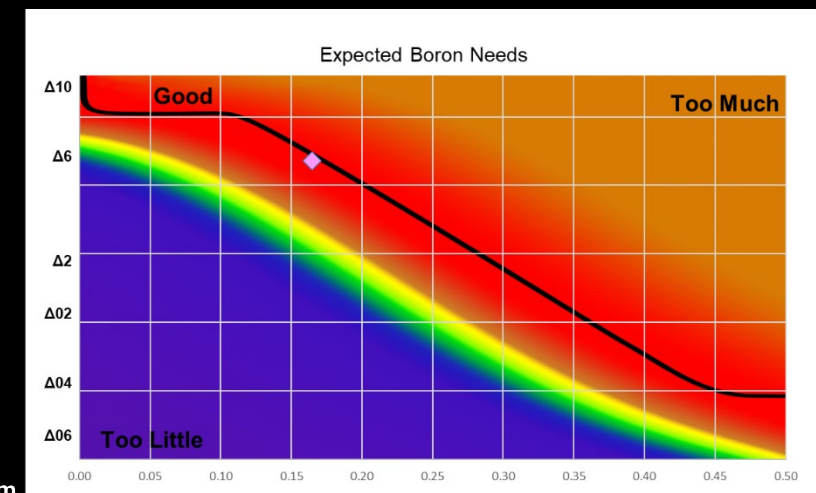
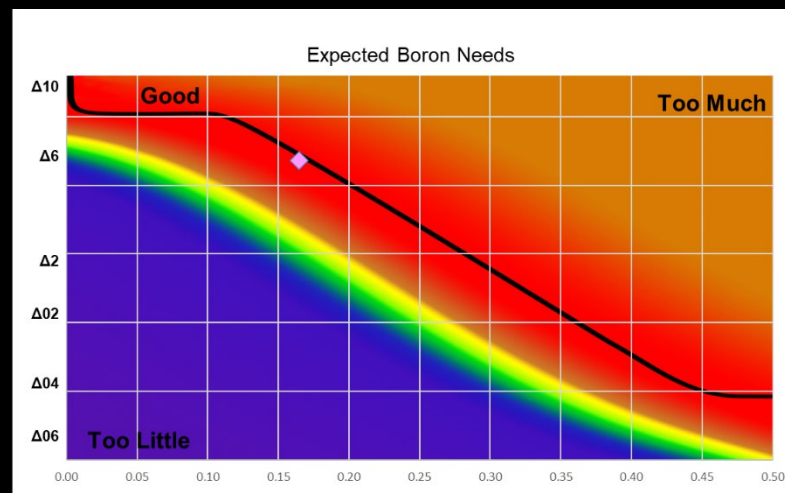


5%

SiO ₂ :Al ₂ O ₃ Ratio 10.44 : 1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.81	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



10%



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Stain Dark Red 6021

Oxidation

Reduction

5%



1-3 Second Dip



2-3 Second Dips



1-3 Second Dip



2-3 Second Dips

10%



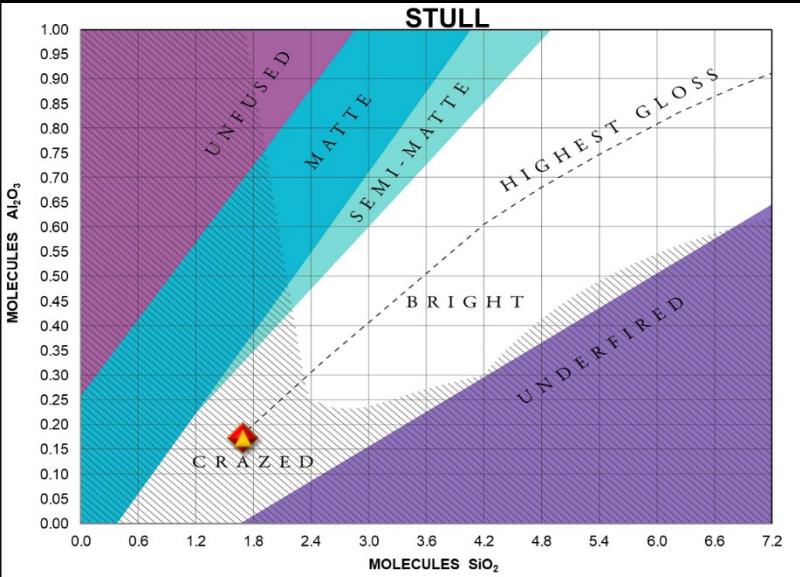
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Big Red – 070822

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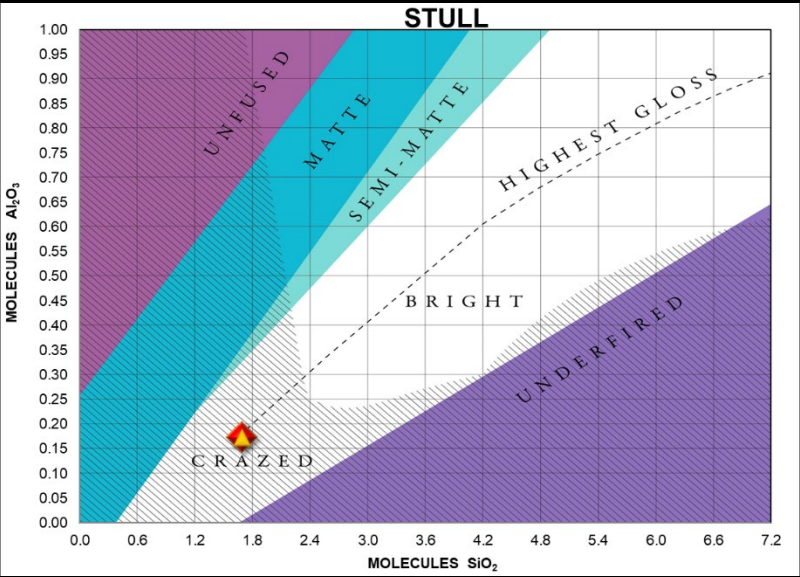
Stain Dark Red 6021

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

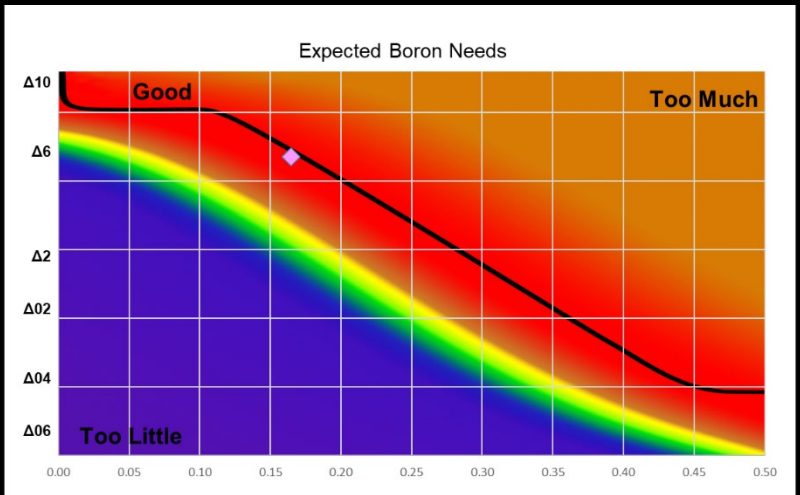
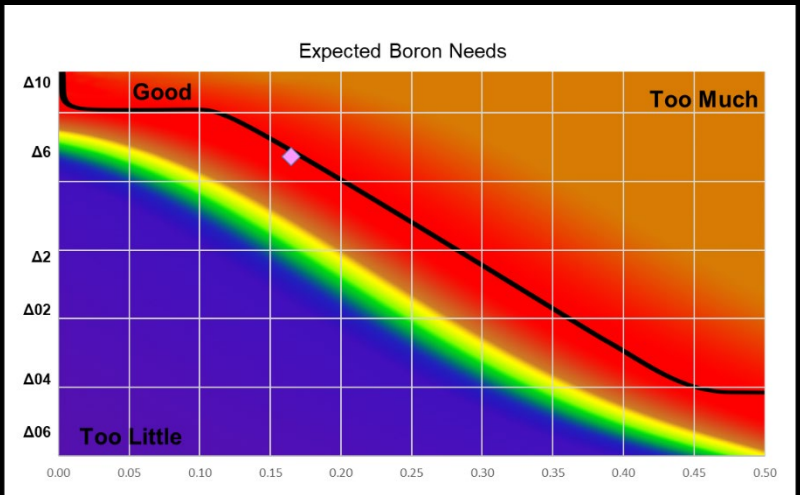


5%

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



10%



Ceramic
Materials
Workshop

Silicon Carbide-30 Mesh

Oxidation

Reduction

3%



1-3 Second Dip



2-3 Second Dips



1-3 Second Dip



2-3 Second Dips

9%



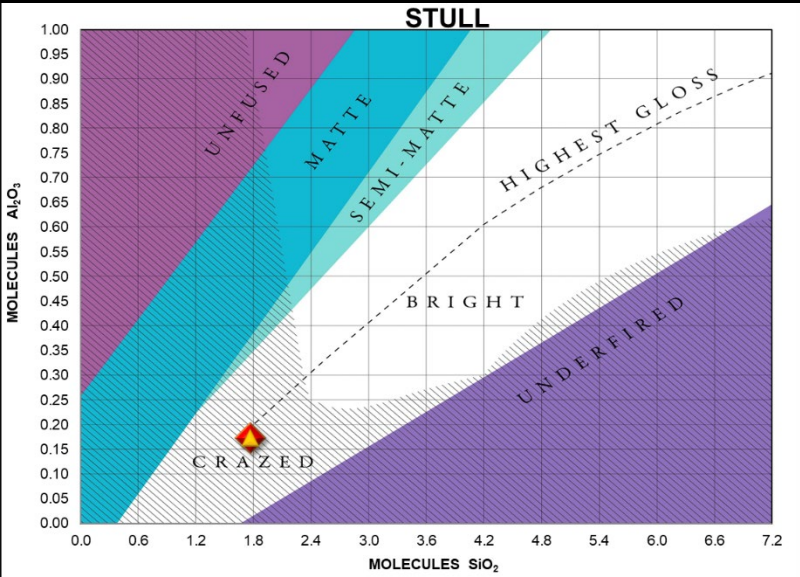
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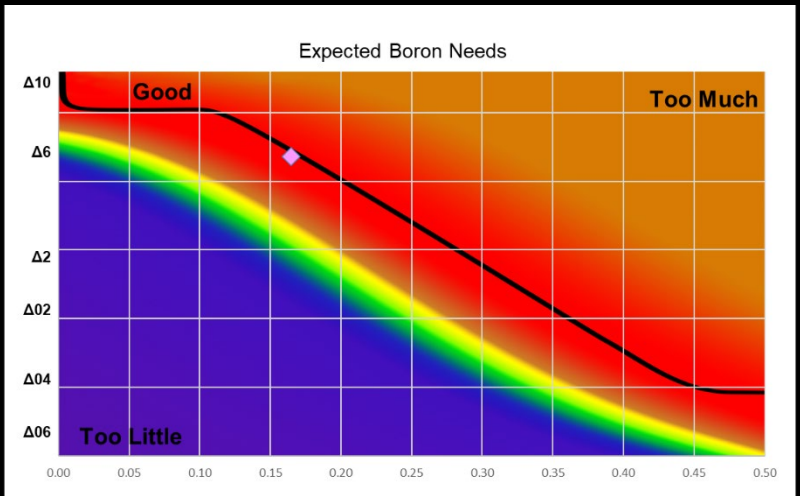
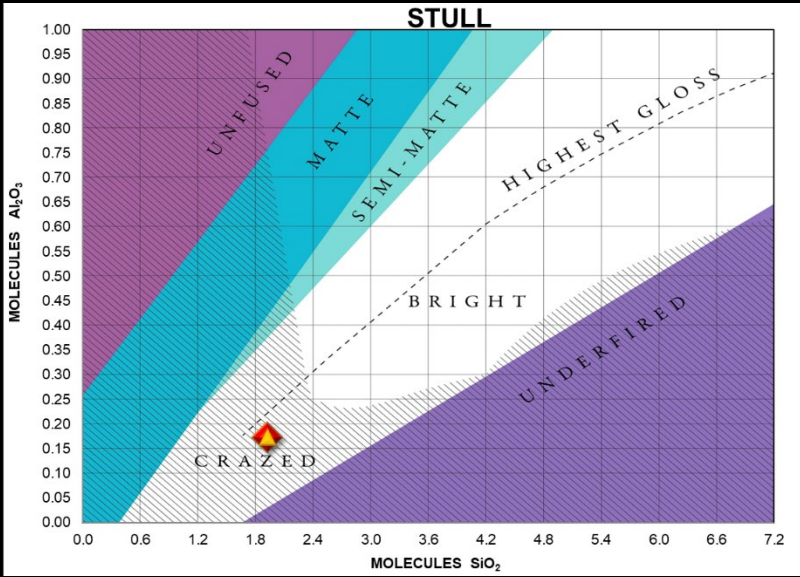
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Silicon Carbide-30 Mesh

SiO ₂ :Al ₂ O ₃ Ratio 10.19 :1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.77	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



SiO ₂ :Al ₂ O ₃ Ratio 11.07 :1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.92	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



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Silicon Carbide-800 Mesh

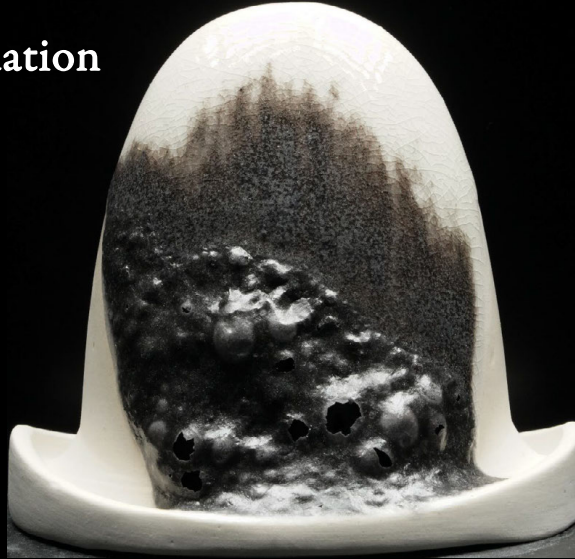
Oxidation

Reduction

3%



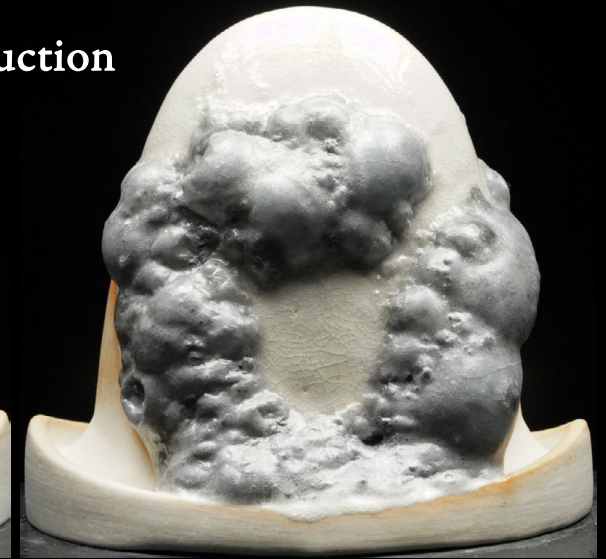
1-3 Second Dip



2-3 Second Dips



1-3 Second Dip



2-3 Second Dips

9%



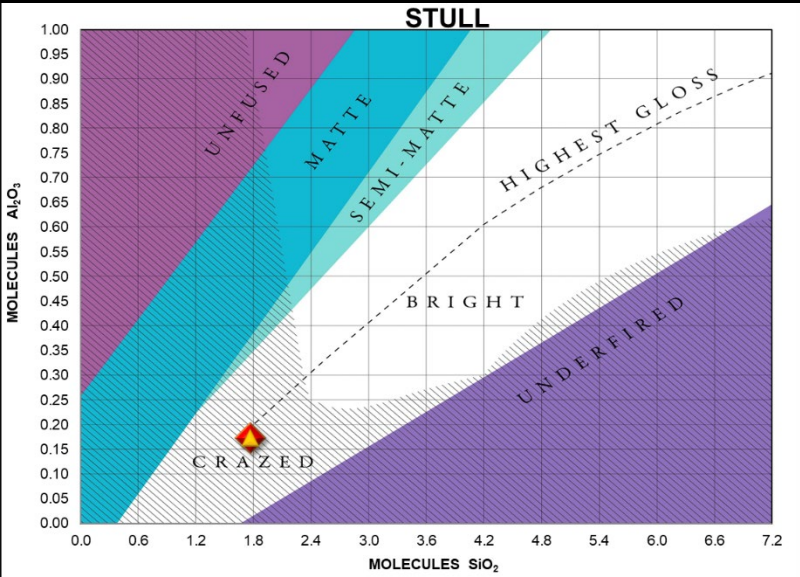
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Silicon Carbide-800 Mesh

SiO ₂ :Al ₂ O ₃ Ratio 10.19 :1		Alkali Metals 0.17		Alkaline Earths 0.83	
SiO ₂ 1.77	Collective "Al ₂ O ₃ " 0.17	Na ₂ O 0.11	K ₂ O 0.06	MgO 0.00	CaO 0.82
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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



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Cr ₂ O ₃	ZrO ₂	P ₂ O ₅		MnO ₂	CoO

