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Råmaterialer
Fritter
Oksider

Miscellaneous materials

P1208	Cellulose Fibre (for making paper clay)	Chopped paper fibres for the production of paper clay. No soaking or mashing required, mix directly with clay slip.
P3380	Batt Wash (Zircon based)	A multi purpose refractory wash for painting onto kiln shelves to reduce the risk of pots sticking to the shelves.
P3382	Gum arabic	An alternative to glaze binder it may also be used as a plasticiser – (2.5 % of the dry weight of the clay) for increasing the dry strength of bodies.
P3386	Mouldmakers size	A high quality size used in the production of plaster moulds to prevent sticking of the two plaster faces. Mix half/half with hot water. Allow to cool; apply with a brush; wipe off excess with soaped natural sponge. Apply 3 coats, allowing to dry between each coat
P3390	Dispersing agent (Dispex)	A sodium based polymer type deflocculent used to increase fluidity / reduce viscosity of casting slips. Normal additions range between 0.1 - 0.3% of the dry weight of the clay.
R1036	Glaze binder (Peptapon - SCMC)	Additions of up to 2% of the dry weight of glaze increases the viscosity, adhesion and surface hardness of the unfired glaze.

Menders

P0596	Mender friend	Ceramic cement for greenware and biscuit suitable for earthenware temperatures. Brush on edges and hold together while setting. Apply a further coat and allow to dry. Fettle and fire.
P3397	Aluminide X repair kit	A polymer type pottery cement specially formulated to repair pottery prior to glazing in either greenware or bisque, suitable for high temperatures (Stoneware).
SY545	Patch-a-tatch	A DUNCAN ceramic cement, used to attach or repair greenware or bisque. Brush on edges and hold together while setting. Apply a further coat and allow to dry. Ideal for earthenware.
SY4416	Fixall	GARE Fixall is a speciality product used to mend greenware or to attach stick-ons. Typically earthenware.

Resists

P3384	Wax emulsion resist	A pre-mixed water based masking medium used to coat areas on which no glaze is required. The wax burns off during firing.
SY547	Wax resist	DUNCAN wax emulsion especially created to repel underglazes and glazes when dipped over it. The wax burns off during firing.
SY548	Mask 'n Peel	DUNCAN water-based emulsion formulated to protect design areas or colours, making application of background or adjoining colours faster and easier. Mask 'n Peel can be used under or between opaque underglazes, glazes or non-fired acrylic colours, and under translucent underglazes. It is an excellent aid for beginner ceramists. Can be left on or peeled off prior to firing.

Raw materials

Name	Analysis	Ref	Comments
Alumina Calcined	Al ₂ O ₃	P3300	Increases glaze viscosity, firing range and resistance to crystallisation
Basalt	48.6% SiO ₂ 14.1% Al ₂ O ₃ 11.2% Fe ₂ O ₃ 1.6% TiO ₂	P3299	Useful in the production of textured bodies and brown-black glazes. More fusible than feldspar. It gives a dark brown glaze at 1250°C
Black Ball Clay	32% Al ₂ O ₃ 47% SiO ₂ 1% Fe ₂ O ₃ 2.1% K/Na ₂ O	P3301	Comparatively white firing clay, very plastic Devon Ball Clay
Blue Ball Clay - Puraflo AK	32% Al ₂ O ₃ 50% SiO ₂ 1.1% Fe ₂ O ₃ 2.1% K/Na ₂ O	P3302	A Devon Ball Clay, more plastic than P3301, high unfired strength, firing to a buff colour
Ball Clay Imerys Kentucky Clay	60.5% SiO ₂ 25.8% Al ₂ O ₃ 1% Fe ₂ O ₃ 1.9% TiO ₂	P3351	A fast casting Ball Clay used in all types of applications, but primarily used in artware.
Hymod AT Ball Clay	29% Al ₂ O ₃ 55% SiO ₂ 2.3% Fe ₂ O ₃ 3.6% K/Na ₂ O	P3352	A Dorset Ball Clay. Its special feature is a high iron content, high strength – useful in the production of warm coloured textured bodies
Hyplas 71 Ball Clay	20% Al ₂ O ₃ 70% SiO ₂ 0.8% Fe ₂ O ₃ 2.3% K/Na ₂ O	P3354	A Devon Ball Clay, giving good plasticity with medium strength and a low iron content
Barium Carbonate (Precipitated)	BaCO ₃	P3303	Used in casting slips (up to 0.5%) to prevent "scumming" due to the presence of soluble salts. A flux in high temperature glazes it also produces matt and semi-matt surfaces at earthenware temperatures
Bentonite	Al ₂ O 2H ₂ O 2SiO ₂	P3304	Extremely plastic colloidal clay, used in bodies (up to 5%) to increase plasticity, and in glaze (up to 2%) as a suspending agent
Bone Ash (Calcined)	Ca ₃ (PO ₄) ₂	P3305	Essential constituent of Bone China, imparting the characteristic translucency. Also used as a secondary flux in glazes giving a milky quality
Calcium Chloride	CaCl ₂ 6H ₂ O	P3308	Used as a flocculent (0.05% addition) or in conjunction with Bentonite as a suspending agent for glazes
China Clay - Treviscoe	36% Al ₂ O ₃ 49% SiO ₂ 0.83% Fe ₂ O ₃ 2.3%K ₂ O	P3293	A Cornish kaolin, white firing, good strength and good rheological properties
China Clay - Standard Porcelain	37.2% Al ₂ O ₃ 47.7%SiO ₂ 0.68%Fe ₂ O ₃ 1.65% K ₂ O	P3297	A Cornish kaolin. Very white firing and high strength
China Clay - Grolleg	36% Al ₂ O ₃ 49% Si O ₂ 0.75 Fe ₂ O ₃ 1.85% K ₂ O	P3298	A Cornish Kaolin. White firing, good strength. Performs well in casting applications
China Clay - CC50 Puraflo	36% Al ₂ O ₃ 48%SiO ₂ 1%Fe ₂ O ₃	P3309	A good general purpose kaolin sufficing most applications
Colemanite	43.9% B ₂ O ₃ 26% CaO 4.5% SiO ₂	P3311	A naturally occurring source of Boron. A powerful primary or secondary flux in glazes. It intensifies the effect of colouring oxides and increases craze resistance of glazes. P2954 (Calcium Borate Frit) may be used as an alternative
Cornish Stone	3.8%K ₂ O 4%Na ₂ O 15.3% Al ₂ O ₃ 72.9% SiO ₂	P3314	An alternative to feldspar as a high temperature flux. This partially decomposed granite is used widely as a flux in bodies. Mineral flux could be used as an alternative
Cryolite	Na ₃ AlF ₆	P3355	For use in alkaline glazes as a flux
Dolomite	31.4% CaO 20.8% MgO	P3315	Natural source of calcium and magnesium Useful as a secondary flux in Stoneware glazes and bodies
Feldspar (Soda)	2.8% K ₂ O 8.5%Na ₂ O 18.5% Al ₂ O 69.5% SiO ₂	P3317	Norwegian sourced. The strongest flux, more suitable for low temperature bodies and glazes.
Feldspar (Potash)	11.3% K ₂ O 3.2% Na ₂ O 18.5% Al ₂ O 65.8% SiO ₂	P3296	Norwegian sourced. Principal body flux having a wide vitrification range. It can also be used as flux in mainly stoneware glazes
Feldspar (FFF)	7.5% K ₂ O 5%Na ₂ O 18.5% Al ₂ O 67.5% SiO ₂	P3316	Finnish sourced. A medium strength flux sufficing both body and glaze applications.
Flint	SiO ₂	P3319	Used in glazes and in bodies as a source of calcined silica
Grog Buff (5-30's Mesh)		P3320	Fireclay based, pre-fired and crushed to mesh size 5-30s. Used as a grog in bodies
Grog Buff (5mm To Dust)		P3353	Fireclay based, pre-fired and crushed to mesh size 5mm-dust used as a grog in bodies where tight control of grog size is not required
Ilmenite (Fine)	FeO TiO ₂	P3324	Used to 'seed' crystalline glazes (up to 1%)
Lithium Carbonate	Li ₂ CO ₃	R1063	Purest way of introducing Li ₂ O to glaze recipes
Molochite (-200s)	37% Al ₂ O ₃ 48%SiO ₂	P3310	Cornish sourced. A high temperature calcined kaolin used to raise maturing temperature of glazes. Reduces crawling tendency in glazes which have a high clay content
Molochite (-120s)	37% Al ₂ O ₃ 48% SiO ₂	P3389	Cornish sourced. A medium to fine sized grog for white bodies
Molochite Fine (-80's)	37% Al ₂ O ₃ 48% SiO ₂	P3358	Cornish sourced. Use as a grog to introduce openness of texture in bodies
Molochite Coarse (16's-30's)	37% Al ₂ O ₃ 48% SiO ₂	P3359	Cornish sourced coarser than P3358 and best suited as an addition to Raku and modelling bodies to introduce a more open texture

Raw materials

Name	Analysis	Ref	Comments
Magnesium Carbonate	MgCO ₃	P3331	Used as a high temperature flux in stoneware glazes (up to 10%) producing a semi matt surface. Larger quantities give an opaque dry appearance BUT may cause crawling and pin holing - CAUTION
Magnesium Sulphate	MgCO ₃ 7H ₂ O	R1093	Sometimes known as Epsom Salts. Used as a flux in stoneware glazes and as a flocculent (1%) in a glazes – an alternative to Calcium Chloride
Mineral Flux No 4		P3349	A synthetic replacement for DF Cornish Stone in bodies (defluorinated)
Mineral Flux No 10		P3339	A synthetic replacement for P3314 Cornish Stone in bodies
Nepheline Syenite (North Cape)	9.1% K ₂ O 7% Na ₂ O 24.9% Al ₂ O ₃ 56% SiO ₂	P3332	A stronger flux than Feldspar for uses both in glazes and bodies, a fairly narrow vitrification band typically used in vitreous bodies
Petalite	0.2% K ₂ O 1.6% Na ₂ O 4% Li ₂ O 15.7% Al ₂ O ₃ 76.1% SiO ₂	P3333	A secondary a flux in high temperature bodies and glazes. It may also be used to alter colour response and to reduce thermal expansion
Potters Plaster	CaSO ₄ 0.5H ₂ O	P3335	A high grade plaster used for producing working moulds. Mixing ratio 940g plaster to 565cc of water
High Density Plaster	CaSO ₄ 0.5H ₂ O	P3336	A dense, hard setting plaster used for producing block and case moulds. Mixing ratio 1.3kg plaster to 565cc of water
Lafarge Classic	CaSO ₄ 0.5H ₂ O	P3391	A dense harder setting plaster used for producing working moulds mixing ratio of 850g plaster to 568cc water
Quartz	SiO ₂	P3337	Find ground Silica Sand for use in bodies and glazes
Rutile Light	TiO ₂	P3338	A Titanium ore with an Iron impurity. As a addition in glaze (>8%) it gives a buff or brown reactive colour.
Silicon Carbide Fine	SiC	P3340	A 5% addition to a glaze gives a localised reduction effect in an electric kiln. The effect requires a leadless Tin based glaze and aids colour development. CAUTION: Large quantities will cause severe blistering
Silicon Carbide - Coarse	SiC	R1067	Used for specking and reaction type glazes
Sodium Carbonate (Soda Ash)	Na ₂ CO ₃	P3342	A deflocculent used in the preparation of casting slips (0.05%) in conjunction with Sodium Silicate. Also as a source of Sodium in alkaline glazes
Sodium Silicate 75	Na ₂ SiO ₂	P3343	A deflocculent used in the preparation of casting slips (>0.3%). Note the Volume (ml) can be converted to weights (g) by multiplying by 1.3. typically used in bone china slip
Sodium Silicate 140	Na ₂ SiO ₂	P3344	A stronger deflocculent used in the preparation of casting slips (>0.3%). Note the Volume can be converted to weights (g) by multiplying by 1.7, typically used in earthenware slips
Strontium Carbonate	SrCO ₃	P3347	A flux for glazes above 1090°C with effects similar to Whiting and Zinc oxide. Non poisonous alternative to Lead oxide. Typically used in Stoneware glazes. Excess additions will precipitate a crystalline matt surface
Spodumene	7.6% Li ₂ O 26% Al ₂ O ₃ 64.5% SiO ₂	P3357	A very active flux used in small amounts in glazes. Also as a body addition (>5%) where its low expansion properties help thermal shock resistance
Silica Sand	SiO ₂	P3387	A medium sized silica sand suitable for ware placing and as a grog
Talc	32.4% MgO 46.3 SiO ₂ 9.5% Al ₂ O ₃	P3345	Used as a body flux in conjunction with feldspar to reduce thermal expansion and increase thermal shock resistance. It can also be used as a secondary flux in glazes giving an opaque semi-matt / vellum finish
Tin Oxide	SnO ₂	P3361	Used primarily as a white opacifier in glazes. Additions of 4-6% produce a semi-opaque glazes whilst additions of 8-10% produce a fully opaque glaze
Titanium Dioxide	TiO ₂	P3362	Used as a glaze opacifier. Additions of up to 10% produce a creamy white glaze with a matt or semi matt surface. Slow cooling assists the crystallisation
Ash - Lavender		P3294	Crushed and washed. As an addition in glazes (>10%) gives a different effect to wood ash
Wood Ash - Oak		P3295	Used as an addition to achieve specialised effects in glazes
Whiting	CaCO ₃	P3346	Principal source of lime in glazes. Under reducing conditions it assists in celadon colour development but an excess gives matt, dull or rough surfaces
Wollastonite	47% CaO 50% SiO ₂	P3348	Primarily used as a secondary flux. An alternative source of calcium and used in both earthenware and stoneware glazes
Zinc Oxide	ZnO	P3350	A secondary flux but above 10% tends to produce a frost-like matt surface with some opacity and can cause occasional pinholing. Also makes glazes susceptible to crawling - CAUTION
Zircosil 5	ZrSiO ₄	P3365	A fine grade of Zirconia used as an opacifier for white and coloured glazes, imparting high opacity, craze resistance and stability. 4-7% produces semi opaque, 8-12% full opacification
Zirconium Oxide	ZrO ₂	R1026	A refractory oxide with similar opacifying powers to that of Zirconium Silicate. Used extensively in the manufacture of ceramic stains.

Frits and colouring oxides

Frits

Ref	Description	CL*	Firing range °C	% Analysis													
				SiO ₂	B ₂ O ₃	ZrO ₂	MgO	Al ₂ O ₃	PbO	Na ₂ O	K ₂ O	CaO	Li ₂ O	ZnO	BaO		
P2950	Lead Bisilicate	6.5	900 - 1100	29.0				12.0	59.0								
P2953	Borax (E)	8.3	900 - 1100	49.6	18.0		0.1	7.5		8.8	1.7	14.1					
P2954	Calcium Borate	6.1	1050 - 1160	17.9	50.3		0.1	4.9			0.3	26.5					
P2955	Borax (J)	10.9	920 - 1050	48.9	13.5			9.1		10.9	8.8	8.8					
P2957	Borax (H)	5.9	1000 - 1100	62.0	14.8		0.2	9.4		3.6	2.7	7.3					
P2960	Low Expansion Frit	3.8	1020 - 1150	63.4	17.6		2.2	8.5			0.2	3.7	1.1	3.2			
P2961	Alkaline (Standard)	6.9	900 - 1100	50.4	25.2		0.1	7.3		12.1	3.4	0.2					
P2962	High Alkali (T)	13.4	880 - 1060	52.5	3.4			5.2		18.6	10.3	2.9					6.9
P2963	Soft Alkaline	14.5	850 - 1000	52.7	10.8		0.1	4.9			0.3	26.5					
P3110	Low boro silicate Ferro	10.1	920 - 950	69.8	2.6			3.7		15.3	2.3	6.3					
P3124	Standard boro silicate Ferro	7.9	1000 - 1020	55.3	13.7			9.9		6.3	0.7	14.1					
P3134	High Alkaline Ferro	9.6	980 - 1000	46.5	23.1					10.3		20.1					
P3195	High Boro Silicate Ferro	6.5	920 - 950	47.44	22.99			12.39		5.99		11.2					
R1122	White Zircon Borax	7.1	960 - 1080	55.9	13.5	12.1	0.7	4.4		6.1	0.2	6.0	1.2				

*expansion details (x10-6/°C)

Colouring oxides

Many different colours and effects are available when oxides are combined or used separately with different glazes, bodies and slips and with varying firing procedures. The illustrations show the raw oxides mixed with a small amount of frit on its own in each case, to illustrate the colour of the basic material

Note percentages are shown as guidance

Copper compounds

These strong colouring oxides and compounds give an apple green colour under neutral or oxidising conditions, except in alkaline glazes when a turquoise blue is obtained. Whilst in reducing conditions a copper red colour is produced sometimes known as sang-de-boeuf. The carbonate form gives an evenly textured green glaze due to its fine particle size (3 - 7%)

NOTE – when added to low solubility glaze, copper causes the solubility of the lead to be greatly increased, making the glaze unsuitable for use on vessels containing food stuff or beverage.

P3404 Copper Carbonate CuCO₃
3 - 7% addition

P3405 Copper Oxide Black CuO
1 - 5% addition

Manganese compounds

Gives brown colours in glazes. Pink, purple or plum colours can be obtained in alkaline glazes. When mixed with iron, it produces brown; when mixed with cobalt, it produces violets.



P3414 Manganese Carbonate MnCO₃
0.2 - 5% - giving pink to brown colours

P3415 Manganese Dioxide MnO₂ (fine)
0.2 - 5% giving pink to brown colours

P3416 Manganese Dioxide MnO₂ (coarse)
2 - 10% giving speckled effects in both bodies and glazes

Iron compounds

These oxides generally give a wide range of colours ranging from honey yellow, brownish reds, brown, black, yellow and purple dependant on firing conditions. Under reducing conditions a blue colour can be obtained

R1011 Iron Chromate

In its coarse form it is used as a blue brick stain. The fine version (2 – 5%) exhibits a grey/brown to black colour in glazes. In reduction conditions the colour will be blue to grey.

P3408 Iron Black Oxide Fe_3O_4

4 - 8% gives darker shades than the red (P3410/P3441)

P3410 Natural Red Iron Oxide Fe_2O_3

2 - 10% produces colours from honey to dark brown

P3412 Iron Oxide Spangles (magnetite) Fe_3O_4

1 - 5% a coarse grade producing crystalline black specks

P3441 Iron Oxide, Red synthetic Fe_2O_3

2 - 10% a very finely divided form, producing even shades ranging from ambers to brown.

P3423 Iron Oxide (Yellow Ochre) Fe_2O_3

3 – 8% a form of iron oxide producing yellow to brown colours

P3429 Iron Oxide (Yellow Ochre)

A different source of materials, producing slightly different colours to P3413

Approximately half the strength of P3423



P3408



P3441



P3423 - P3429



P3410

Cobalt compounds

The most powerful colouring oxide. This oxide produces a deep blue or blue-black colour in lead and leadless glazes and a vivid blue in alkaline glazes. The presence of magnesium gives a more purple colour.

P3402 Cobalt Carbonate $CoCO_3$

1 - 3% to obtain a blue glaze

P3403 Cobalt Oxide Black Co_3O_4

1 – 1.5% for a deep blue black



Nickel oxide black

P3417 Nickel Oxide Black Ni_3O_2

1 - 3% giving brownish greens to grey. In high zinc content stoneware glazes a yellow or blue is obtained under reducing conditions



Chromium compounds



P3401 Chromium Oxide Cr_2O_3

Normally green in colour but in some lead glazes will give red and yellow. A pink is produced in the presence of tin oxide. Normally additions of 1-3% is used. A 1% addition to low firing leaded glazes with a soda content gives a brilliant yellow.

Yellow oxides

P3400 Antimony Oxide Sb_2O_3

Additions of 1-2% to a high leaded glaze give the characteristic Naples yellow

R1042 Vanadium Pentoxide V_2O_5

Up to 10% addition – gives a weak yellow as a stain. Can be used at higher temperatures than antimony oxide, giving a stronger colour when used in conjunction with tin