

INTRODUCTION

I came across Naked Raku in 1995, during a workshop about primitive firing techniques by Margot Spiegel Kraemer, who learned the technique herself from Bill and Kate Jacobson. Naked Raku was discovered “by accident” in the early seventies by various people whilst firing normal Raku.

There are 2 different methods :

1. **Slip resist**: Early pioneer : Jerry Kaplan ‘Raku Reduction Stenciling’ (flat surfaces).
Charles and Linda Riggs: very thick clayslurry (alumina, fireclay, kaolin) ‘double dip’ creates different crackling
2. **Slip and glaze**: thin slip layer with glaze on top.
The purpose of the glaze is to create patterns, shades and cracklings, not to hold slip on the sliplayer.
Pioneers : Bill and Kate Jacobson (USA), David Roberts (UK).

The process of Naked Raku:

- Smooth surface, 2 methods :
 1. **Terra Sigillata**: quick method, but can “pop off” (solution = spraying).
Also easy to scratch.
 2. **Burnishing**: gives more ‘deep shine’ and ‘depth of view’.
 - Different kind of crackling.
 - Favourite burnishing tools: light bulbs, thin plastic (wheel), bone, credit cards, plastic bottom of icecream boxes, flat stone.
 - Do not use metal spoons or knives, they may leave marks.
 - Burnishing gives extra strength (good for rims).
 - Superficial burnishing: matt, rougher surface, less crackling
- After bisque, apply slip layer (= separation layer).
- Apply glaze on top of slip.
- Normal raku firing, slightly lower temperature.
- Reduction in smokebin.
- Remove egg-shell: knife, creditcard, wood, cleaning pad : use **water** (scratch danger)!
- Remove remnants and let dry completely.
- Apply wax (beeswax, furniture wax), preferably paste type, no liquid wax.
 - Deepens the colour: white goes to ivory.
 - Protection against dust, grease and fingermarks.

NOTE: If no good results upon first firing : remove all glaze-slip remnants and bisque again to 600° Celcius

Differences between ‘Western Raku’ and ‘Naked Raku’ :

- Matt versus shiny : ‘subtle shine’.

- primitive aspect of Naked Raku: final texture is pure result of influences from smoke and fire on the object, no shiny glaze hiding the body and texture of the clay underneath.
- Concept of **sacrificial** slip and glaze.

CLAY

Form of the object:

- Ball-form is strongest form, preferably made out of one single piece of clay.
- More risks with constructed forms, flat bowls or plates : outer rim cools faster, shrinks first, causes tensions, result = cracks.
- Equal **wall-thickness**.
- **Avoid** thin rims and thick bottoms.

Kind of clay :

- Raku clay or commercial clay containing fine grog or sand.
- Fine grog: easier to burnish, specially at rims.
- Coarse grog can result in white dots-specks in black areas.
- Grog is more shockresistant than sand.

Personal clayrecipe:

- Parameters : clay recuperation – moistness control – colour possibilities.
- 55 clay (any kind).
- 35 fine grog.
- 10 talc (shockresistant, adds plasticity, grog makes clay brittle).

Colour possibilities before bisque

- Engobes using oxides or stains.
- Risk for pop-off due to aggressive nature of firing technique.
- Spraying gives stronger bond than brushing.
- Suggested to use many thin layers, better than one single thick application.
- Sharp edges and rims : difficult to burnish.
- Oxides or stains, mixed into dry or wet clay gives more even results

S L I P S

I Started experimenting from scratch with pure clay mixtures : earthenware clay, stoneware, porcelain, ballclay, kaolin, powderclay, recuperated clay,...

Most of them work, but some 'plastic' clays curl up, or flake off, resulting in black areas.

Technical perfect recipe (David Roberts):

- 60 kaolin (EPK).
- 40 flint (quartz or silica).
- Drawback: needs constant stirring up (heavy silica sinks to bottom of slipbucket).

Personal slip recipe: (by weight)

- 50 Clay "Grès de Saint Amand, Terres de la Puisaye" (Limoges stoneware).
- 30 Kaolin (EPK).
- 20 Flint (finest quartz or silica).
- Water addition : +/- 175 grams to 100 grams dry material.

USA equivalents for Limoges:

- Highwater Phoenix Stoneware Clay or Highwater Raku Clay.
- Laguna 52 Buff : WC-851.
- Water addition : +/- 170 grams to 100 grams dry material.

Important:

- Correct **viscosity** is very important (full milk).
If too thin, the glaze will melt down to bisque, or is very difficult to remove.
If too thick, the slip might curl up or flake off, resulting in large black areas.
- **Thickness** of sliplayer also influences the kind of crackling :

- Very thin sliplayer, on smooth burnished surfaces: thin sharp lines.
 - Thick sliplayer on rough surfaces :wider lines, hazier crackling.
- **Sieving** (80 or 100 mesh) 5 or 6 times when preparing new slipbucket, remove grog and sand particles to avoid overload of 'black points'.
Also sieve again after using for a couple of hours, and stir up frequently.
Avoid airbubbles (no paintmixer immediately before use).

Applying slip:

- **Brushing:**
 - Irregular slipthickness: risk of thin areas.
 - If too thick: may create flaking or curling.

- **Dipping:** timing is critical, needs quick action to avoid thick sliplayer building up.

- **Spraying:**
 - For complicated forms only.
 - Needs good spraying technique : difficult to judge slipthickness.
 - Bad mix if silica sinks down in spraycontainer.
 - Very time consuming.

- **Pouring:**
 - Best method: easy, fast, correct thickness.
 - Application : hand-held, or using sticks, clamps or other tools.

NOTE: about 'black points' _

- Unsieved grog or sand.
- Dust on surface of bisque, or in small cavities (bad burnishing).
- Airbubbles.

GLAZE

Classic recipe (Bill and Kate Jacobson)

- 35 Gerstley Borate.
- 65 Frit 3110.
- approx 100 to 135 grams of water to 100 grams of dry material.

Alternatives for Gerstley Borate:

- Unsuccessful: colemanite, borocalcite.
- Acceptable : Frit 3221 or 3134 (or low temperature Boron-calcium-sodium frit).
- Standard rakuglaze (white crackle Raku).
- New products : Laguna Borate,...

Alternative recipes :

- 75 Frit 3110 + 25 Nepheline Syenite (low temperature firing Feldspar).
- 66 Frit 3110 + 33 Frit 3221.
- 65 Frit 3110 + 15 Frit 3221 + 20 Nepheline Syenite.

Glaze viscosity:

‘Cream’ to ‘liquid yoghurt’

When applying : sieve before use, stir up regularly, glaze tends to “jelly”.

Glazes with GB can be kept for weeks or months, and re-used.

If longer timeperiod: dry out completely, break apart, add water again, sieve.

Methods for applying glaze layer :

- Spraying with compressor.
- Dipping.

- Brushing.
- Pouring.
- Others: see later (surface treatment).

Problems between slip & glaze layer

Classic glazing: only 1 or 2 layers on bisque.

Naked raku: double layer of slip, double layer of glaze.

Problem: bisque can not cope with overdose of water.

Solutions :

- Keep thin rims uncovered, or only partial glazing.
- Drying in between (sun, electric kiln, BBQ, hairdryer, paintburner).

NOTES:

- Slip layer must be **dry** (changed colour) , before applying glaze.
No problem to glaze slipped bisque next day, week or month, but **avoid dust**.
- Do not apply glaze on areas not covered with slip!

S U R F A C E T R E A T M E N T S

- **Patterns:** selective application of glaze on chosen areas.
- **Masking tape:**
 - Use best quality (paper-like, not plastic-like).
 - Creates sharp clean lines, but can also be torn or cut for irregular patterns.
- **Latex:** only to be used on perfect burnished objects.
Latex parts left behind in crevices can create burnt-plastic marks.
- **Waxresist:**
 - For naked raku, better alternative for Latex.
 - Burns away in kiln, can create hazy lines.
 - Experiment: slip and glaze over dried-up waxresist, then partly scratched.
- **Scratching lines:**
 - Needs equal slip and glaze layer.
 - Scratch with sharp tool down to bisque, BBQ-pin gives best results.
 - Best results: when glaze just dried up, and still moist.
 - Variation: partly remove glaze between lines with knife or sponge.
- **Brushwork**
- **Spatter:** with toothbrush.

- **Dripping down with brush**
- **Squeezing:** with injection needle or slip trailer.
- **Sponging**
- **SPLASHING TECHNIQUE:**
 - Use '**thick glaze**' for creating large white areas with big brush.
 - Use '**basic glaze**' for adding patterns in between.
 - Create thin lines by squishing with various sizes of small brushes.
- **DILUTED GLAZES to create different shades of GREYS:**
 - **Create a very thin Glaze by adding more** water to dry ingredients. Pour, or use brushwork to paint on slip, intensity of off-whitish to grey depends on amount of glaze absorbed by brush, method of application, and ratio between dry materials and water.
 - **Guideline : add 300-350-400-450 H2O to 100 gram dry ingredients.**
 - **Drawback:** very difficult to remove carbonised sliplayer. May need long soaking in water.

K I L N F I R I N G

Objects must be absolutely **dry** before entering the kiln, to avoid explosions.

Heat the objects up on BBQ, in electric kiln for 20 minutes, or on top of a hot kiln.

Important: no direct contact between objects and flame from burner, construct some kind of firing chamber

Firing cycle

- Slow initial firing, you can check with cold bottle for moistness at the exithole.
- Steady firing up to 600° Celcius
- Quicker firing from 600 up to 700-725°.
- Lower flame as from 700-725° onwards.
- Start looking into the kiln for '**orangepeel**' (750-775°).
- Short period of maturing (5 minutes) : allow orangepeel to devellop on all sides and objects.
- **Never** cross 800° Celcius, glaze might melt down.
- Consider cold and hot areas in the kiln, change flame direction if needed.

Reducing after kilnfiring:

- Remove with tongs, try to keep transit-time to smoke-bins as short as possible.
- Adjust size of smokebin to size of work.

- Reduce with burnable material, sprinkled woodshavings work best.
Keep smokebin closed for 10-12 minutes, longer for monumental or constructed work.
- Let cool down until 'hand-warm', or spray water with fine mist
 - Remove eggshell.
 - Clean thoroughly in waterbuckets, **keep moist** when scratching off remnants.
 - Final clean-up with perfect clear water.
 - After drying, apply layer of beeswax and buff. (shoeshine brush, old cotton T-shirt, woolrags)

'Cold air' variations:

Apply in between kiln and smokebin, will create wild dark crackling.

Tools: hose from compressor, air gun, bicycle pump, aerosol bottle.

Alternative method : spraying water

CONCLUSIONS

- Take **notes**, make drawings, or take pictures before and after.
- Remove Masking Tape and Latex before drying on BBQ or in kiln.
- Keep bottoms free of glaze.
- Do not apply glaze directly on bisque.
- Expect the unexpected, await the gifts of the Firegods.
- Experiment, experiment, experiment,...
- **Final result** is a balance of various parameters, all influencing each other:
 - kind of clay (porosity).
 - bisque temperature (I use 950 °C for stoneware, 900 °C for earthenware).
 - smoothness of surface (terrasig or good-bad burnishing).
 - form of object.
 - temperature of bisque before applying slip (moist studio, or hot sun).

- components of slip.
- viscosity of slip.
- method of applying slip.
- thickness of slip layer.
- glaze composition.
- firing temperature in kiln (hot or cold spot).
- atmosphere inside kiln.
- timeframe between kiln and smokebin.
- amount and kind of reduction material.
- time inside smokebin.

DOCUMENTATION

Wally Asselberghs
Wechelsebaan 49
B-2275 Lille
Belgium

32.014.55.55.31

e-mail : wallyasselberghs@yahoo.com

Website : www.wallyasselberghs.be

- E-Group “International Forum on Naked Raku” : nakedraku@yahoogroups.com
- Books : Steven Branfman, David Roberts

HYDROMETER – SPECIFIC GRAVITY

1.35 – 1.40 : BASIC GLAZE

1.25 : THIN SLIP

1.27-1.28 : MEDIUM SLIP

1.30 : THICK SLIP

TEMPERATURE COMPARISON TABLE

ORTON		
CONE	CELCIUS	FAHRENHEIT
	500	932
O22	600	1112
O21	614	1137
O20	635	1175
O19	683	1261
	700	1292
O18	717	1323
	725	1337
O17	747	1377
	750	1382
	775	1427
O16	792	1458
	800	1472
O15	804	1479
O14	838	1540
O13	852	1566
O12	884	1623
O11	894	1642
O10	900	1652
O9	923	1693
	950	1742
O8	955	1751
O7	984	1803
O6	999	1830
O5	1046	1915