

# RAKU - my never-ending passion

*Georg Krüger from Alsace gives a course on raku to our readers*

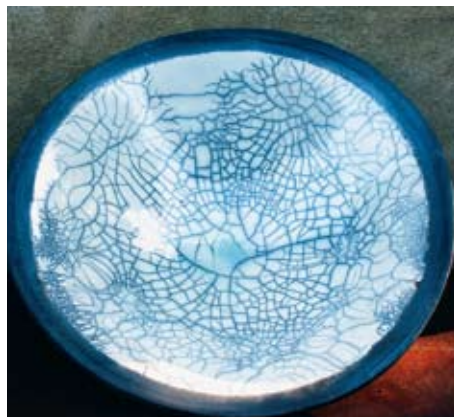


I was born in a “clay factory” in 1954. On my mother’s side of the family, there was a factory for drainpipes and roof tiles. Not what you would call creative, but vital work at the time, and I am sure that this is where my passion for clay has its roots.

It was nearly 15 years ago that I moved to the North Alsace region of Lorraine together with my teaching workshop so that I would have plenty of space for kilns and pitfiring. I have been working with the infinite potential of clay for more than 25 years. I have always made a point of passing on my knowledge and my enthusiasm to as many others as possible. I am particularly enthusiastic about raku with its endless range of possibilities. I do around 80-140 firings a year, which has given me a huge store of experience on everything to do with raku. I have always been a teacher, but also a learner through the experience of making and firing, and of course also through communicating with the course participants, who often speak of their own experience. Since 2003, I have been planning with Bernd Pfannkuche to make this store of experience accessible to a larger circle of raku fans, beyond the confines of the studio. A practically based series has been prepared with instructions, hints and recipes. In my first article, I want to explain my own special classification of raku techniques.

For several decades, raku has been fired, experienced and developed here in Europe in many variations. I came under the spell of this technique at a happening in the Netherlands, and learned more at a seminar with Gustav Weiß in 1983. I immediately began to experiment – with my own approach – and now my own methods have evolved to cover a very wide range. My articles are intended to allow readers of NC to share in my enthusiasm for and my knowledge of raku, and also to save those who work with raku or who want to do so in future a lot of wasted effort.

With time, my courses on raku have developed a certain structure of how to clas-



*A transparent glaze with controlled formation of crackle on a 55 cm bowl*



*Unpacking a 500 litre kiln in protective clothing*



*The coloured glaze; the right-hand pot was more heavily reduced after firing*

sify the various possibilities. What I cannot agree with is the claim that raku is a crude, simple form of ceramics, an opinion that is occasionally heard.

Raku can be done in a crude and simple way, but through the interruption of normal ceramic cooling, a huge range of possibilities to influence the final result opens up, which is not available with any other firing method. There are countless possibilities!! After 25 years of intensive raku firing, I am still excited and interested, what is possible, what can I improve? Answers that continue show new variations with each new firing.

### 1. Raku with glazes

(Peter Klube has been dealing with this area in NC, and we will have to test how compatible his recipes are with my approach. For example, I want to contribute a clear glaze, which is easy to make and which helps me to demonstrate how the typical crackle comes about and shows how glazes behave in reduction. The same glaze with the appropriate colouring agents serves to explain the possibilities of after-reduction).

- a) transparent glazes that cannot be reduced; various compositions provide an entirely different range of colours and crackle.
- b) transparent coloured glazes that cannot be reduced
- c) transparent glazes that can be reduced (lustre is possible)
- d) opaque glazes
- e) pure lustre glazes (e.g. silver nitrate glaze)
- f) reduction firing during temperature rise with special glazes

### 2. Crackle –

How it can be achieved, what conditions are necessary and how to influence it

### 3. Surface treatment and design

in various kinds of firing

- a) taping and resist techniques
- b) glaze lines

**4. Structuring the surface,**

specially suitable for raku

- a) broken earth
- b) fissured coatings
- c) structured clay surfaces with special techniques and clay bodies

**5. Iron sulphate**

- a) changing the colour of the clay with reducible material
- b) influence of temperature, clay colour, flux and post-firing reduction

**6. oxide mixtures for copper matt surfaces with special post-firing reduction (will be dealt with by Peter Klube).**

**7. Burnishing slips**

- a) burnishing and burnishing slips, porcelain slip
- b) terra sigillata in various colours; changing the appearance of the glaze or of the development of blackening when the body is carbonised
- c) burnishing slip with reducible colouring agents

**8. Glass and raku**

- a) melting glass onto raku (special method of applying the glass)
- b) glass fusing (i.e. the intentional, creative use of glass elements)

**9. Raku black**

- a) terra sigillata
- b) clay bodies and reduction material
- c) burnishing and rough surfaces

**10. Special methods of post-firing reduction**

- a) straw
- b) woodfiring
- c) reoxidation of slips and terra sigillata in an uncovered sawdust bed
- d) open post-firing reduction for Egyptian blue

**11. Naked smokeless raku**

- a) on various bodies and surfaces
- b) with terra sigillata or burnishing slips

**12. Wire mesh in raku**

- a) sculpture
- b) slabs
- c) combining with other ceramic pieces

**13. Large-scale ceramics in raku**

- bowls of more than 55 cm and up to 1.30m in one piece and pieces that have to be smoked in the kiln because they cannot be moved.

This list reflects my own work with raku, which is why some possibilities are missing that I do not use, either because they are too toxic or I simply do not like them. I would now like to give a practical guide to glaze production. My aim is not only to give a glaze recipe but I am also keen to help readers understand glaze composition. This is the only way it is possible to achieve



above and below - using wire mesh, with iron sulphate



the results you plan. So now the practical implementation of this series about raku can begin with this recipe.

The most important thing for me is that the glaze is as versatile as possible, is not highly toxic, can be easily controlled and the ingredients are readily available. There are millions of conceivable possibilities for such a glaze, but if you are a newcomer to the technique, you will certainly want a tried and tested recipe.

I always recommend mixing several frits. This usually makes a more stable glaze which is easier to vary by adjusting the proportion of the various frits. Frits have the advantage that the water-soluble ingredients like sodium become insoluble, thus significantly reducing permeation of the body. If too much water-soluble flux penetrates into the body, it can have two detrimental effects: the body becomes less porous and therefore more fragile, and secondly the carbonisation or blackening of the body in the unglazed areas is only partly possible.

This is a simple way to achieve a transparent raku glaze that can be coloured and which forms a good crackle: (the figures represent proportions; they can be weighed out in grams or kilos)

- frits M 1233; D 90157; M 6640; M 233864; D 90168; FM 5021 to make the glaze matt
- to counteract the melting point: calcined borax and quartz
- a suspending agent:

dextrin (also sticks the glaze firmly to the pot, which is important for health and safety as well as the quality of the result as hardly any glaze can rub off; dilute acids like vinegar essence; bentonite, china clay, kaolin or ball clay.

It is now simple to compose various raku glazes from these three groups, which are safe and reliable and can easily be adjusted. One example is quoted here:

*(I will be glad to send the Seger formula by e-mail to anyone interested)*

20 frit A + 40 frit B + 30 frit C +  
10 clay as a suspender + 5 calcined borax +  
5 quartz

As a finished recipe 20 M 1233  
40 D 90157  
20 M 233864  
10 China clay  
5 calcined borax  
5 quartz

*A maximum of 5% of other suspending agents, depending on colouring 2% dextrin + 2% bentonite, and as needed vinegar essence, but add these carefully! Otherwise the glaze will become much too thick. This glaze is for 1010 – 1050°C and can easily be adjusted by altering the proportions of borax and quartz. Borax reduced the maturing temperature and quartz raises it. If the glaze runs, swap some borax for quartz, and vice versa if it does not fully mature.*

*This glaze can be coloured with a range of oxides and stains. Of course it does not represent the whole range of possible raku glazes, but in my experience, two or three basic glazes are enough to achieve fantastic results.*

*To study the effects of reduction, add 4% copper carbonate, which produces a greenish-blue turquoise if cooling takes place without reduction.*

*Next time the various effects of post-firing reduction will be demonstrated using this glaze as an example. We will be concentrating on the formation of cracks and how to influence them.*