PATENT CLAIMS

1. An electric detonator comprising a cap, comprising: a priming charge; and an electrode, comprising a positive pole, a negative pole and a resistor element, configured as a thin film bridge comprised of a layer of zirconium, and wherein:

i) said positive pole is configured as a rod or pin axially arranged in the cap, and

ii) said negative pole is configured as a socket arranged coaxially to the pin; or

iii) said negative pole is configured as a rod or pin axially arranged in the cap, and

iv) said positive pole is configured as a socket arranged coaxially to the pin; and

wherein said priming charge comprising at least two lead-free primary explosives, a first primary explosive and a second primary explosive, and at least one secondary explosive, wherein the two primary explosives and the secondary explosive are arranged in layers, in an increasing degree of heat sensitivity, bearing one against the other, wherein the first primary explosive, constituting a more heat sensitive of the two primary explosives, is arranged closest to the resistor element, and wherein the second primary explosive is arranged thereafter between the first primary explosive and the secondary explosive.

2. The electric detonator according to Claim 1, wherein the positive pole of the electrode is configured as a rod or pin axially arranged in the cap, and in that the negative pole is configured as a socket arranged coaxially to the pin.

3. The electric detonator according to Claim 1, wherein the first primary explosive comprises potassium 4,6-dinitrobenzofuroxane, wherein the second primary explosive comprises silver azide, and wherein the secondary explosive comprises cyclotrimethylenetrinitramine.

4. The electric detonator according to claim 1, further comprising a third primary explosive more heat-sensitive than the first primary explosive.

5. The electric detonator according to claim 1, wherein the first primary explosive comprises potassium 4,6-dinitrobenzofuroxane and the second primary explosive comprising silver azide.

6. The electric detonator according to claim 1, wherein the priming charge is ignited and the detonator is detonated by burning-off of the resistor element connected to a voltage source via the positive pole and the negative pole.

7. The electric detonator according to claim 1, wherein the resistor element is directly connected between the centrally arranged pin and the coaxially arranged socket.

8. A method for producing an electric detonator providing a cap, providing a priming charge and an electrode, providing a positive pole and a negative pole and a resistor element, said priming charge comprising at least two lead-free primary explosives, a first primary explosive and a second primary explosive, and at least one secondary explosive, arranging the two primary explosives and the

secondary explosive in layers, in an increasing degree of heat sensitivity, bearing one against the other, arranging the first primary explosive, constituting a more heat sensitive of the two primary explosives, closest to the resistor element, and arranging the second primary explosive between the first primary explosive and the secondary explosive, and providing the resistor element as a thin film bridge, comprised of a layer of zirconium, producing the thin film bridge by zirconium being evaporated through a mask in order, with a given geometry, to provide a given electrical resistance.

9. The method for producing an electric detonator according to claim 8, further comprising burning-off of the resistor element connected to a voltage source via the positive pole and the negative pole to ignite the priming charge and detonate the detonator.

10. An electric detonator comprising: a cap; a priming charge; and an electrode, comprising a positive pole, a negative pole and a resistor element, said priming charge comprising at least two lead-free primary explosives, a first primary explosive and a second primary explosive, and at least one secondary explosive, wherein the two primary explosives and the secondary explosive are arranged in layers, in an increasing degree of heat sensitivity, bearing one against the other, wherein the first primary explosive, constituting a more heat sensitive of the two primary explosives, is arranged closest to the resistor element, and wherein the second primary explosive is arranged thereafter between the first primary explosive and the secondary explosive, wherein the resistor element is configured as a thin film bridge, comprised of a layer of

zirconium, and wherein the thin film bridge is produced by zirconium being evaporated through a mask.

11. The electric detonator according to claim 10, further comprising burning-off of the resistor element connected to a voltage source via the positive pole and the negative pole to ignite the priming charge and detonate the detonator.