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(54) **INSENSITIVE HEXOGEN EXPLOSIVE**

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(57) **ABSTRACT**

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By virtue of at least 5% of octogen in relation to the hexogen explosive, insensitive behaviour is achieved in relation to high thermal loadings (Fast Cook Off).

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**INSENSITIVE HEXOGEN EXPLOSIVE**

[0001] The invention relates to a hexogen explosive as set forth in the classifying portion of claim 1.

[0002] An explosive of that kind is to be found in DE 37 39 191 A1. Described therein is a castable explosive with a plastic binder.

[0003] The conditions in terms of the required insensitivity are described in accordance with the technical delivery condition of the "Bundesamt für Wehrtechnik und Beschaffung" ("Federal Office for Defence Technology and Procurement") in Germany, TL 1376-0800. In accordance therewith an explosive which is enclosed in a receptacle such as a missile body is not to tear open the receptacle in the event of bombardment or a thermal effect thereon. The maximum reaction admitted is only for it to burn away, in which case a cylindrical container must remain whole but the bottom may rip open.

[0004] Accordingly the object of the present invention is to propose a 15 hexogen explosive which satisfies the above-indicated condition.

[0005] The invention attains that object in accordance with the characterising features of claim 1. Advantageous developments of the invention are to be found in the appendant claims.

[0006] In accordance with the invention the explosive becomes surprisingly more insensitive but more powerful.

[0007] In accordance with the invention hexogen type B can be used as the explosive. This is inexpensive and environmentally friendly.

[0008] The proportion of octogen in the hexogen type B of at least 5% in relation to the explosive provides that the explosive charge disposed in a receptacle does not progressively burn away after it is ignited. The cylinder remains substantially intact. Only weak points such as closure caps come away. No air shockwave is formed.

[0009] The operative mechanism of the invention is based on a change in phase of the octogen, from a temperature of 167° C. As a result there is an abrupt increase in volume which takes effect at intended desired-rupture locations or separation locations.

[0010] The invention can be used in relation to explosives with pure hexogen type A and insensitive hexogen types (iRDX). Through an addition of at least 5% of octogen, there is maintained a thermal insensitivity of also other mixtures of explosives, which already possess adequate shockwaves; where the exceptions are mixtures of explosives which contain TNT in an unbonded condition. Likewise for the various production processes for explosives, namely the explosives produced using the slurry or the solvent processes. The field of application embraces both cast explosive charges and also pressed explosive charges.

[0011] The invention is particularly suitable for pressed insensitive explosive mixtures in which coarse-grain and fine-grain explosive crystals 15 are bound by a binder system comprising a plasticiser such as DOA and HYTEMP®, see in that respect the patent application filed on the same day, bearing the filing number \_\_\_\_\_.

[0012] The action according to the invention already occurs with a proportion of octogen of 5%, in which respect the proportion can extend to 100%.

[0013] DOA Acycl. dicarboxylic acid ester

[0014] HYTEMP® registered trademark of ZEON Chemicals L.P., 4100 Bells Lane, Louisville, Ky. 40211.

1. An insensitive hexogen explosive characterised in that the explosive contains at least 5% of octogen.

2. A hexogen explosive according to claim 1 characterised in that the explosive is produced by a slurry process or a solvent mix process.

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