

# HEXANITROSTILBENE (HNS)

*Leading worldwide specialist in the field of high explosives, EURENCO offers its customers a complete range of high explosives and compositions like HNS, owing to high-tech manufacturing capabilities.*



## PRODUCT

- Chemical names: HNS, 1,1'-(1,2-ethenediyl)bis(2,4,6-trinitrobenzene)
- CAS number: 20062-22-0
- Chemical formula:  $C_{14}H_6N_6O_{12}$
- Melting point: 316 – 318 °C
- Heat of combustion:  $-6\,434.2 \pm 5.0$  kJ/mol solid phase
- Density: 1.74 g/cm<sup>3</sup>
- Detonation velocity: 7 000 to 7 100 m/s
- Volume of detonation gases: 700 l/kg
- Impact sensitivity: 5 J
- Friction sensitivity: 240 N

EURENCO manufactures all different types of HNS from type I to type IV:

- ◆ HNS Type I for initiation (WS 5003F specification): more stable than stipulated in the MIL-specification thanks to a special purification process.
- ◆ HNS Type II for oil and gas drilling: A special quality of HNS, coated with a high temperature resistant polymer, is produced according to WS 5003F specification.
- ◆ HNS Type III for nucleation of TNT: produced under German and US specifications.
- ◆ HNS type IV for slapper detonators: characterized by a high sensitivity and thereby good reliability in initiation systems, this quality is significantly more thermally stable than stipulated in the military specifications.

## USES

Owing to its stability at high temperature and its excellent performance, HNS has several applications in the aerospace, ammunition and oil and gas industries when thermal and/or vacuum stability are required:

### Space and military pyrotechnics

HNS is used in cap relays, detonating cords, transmission cords and booster charges for I.M. applications by bringing heat resistance, low sensibility and high performance.

### Artillery ammunition filling

HNS is used as anti-crack additive in TNT or TNT-RDX charges; it improves the fine crystalline structure of the composition and prevents from crack formation.

### Oil and gas drilling

Thanks to its excellent thermal stability, HNS is used in perforating and cutting charges for oil and gas industry when the requirement of high temperature resistance is important. This HNS is extra purified and produced in special formulations leading to an increased thermal resistance and good handling characteristics, which are critical for this type of high mass production rate.

### Slapper detonators

Owing to its high sensitivity and good reliability characteristics, this HNS is used as initiation explosive in slapper detonators (the surface area is above 10 m<sup>2</sup>/g). A purification process makes it significantly more thermally stable than stipulated in military specifications.

#### EURENCO

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