TRINITROTOLUENE

TNT

TECHNICAL DATASHEET

Trinitrotoluene (TNT) is a secondary high explosive known for its high chemical stability, predictable detonation behaviour, and low sensitivity to mechanical stimuli. It is widely used in defence and controlled industrial applications where consistent performance and safe handling are critical.

The product is supplied in high-purity crystalline form, appearing as light-yellow flakes, free from moisture and mechanical impurities. Any naturally occurring bound flakes, if present, are easily separable by hand and do not affect processing or performance. The material is therefore well suited for melt–pour operations, allowing uniform casting and filling without additional preparation.



TECHNICAL DETAILS

PARAMETER	SPECIFICATION
Appearance	Light Yellow Flakes
Colour	Not darker than No. 30257 (supersedes by AMS-STD-595)
Odour and Taste	Odourless, Tasteless
Molecular Weight	227.13 g/mol
Water Solubility	0.013 g/l at 20 °C
Moisture %	0.10 Max
Acidity % (as H2SO4)	0.10 Max
Alkalinity	None
Solidification Temperature	≥80.2 °C
Boiling Point	240 °C
Flash Point	290 °C to 300 °C
Vapour Pressure	1.98×10^{-4} mm Hg
Density	1.654 g/cm³ at 20 °C
Detonation Velocity	7000 m/s at 1.62 g/cm³
Insoluble in (Acetone / Benzene / Toluene)	0.10 Max

OVERVIEW

TNT exhibits low sensitivity to impact, friction, and shock, while maintaining a consistent energy output, making it reliable for use in cast charges, explosive formulations, and defence manufacturing applications. Its balance of stability, castability, and performance has established TNT as a reference explosive for demanding and regulated environments.

APPLICATION

- Used as a key ingredient in Pentolite cast boosters for the global mining and blasting industry.
- Serves as a base explosive for a wide range of military-grade explosive compositions and munitions.
- Suitable for melt-pour explosive manufacturing due to its thermal stability and uniform crystalline structure.
- Widely applied in defence, mining, and specialized energetic formulations requiring dependable performance and controlled sensitivity.

OFFICE
A-608, WALLFORT ENCLAVE-2, PACHPEDI NAKA
RAIPUR CHHATTISGARH 492001

PHONE
+91 9993555756

EMAIL
sivatradeandpack1@gmail.com

STORAGE

- Store TNT in approved, fire-resistant explosive magazines as per applicable statutory rules and regulations.
- The storage area shall be cool, dry, well ventilated, and protected from heat sources, open flames, and contaminants.
- Keep material in well-closed containers to prevent moisture ingress and contamination.
- TNT is chemically stable under recommended storage conditions with a minimum shelf life of 3 years when stored properly; longer storage life is achievable under controlled conditions.

HANDLING

- Handled only by trained and authorized personnel.
- Use appropriate personal protective equipment (PPE) during handling and processing.
- Avoid rough handling, excessive mechanical stress, and unnecessary heating.
- Maintain strict temperature control and adequate ventilation during melting or casting operations.
- Follow approved operating procedures and safety regulations at all times.

PACKAGING

TNT is packed and supplied in 25 kg corrugated boxes with 2 plastic liners inside.

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