

Characteristics of Explosives

1. Picric Acid
2. TNT
3. RDX

References:

1. Explosives Handbook (Kyouritu Publication)
2. Industrial Explosives (Japan Industrial Explosives Society, Data Editorial Dept.)

1. Picric Acid (Trinitrophenol)

Chemical Formula	$C_6H_2(OH)(NO_2)_3$
Melting Point	122.5
Ignition Point	322 or over
Explosiveness	<ol style="list-style-type: none">1. More sensitive than TNT2. Deflagration due to impacts caused by shooting and shrapnel (*1)3. The heavy metal salt (especially, copper, lead, iron) of picric acid is more sensitive than picric acid, and greater brisance (*1)
Reaction to Other Substances	<ol style="list-style-type: none">1. Not hygroscopic, but relatively soluble in water (the water solution is acid)2. Reacts with metals (especially, copper, lead, iron), producing sensitive metal salts
Changes of Characteristics Over Time	Picric acid itself does not change (ref: the result of the first investigation for the basic plan) (*1)
Notice about Handling	Human contact with picric acid causes irritation and damage to the skin

Note: (*1): Refer to the former Japanese Navy's reports on various studies and tests on picric acid, etc.

2. TNT (Trinitrotoluene)

Chemical Formula	$C_6H_2CH_3(NO_2)_3$
Melting Point	80.75
Ignition Point	300 or over
Explosiveness	<ol style="list-style-type: none">1. Much less sensitive than picric acid2. Mixed with alkali, readily decomposes at around 100 , followed by explosion
Reaction to Other Substances	<ol style="list-style-type: none">1. Not hygroscopic, almost insoluble in water. Slightly soluble in alcohol and ether. Readily soluble in acetone, benzene and toluene2. No reaction to metals. A stable compound with no tendency to readily decompose
Changes of Characteristic Over Time	TNT itself does not change (ref: the result of the first investigation for the basic plan)

3. RDX (Trimethyltrinitroamine, Hexogen)

Chemical Formula	$(\text{CH}_2)_3(\text{NNO}_2)_3$
Melting Point	204.1
Ignition Point	260
Explosiveness	<ol style="list-style-type: none">1. More sensitive to impact and friction than picric acid2. Great brisance and very effective as a booster3. Ignites easily with a match, etc. In an air-tight enclosure, combustion easily turns to explosion4. Mixed with alkali, readily decomposes at around 50 , followed by explosion
Reaction to Other Substances	Insoluble in water. Hardly soluble in alcohol, ether and benzene. Slightly soluble in acetone and cyclohexanone. Readily soluble in warm, dense nitric acid.
Changes of Characteristics Over Time	RDX itself does not change (ref: the result of the first investigation for the basic plan)