

TRINITROPHENOL

This explosive is more commonly known as Lyddite or Picric Acid. It got the name Lyddite from the place in England where it was made in England (LYDD). The name picrate comes from the Greek “pikros” meaning “bitter” which picric acid is on the tongue. Mr. Woulffe discovered it in 1771. He discovered the chemical as a dye, not an explosive. Its explosive properties were not realised for many years (about 1880), which is a very good indication of the insensitivity of the chemical. Incidentally the dye colour was yellow. It is one of the earliest known examples of a true Nitro compound.

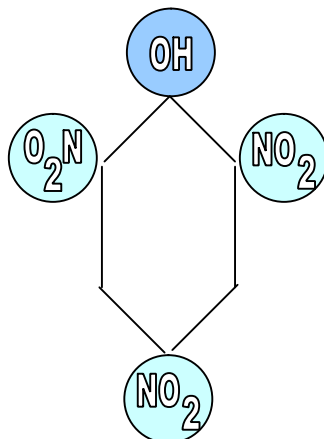
This insensitivity instantly raises a problem with Picric Acid. If it is that insensitive, it must be difficult to detonate. And it is. There were many reports from WWI battlefields of clouds of noxious fumes from British shells giving rise to the belief that gas shells were being used. They weren't. Just low order detonations.

Picric Acid was used in some large calibre shells such as 15inch A.P.C. and it was widely used as an intermediary in German shells and bombs. This Explosive was one of the very earliest High Explosives to be used by military forces. Because of its insensitivity it is suitable for use in the role of an intermediary and as a main filling. Picric Acid was always well known for the difficulty associated in getting it to detonate fully although this may well have been as a result of faulty exploder designs of the day. It was very stable in storage if kept dry and was suitable for use and storage in hot climates. The very high melting point of picric acid made for difficult shell filling. The major drawback with Picric Acid was that it forms sensitive picrates with metals. The picrates thus formed are very sensitive and are capable of acting as detonators to picric acid. All metal surfaces need to be treated with protective films to prevent interaction between picric acid and the metals. Copal varnish was found to be the most suitable for this task.

PICRATE	F of I
LEAD	18
BARIUM	68
SODIUM	80
COPPER	90
ZINC	110
NICKLE	110
AMMONIUM	110
CALCIUM	120

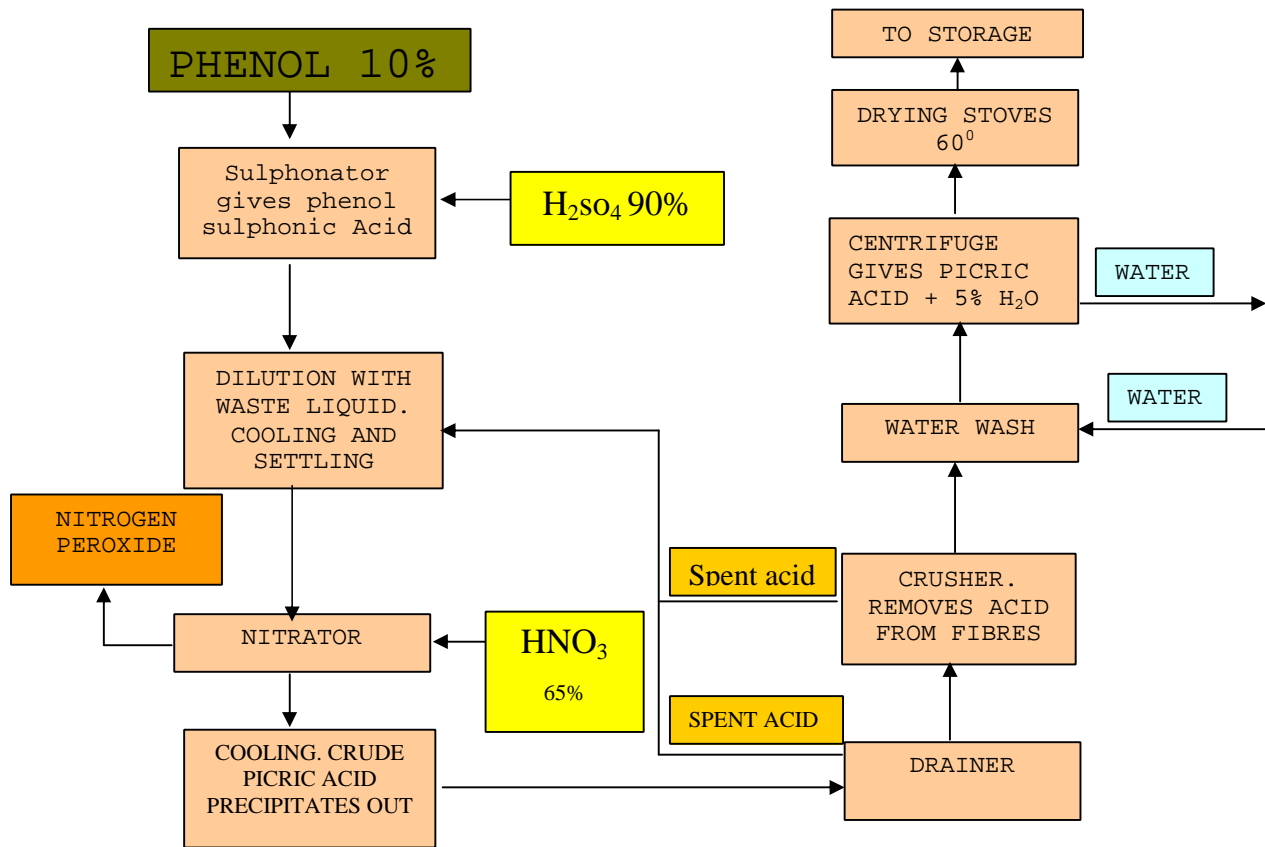
The physical properties of picric acid.

FORMULA	MELTING POINT	IGNITION POINT	POWER	F of I	V of D	Density
$C_6H_2OH(NO_2)_3$	120.6 ^o	300 ^o	100	100	7200 mps	1.76



MOLECULAR ARRANGEMENT

THE MANUFACTURE OF PICRIC ACID



DINITROPHENOL is made the same way as picric acid and has almost the same properties with the exception that it is slightly less sensitive than picric acid.