

3. CHEMICAL AND PHYSICAL INFORMATION

3.1 CHEMICAL IDENTITY

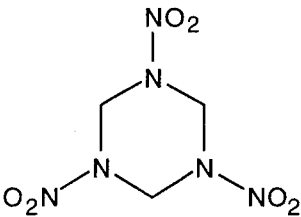
Information regarding the chemical identity of RDX is located in Table 3-1.

3.2 PHYSICAL AND CHEMICAL PROPERTIES

Information regarding the physical and chemical properties of RDX is located in Table 3-2.

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TABLE 3-1. Chemical Identity of RDX

Characteristic	Information	Reference
Chemical name	RDX	HSDB 1994
Synonym(s)	Cyclonite; 1,3,5-triazol-1,3,5-trinitro-cyclohexane; hexahydro-1,3,5-trinitro-1,3,5-triazine; 1,3,5-trinitrohexahydro-1,3,5-triazine; cyclotrimethylenenitramine; hexogen; hexolite; PBX	HSDB 1994
Registered trade name(s)	No data	
Chemical formula	$C_3H_6N_6O_6$	HSDB 1994
Chemical structure		Merck 1989
Identification numbers:		
CAS registry	121-82-4	Sax and Lewis 1987
NIOSH RTECS	XY9450000	HSDB 1994
EPA hazardous waste	No data	
OHM/TADS	No data	
DOT/UN/NA/IMCO shipping	UN0072; IMO1.1	HSDB 1994
HSDB	2079	HSDB 1994
NCI	No data	

CAS = Chemical Abstracts Services; DOT/UN/NA/IMCO = Department of Transportation/United Nations/North America/International Maritime Dangerous Goods Code; EPA = Environmental Protection Agency; HSDB = Hazardous Substances Data Bank; NCI = National Cancer Institute; NIOSH = National Institute for Occupational Safety and Health; OHM/TADS = Oil and Hazardous Materials/Technical Assistance Data System; RTECS = Registry of Toxic Effects of Chemical Substances

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TABLE 3-2. Physical and Chemical Properties of RDX

Property	Information	Reference
Molecular weight	222.26	Merck 1989
Color	White	Sax and Lewis 1987
Physical state	Solid	Sax and Lewis 1987
Melting point	205–206 °C	Merck 1989
Boiling point	Decomposes	Miyares and Jenkins 1991
Density at 20 °C	1.82 g/mL	Merck 1989
Odor	No data	
Odor threshold:		
Water	No data	
Air	No data	
Solubility:		
Water at 20 °C	38.4–38.9 mg/L; 60 mg/L	Army 1983b; Miyares and Jenkins 1991
Organic solvent(s)	Slightly soluble in methanol, ether, ethyl acetate, glacial acetic acid	Merck 1989
Partition coefficients:		
Log K_{ow}	0.87 ^a	HSDB 1994
Log K_{oc}	1.80 ^b	Army 1987a
Vapor pressure at 20 °C	1×10^{-9} mm Hg (Torr)	Army 1987a
Henry's law constant (atm·m ³ /mol)	1.2×10^{-5}	McKone and Layton 1986
Autoignition temperature	No data	
Flashpoint	No data	
Flammability limits (explosive limits) (vol % in air)	No data	
Conversion factors	1 mg/m ³ = 9.1 ppm	HSDB 1994
Explosive limits	Class A explosive; explosion may be prompted by sudden shock, high temperature, or combination of both	

^aEstimate value^bCalculated value

HSDB = Hazardous Substance Data Bank; vol % = percent volume

