



UNITED NATIONS INTERNATIONAL DRUG CONTROL PROGRAMME

SCIENTIFIC AND TECHNICAL NOTES	SCITEC/11 April 1996
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**Basic Information on Substances
Frequently Used in the Illicit Manufacture
of Narcotic Drugs or Psychotropic Substances
(Article 12, 1988 Convention)**

for Use by Non-Laboratory Officials

prepared by

**LABORATORY SECTION
TECHNICAL SERVICES BRANCH**

INTRODUCTION

The 1988 Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances addresses in article 12 the monitoring and control of specific chemicals, solvents and precursors used in the illegal processing or manufacture of controlled drugs. Twenty-two substances frequently used in the illicit manufacture of narcotic drugs or psychotropic substances are currently placed under international control.

This publication was prepared in response to the growing demand for information on those controlled substances and is meant to provide assistance especially to law enforcement officers. It provides a basic description of substances most frequently used in the illicit manufacture of drugs of abuse, including their synonyms, physical appearance and their legitimate and illicit uses. Supplementary, more detailed information on the illicit production of drugs of abuse for clandestine laboratory investigations is provided in the manual "Clandestine Manufacture of Substances under International Control" (ST/NAR/10), which is currently undergoing revision and which will be published soon.

In addition to the twenty-two substances under international control, this publication includes seven substances which are frequently encountered in the clandestine manufacture of heroin and which are not controlled under the 1988 Convention. Special attention is drawn to the safety warnings as well as to the guidelines for the handling and storage of the substances, i.e. since most of these substances are corrosive, inflammable or toxic, inappropriate handling may lead to serious accidents.

In order to continuously update this publication to satisfy law enforcement officers' needs for information, the Laboratory of the Technical Services Branch would welcome observations, suggestions and comments on its contents and usefulness. Those observations, suggestions and comments may be addressed to:

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CONTENTS

General safety warning.....	1
Acetic acid	2
Acetic anhydride.....	4
Acetone	6
<i>N</i> -Acetylanthranilic acid	8
Acetyl chloride.....	10
Anthranilic acid	12
Chloroform.....	14
Ephedrine	16
Ergometrine	20
Ergotamine.....	24
Ethyl ether	27
Ethylidene diacetate.....	29
Hydrochloric acid	31
Isosafrole.....	33
Lysergic acid.....	35
3,4-Methylenedioxyphenyl-2-propanone	37
Methyl ethyl ketone	39
Phenylacetic acid	41
1-Phenyl-2-propanone	43
Phosphorous pentachloride	45
Phosphorous trichloride.....	47
Piperidine	49
Piperonal	51
Potassium permanganate	53
Pseudoephedrine	55
Safrole	60
Sulfuric acid.....	62
Thionyl chloride	64
Toluene	66
References.....	68
Annex - Tables.....	70

!!! GENERAL SAFETY WARNING !!!

Within the group of controlled precursors and essential chemicals, there are **HIGHLY FLAMMABLE AND EXPLOSIVE** as well as **HIGHLY CORROSIVE** substances.

Therefore,

- When handling suspected material:
 - NEVER TASTE of SNIFF suspected material;
 - DO NOT SMOKE;
 - keep away from sources of ignition and heat (e.g. motors, lighters, direct sun light, hot plates);
 - wear safety goggles and suitable gloves (e.g. latex, vinyl);
 - handle the material at a well ventilated place;
 - do not eat and drink while handling the material;
 - take special care when transporting the material, follow the guidelines recommended for the transport of hazardous chemicals.

- In case of an accident:
 - immediately take off contaminated clothing;
 - in case of contact with skin and/or eyes, rinse immediately with plenty of water and seek medical advice;
 - in case of spillage of larger amounts, stop smoking, evacuate the area and inform the fire brigade.

- Store the suspected material in a separate room which should be well ventilated, cool, dry and fireproof. Store the material in well closed containers. Follow the more detailed guidelines for storage given below.

- Do not dispose of suspected materials by pouring them into the canalization system or by throwing them into the household garbage. Instead forward them to a company/organization authorized for the collection and the disposal of hazardous waste.

ACETIC ACID

Molecular Formula: C₂H₄O₂

Molecular Weight: 60.05

International Control: Not under International Control

Harmonized System Number* : 2915.21

Other Names: Acide acétique

Acide acétique cristallisable

Acido acetico

Acidum aceticum

Aci-Jel

Concentrated acetic acid

Essigsäure

Ethanoic acid

Ethylic acid

FEMA No.2006

Glacial acetic acid

Methanecarboxylic acid

Vinegar acid

Physical Appearance:

Translucent, crystalline mass or clear, colourless liquid with a pungent, vinegar-like odour.

Chemical/Physical Properties:

Melting Point: 17°C

Boiling Point: 118°C

Density (g/cm³, 20°C): 1.0492

Solubility: Miscible with water, alcohol, benzene, chloroform, ethyl ether, glycerol, carbon tetrachloride; practically insoluble in carbon disulfide.

* Harmonized Commodity Description and Coding System, Harmonized System Committee of the Customs Cooperation Council, Brussels, Belgium

!!!!!! SAFETY WARNING !!!!!

- *corrosive*
- *vapours irritating to the eyes and the respiratory tract*
- *More severe exposures result in pulmonary edema.*
- *flammable*

STORAGE/HANDLING

- *Keep in a fireproof place.*
- *Separate from oxidants and strong bases.*

- *Keep away from open flame and sparks, no smoking.*
- *Handle at a well ventilate place, under a hood or with respiratory protection.*
- *Wear safety goggles or a face shield and gloves.*

- *In case of:*
 - inhalation: → fresh air, rest, place in half-sitting position,
→ seek medical advice;*
 - contact with skin: → remove contaminated clothing,
→ flush skin with plenty of water or shower,
→ seek medical advice;*
 - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
→ immediately seek medical advice;*
 - ingestion: → drink a lot of water,
→ DO NOT induce vomiting,
→ immediately seek medical advice.*

Legitimate Use:

Widely used in commercial organic syntheses (manufacture of various acetates, acetyl compounds, vinyl acetate, cellulose acetate, acetate rayon, plastics); used for printing calico and dyeing silk; solvent, e.g. for gums, resins, volatile oils; used in food industry and as pharmaceutical aid.

Illicit Use:

In the clandestine manufacture of 1-phenyl-2-propanone (P2P), for the illicit synthesis of amphetamine and metamphetamine and in the clandestine manufacture of heroin. (also see annex)

ACETIC ANHYDRIDE

Molecular Formula: C₄H₆O₃

Molecular Weight: 102.09

International Control: Table II, 1988 Convention

Harmonized System Number* : 2915.24.0000

Other Names: Acetanhydrid, -e

Acetic acid anhydride

Acetic oxide

Acetyl acetate

Acetyl anhydride

Acetyl ether

Acetyl oxide

Anhydride acétique

Anhydride éthanique

Anidride acetica

Anídrido acético

Anidrido etanoico

Azijnzuur anhydride

Essigsäureanhydrid

Ethanoic acid anhydride

Ethanoic anhydrate

Ethanoic anhydride

Ethanoic anydride

Octowy bezwodnik

Oxido acetico

Oxido de acetilo

Oxyde acétique

Oxyde acétylique

Physical Appearance:

Mobile, colourless liquid, penetrating choking characteristic odour, closely related to vinegar.

Chemical/Physical Properties:

Melting Point: -73.1°C

Boiling Point: 140°C

Density (g/cm³, 20°C): 1.082

Solubility: Miscible with ethyl ether, soluble in benzene and chloroform and a number of other organic solvents; dissolves in water with conversion to acetic acid.

!!! SAFETY WARNING !!!

- *corrosive*
- *vapours irritating to eyes, nose and throat*
- *can react vigorously with oxidizing materials*
- *reacts violently on contact with water or steam*

STORAGE/HANDLING

- *Keep in a dry, fireproof place.*
- *Store in containers lined with stainless steel or polyethylene.*
- *Separate from oxidants, strong bases and alcohols.*

- *Keep away from open flame and sparks, no smoking.*
- *Handle at a well ventilate place, under a hood or with respiratory protection.*
- *Wear safety goggles or a face shield, protective clothing and gloves.*

- *In case of:*
 - inhalation: → fresh air, rest, place in half-sitting position,
→ seek medical advice;*
 - contact with skin: → remove contaminated clothing,
→ flush skin with plenty of water or shower,
→ seek medical advice;*
 - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
→ immediately seek medical advice;*
 - ingestion: → drink a lot of water,
→ DO NOT induce vomiting,
→ immediately seek medical advice.*

- *In case of fire, DO NOT use water-based extinguishers.*

Legitimate Use:

Acetylating agent in chemical and pharmaceutical industry; for manufacture of cellulose acetate, for textile sizing agents and cold-bleaching activators; for polishing metals; production of acetylated plastic auxiliaries and certain types of brake fluids; in mixture with nitric acid as a nitrating agent (production of dyes, explosives).

Illicit Use:

In the clandestine manufacture of heroin; for the illicit synthesis of methaqualone and mecloqualone, acetyl-*alpha*-methylfentanyl; 1-phenyl-2-propanone (P2P) and *N*-acetyl-anthranilic acid. (also see annex)

ACETONE

Molecular Formula: C₃H₆O

Molecular Weight: 58.08

International Control: Table II, 1988 Convention

Harmonized System Number* : 2914.11.5000

Other Names: Aceton, -a, -e, -um

Acido piroacetico

â-Cétopropane

Diméthylcétal

Diméthylcétone

Diméthylformaldéhyde

Dimethylketone

Esprit pyroligneux

Ether pyroacétique

â-Ketonepropane

â-Ketopropane

Methyl ketone

Propanone

2-Propanone

Propan-2-one

Pyroacetic acid

Pyroacetic ether

Quetona de metilo

Physical Appearance:

Colourless liquid, volatile with sweetish, characteristic odour.

Chemical/Physical Properties:

Melting Point: -94°C

Boiling Point: 56.5°C

Density (g/cm³, 20°C): 0.7899

Solubility: Miscible with water and most organic solvents.

!!! SAFETY WARNING !!!

- *highly flammable*
- *skin and severe eye irritant*
- *inhalation and ingestion produce headaches, dizziness and vomiting*

STORAGE/HANDLING

- *Store in closed containers, at a temperature not exceeding 15 °C.*
- *Keep containers in a well-ventilated place, away from heat, sparks and flames.*
- *Separate from oxidants.*

- *Keep away from open flame and sparks, no smoking.*
- *Handle at a well ventilate place, under a hood or with respiratory protection.*
- *Wear safety goggles and gloves.*

- *In case of:*
 - inhalation: →fresh air, rest,*
→seek medical advice;
 - contact with skin: →remove contaminated clothing,*
→flush skin with plenty of water or shower,
→seek medical advice if necessary;
 - contact with eyes: →immediately rinse with plenty of water (min. 10 minutes),*
→seek medical advice;
 - ingestion: →drink a lot of water,*
- *DO NOT induce vomiting,*
- *seek medical advice.*

Legitimate Use:

Commonly used solvent in chemical laboratories and chemical/pharmaceutical industry; in the production of lubricating oils and as an intermediate in the manufacture of chloroform and of various pharmaceuticals and pesticides; in the manufacture of plastics, paints, varnishes, cosmetics.

Illicit Use:

As solvent in processing opium and coca leaves, leading to the manufacture of heroin and cocaine; also used as solvent in the synthesis of LSD and amfetamines. (also see annex)

N-ACETYLANTHRANILIC ACID

Molecular Formula: C₉H₉NO₃

Molecular Weight: 179.18

International Control: Table I, 1988 Convention.

Harmonized System Number* : 2924.29.4500

Other Names: 2-Acetamidobenzoic acid

o-Acetamidobenzoic acid
ortho-Acetamidobenzoic acid
o-(Acetylamino)benzoic acid
N-Acetylamino benzoic acid
1-Acetylamino-2-carboxybenzene
N-Acetylanthranilsäure
Anthranilic acid, *N*-acetyl-
Benzoic acid, 2-(acetylamino)-
2-Carboxyacetanilide

Physical Appearance:

Fine white or off-white crystalline powder.

Chemical/Physical Properties:

Melting Point: 184.5 - 187°C

Solubility: Moderate solubility in most organic solvents; low solubility in water.

!!! SAFETY WARNING !!!

- Harmful if swallowed

STORAGE/HANDLING

- *Store in tightly closed containers in a cool, dry area.*
- *Handle at a well ventilate place.*
- *Wear safety goggles, gloves and a dust mask.*
- *Avoid contact with skin and eyes.*
- *Do not eat, drink or smoke while handling the substance.*

- *In case of:*
 - contact with skin: →remove contaminated clothing,*
→wash with plenty of water and soap,
→seek medical advice if necessary;
 - contact with eyes: →immediately rinse with plenty of water (min. 10 minutes),*
→seek medical advice;
 - ingestion: →rinse mouth with plenty of water,*
→if feeling unwell, immediately seek medical advice.

Legitimate Use:

In the manufacture of pharmaceuticals, plastics and fine chemicals.

Illicit Use:

In the clandestine synthesis of methaqualone and mecloqualone. (also see annex)

ACETYL CHLORIDE

Molecular Formula: C₂H₃ClO

Molecular Weight: 78.50

International Control: Not under International Control

Other Names: Acetic acid chloride

Acetic chloride

Acetylchlorid

Chlorure d'acétyle

Cloruro de acetilo

Essigsäurechlorid

Ethanoyl chloride

RCRA Waste Number U006

Physical Appearance:

Colourless, fuming liquid with a strong, pungent odour.

Chemical/Physical Properties:

Melting Point: -112°C

Boiling Point: 52°C

Density (g/cm³, 20°C): 1.1051

Solubility: Miscible with acetone, benzene, chloroform, ethyl ether, glacial acetic acid, petroleum ether, toluene, carbon disulfide.

It is decomposed by water and by alcohols.

!!!!!! SAFETY WARNING !!!!!

- *corrosive*
- *vapours irritating to the eyes and the respiratory tract*
- *More sever exposures result in pulmonary edema.*
- *highly flammable*
- *forms explosive air-vapour mixtures*
- *reacts violently with water, alcohols, bases and many other compounds*

STORAGE/HANDLING

- *Keep in a dry, fireproof place.*
- *Separate from strong bases and alcohols.*

- *Keep away from open flame and sparks, no smoking.*
- *Handle at a well ventilate place, under a hood or with respiratory protection.*
- *Wear safety goggles or a face shield, protective clothing and gloves.*

- *In case of:*
 - inhalation: →fresh air, rest,*
→seek medical advice;
 - contact with skin: →remove contaminated clothing,*
→flush skin with plenty of water or shower,
→seek medical advice;
 - contact with eyes: →immediately rinse with plenty of water (min. 10 minutes),*
→immediately seek medical advice;
 - ingestion: →drink a lot of water,*
→immediately seek medical advice.

- *In case of fire, DO NOT use water-based extinguishers.*

Legitimate Use:

Acetylating agent in the synthesis of pharmaceuticals and dyes, in the manufacture of lubricating grease and rubber, in polymerization processes. Used in the testing for cholesterol and for the determination of water in organic liquids.

Illicit Use:

In the clandestine manufacture of heroin. (also see annex)

ANTHRANILIC ACID

Molecular Formula: C₇H₇NO₂

Molecular Weight: 137.14

International Control: Table II, 1988 Convention

Harmonized System Number* : 2922.49.3500

Other Names: Acide 2-aminobenzoïque
Acide anthranilique
Acido antranílico
Acido *ortho*-aminobenzoico
2-Aminobenzoesäure
2-Aminobenzoic acid
o-Aminobenzoic acid
ortho-Aminobenzoic acid
1-Amino-2-carboxybenzene
o-Anthranilic acid
Anthranilsäure
Carboxyanilin, -e
2-Carboxyanilin, -e
o-Carboxyaniline
ortho-Carboxyanilline
NCI-CO 1730
Vitamin L
Vitamino L1

Physical Appearance:

White to pale yellow powder with sweetish taste.

Chemical/Physical Properties:

Melting Point: 144 - 147°C

Solubility: Soluble in hot water, ethanol, ethyl ether, glycerol, slightly soluble in cold water.

!!! SAFETY WARNING !!!

- *Harmful if swallowed*
- *Irritating to eyes and the respiratory tract*

STORAGE/HANDLING

- *Store in tightly closed containers and in a cool, dry area.*
- *Handle at a well ventilate place.*
- *Wear safety goggles, gloves and a dust mask.*
- *Avoid contact with skin and eyes.*
- *Do not eat, drink or smoke while handling the substance.*

- *In case of:*
 - contact with skin:* *→remove contaminated clothing,*
 →wash with plenty of water and soap,
 →seek medical advice if necessary;
 - contact with eyes:* *→immediately rinse with plenty of water (min. 10 minutes),*
 →seek medical advice;
 - ingestion:* *→rinse mouth with plenty of water,*
→if feeling unwell, immediately seek medical advice.

Legitimate Use:

Chemical intermediate required in the manufacture of dyes, pharmaceuticals and perfumes, also used in the preparation of bird and insect repellents.

Illicit Use:

In the clandestine synthesis of methaqualone and mecloqualone. (also see annex)

CHLOROFORM

Molecular Formula: CHCl_3

Molecular Weight: 119.38

International Control: Not under International Control

Harmonized System Number*: 2903.13

Other Names: Chloroforme

Chloroformium anaestheticum
Chloroformum pro narcosi
Cloroformio
Cloroformo
Formyl trichloride
Freon 20
Methane trichloride
Methane, trichloro-
Methenyl trichloride
Methyl trichloride
NCI-C02686
R 20
RCRA Waste Number U044
TCM
Trichloroform
Trichloromethane

Physical Appearance:

Highly refractive, colourless, mobile, volatile, nonflammable liquid with a characteristic sweet odour.

Chemical/Physical Properties:

Melting Point: -64°C

Boiling Point: 61°C

Density (g/cm^3 , 20°C): 1.4832

Solubility: Miscible with alcohol, benzene, ethyl ether, petroleum ether, carbon tetrachloride, carbon disulfide, oils. Slightly soluble in water.

!!!!!! SAFETY WARNING !!!!!

- *poisonous by inhalation and ingestion*
- *Inhalation results in hallucinations, distorted perception, nausea and vomiting, hypotension, respiratory depression and loss of consciousness.*
- *skin and eye irritant*
- *Prolonged and repeated exposure can cause liver and kidney damages.*
- *carcinogenic*

STORAGE/HANDLING

- *Keep in a cool place, protected from light.*
- *Ventilate at floor level.*

- *Handle at a well ventilate place, under a hood or with respiratory protection.*
- *Wear safety goggles and gloves.*

- *In case of:*
 - inhalation: → fresh air, rest,*
→ seek medical advice;
 - contact with skin: → remove contaminated clothing,*
→ flush skin with plenty of water or shower,
→ seek medical advice;
 - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),*
→ seek medical advice;
 - ingestion: → rinse mouth with water,*
- *DO NOT induce vomiting,*
- *immediately seek medical advice.*

Legitimate Use:

Commonly used solvent in chemical laboratories and chemical/pharmaceutical industry; extractant for fats, oils, rubber, alkaloids, waxes, gutta-percha, resins; used as cleansing agent. Chemical intermediate in the synthesis of the refrigerant fluorocarbon 22. In medicine as a general anesthetic in former times, today obsolete because of its toxicity.

Illicit Use:

Solvent which can be used in the production of cocaine and heroin and for numerous other clandestine drug syntheses. (also see annex)

EPHEDRINE

	Molecular Formula:	Molecular Weight:
base:	$C_{10}H_{15}NO$	165.23
base hemihydrate:	$C_{10}H_{15}NO \cdot \frac{1}{2}H_2O$	174.24
hydrochloride:	$C_{10}H_{15}NO \cdot HCl$	201.70
nitrate:	$C_{10}H_{15}NO \cdot HNO_3$	228.25
sulfate:	$(C_{10}H_{15}NO)_2 \cdot H_2SO_4$	428.55

International Control: Table I, 1988 Convention.

Harmonized System Number * :

Adjusted Harmonized System Number ** :

base: 2939.40.5000 hydrochloride: 2939.40.5000 nitrate: 2939.40.5000 sulfate: 2939.40.5000	base: hydrochloride: nitrate: 2939.40.5007 sulfate: 2939.40.5008	<i>d</i> -ephedrine: 2939.40.5001 <i>l</i> -ephedrine: 2939.40.5002 <i>dl</i> -ephedrine: 2939.40.5003 <i>d</i> -ephedrine: 2939.40.5004 <i>l</i> -ephedrine: 2939.40.5005 <i>dl</i> -ephedrine: 2939.40.5006
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Other Names:

- base:
- Eciphin
 - Efedrin
 - Ephedrate
 - Ephedremal
 - Ephedrin, -e, -um
 - (-)-Ephedrin, -e
 - l*-Ephedrin, -e
 - Ephedrina anidra
 - Ephedrina emiidrato
 - L*(-)-Ephedrine
 - (-)-(1*R*,2*S*)-Ephedrine
 - (-)-*erythro*-Ephedrine
 - 1(*R*),2(*S*)-*erythro*-(*-*)-Ephedrine
 - Ephédrine anhydre

 - Ephedrine anhydrous
 - Ephédrine hémihydratée
 - Ephedrin hemihydrat
 - dl*-Ephedrinum
 - Ephedrinum anhydricum
 - Ephedrinum hemihydricum
 - Ephedrinum hydratum
 - Ephedrin, wasserfreies

** Adjusted Harmonized System by UNDCP to distinguish between substances within a group/class.

Ephedrivo
â-Hydroxy-â-methylaminepropylbenzene
1-Hydroxy-2-methylamino-1-phenylpropane
â-Hydroxy-â-methylaminopropylbenzene
I-Sedrin
Lexofedrin
â-[1-(Methylamino)ethyl]benzene methanol
â-[1-(Methylamino)ethyl]benzenemethanol
[*R*-(*R*^{*},*S*^{*})]-â-[1-(Methylamino)ethyl]benzenemethanol
â-[1-(Methylamino)ethyl]benzyl alcohol
1-â-(1-Methylaminoethyl)benzyl alcohol
2-Methylamino-1-phenylpropanol
2-Methylamino-1-phenylpropan-1-ol
2-Methylamino-1-phenyl-1-propanol
(1*R*,2*S*)-2-Methylamino-1-phenyl-1-propanol
(1*R*,2*S*)-2-Methylamino-1-phenyl-propan-1-ol hemihydrate
1-Phenyl-1-hydroxy-2-methylaminopropane
1-Phenyl-2-methylamino-1-propanol
1-Phenyl-2-methylaminopropanol
Racephedrine

hydrochloride:

Astmaphedrine
Biophedrin
Caniphedrin
Efedrina chloridrato
Efedron
Efetonina
Eggophedrin
Ephédrine chlorhydrate
Ephedrine chloride
Ephedrine hydrochloride
(-)-Ephedrine hydrochloride
Ephedrinhydrochlorid
Ephedrini hydrochloricum
Ephedrinium chloratum
Ephedrinum chloratum
l-Ephedrinum hydrochloricum
dl-Ephedrinum hydrochloricum
Ephedronguent

Ephedrosst
Ephetonin, -e
Fedrine
(-)-(1*R*,2*S*)-*N*-(1-Hydroxy-1-phenylprop-2-yl)-*N*-methylammonium
hydrochloride
[*R*-(*R*^{*},*S*^{*})]- α -(1-(Methylamino)ethyl)benzenemethanol hydrochloride
dl- α -(1-(Methylamino)ethyl)benzyl alcohol hydrochloride
Minus ephedrine hydrochloride
1-Phenyl-2-methylaminopropanol-1 hydrochloride
Racephedrine hydrochloride
Reukap
Sanedrine

sulfate:

Benzenemethanol, α -[1(methylamino)ethyl]-, [*R*-(*R*^{*},*S*^{*})]-, sulfate (2:1)
Ectasuleminus
(-)-Ephedrine sulfate (2:1)
Ephedrine sulfate
Ephedrini sulfas
Ephedsol
Isofedrol
Iso-phedrizem
1- α -[1-(Methylamino)ethyl]benzyl alcohol sulfate
NCI-C55652
1-Phenyl-2-methylaminepropanol-1 sulfate
Sal-Phedrine
Spaneph

Physical Appearance:

base: Crystals/waxy solid crystals or granules with soapy feel.
hydrochloride: Orthorhombic needles.
sulfate: Crystals/orthorhombic needles. White or slightly reddish yellow crystals.

Chemical/Physical Properties:

	Melting Point:
base:	79°C
hydrochloride: (racemate)	187 - 188°C
	(<i>l</i> -isomer) 216 - 220°C
nitrate:	126 - 128°C
sulfate:	247°C

Solubility:

base: Soluble in water, alcohol, ethyl ether, chloroform, oils.

hydrochloride: Soluble in water, very soluble in alcohol, practically insoluble in ethyl ether.

sulfate: Soluble in water, partly soluble in alcohol.

!!! SAFETY WARNING !!!

- *Harmful if swallowed*
- *Do not breathe dust!*
- *Avoid contact with skin and eyes!*

STORAGE/HANDLING

- *Keep in well-closed containers, protected from light.*
- *Handle at a well ventilate place.*
- *Wear safety goggles, gloves and a dust mask.*
- *Avoid contact with skin and eyes.*
- *Do not eat, drink or smoke while handling the substance.*
- *In case of:*
 - contact with skin: → remove contaminated clothing,
→ wash with plenty of water and soap,
→ seek medical advice if necessary;*
 - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
→ seek medical advice;*
 - ingestion: → rinse mouth with plenty of water,
→ if feeling unwell, immediately seek medical advice.*

Legitimate Use:

In the manufacture of bronchodilators.

Illicit Use:

In the clandestine synthesis of metamfetamine. (also see annex)

ERGOMETRINE

	Molecular Formula:	Molecular Weight:
base:	$C_{19}H_{23}N_3O_2$	325.39
hydrochloride:	$C_{19}H_{23}N_3O_2 \cdot HCl$	361.85
maleate:	$C_{19}H_{23}N_3O_2 \cdot C_4H_4O_4$	441.46
oxalate:	$C_{19}H_{23}N_3O_2 \cdot C_2H_2O_4$	395.43
tartrate:	$(C_{19}H_{23}N_3O_2)_2 \cdot C_4H_6O_6$	800.87

International Control: Table I, 1988 Convention.

Harmonized System Number * :

Adjusted Harmonized System Number ** :

base:	2939.60.0000	base:	2939.60.1000
hydrochloride:	2939.60.0000	hydrochloride:	2939.60.1001
maleate:	2939.60.0000	maleate:	2939.60.1002
oxalate:	2939.60.0000	oxalate:	2939.60.1003
tartrate:	2939.60.0000	tartrate:	2939.60.1004

Other Names:

base:

Acide lysergique 2-hydroxy-1-méthyléthylamide
 Acide lysergique 2-propanolamide
 [8 \hat{a} (S)]-9,10-Didehydro-*N*-(2-hydroxy-1-méthylethyl)-6-méthylergoline-8-carboxamide
 9,10-Didehydro-*N*-[(S)-2-hydroxy-1-méthylethyl]-6-méthylergoline-8 \hat{a} -carboxamide
 9,10-Didehydro-*N*-(2-hydroxy-1-méthylethyl)-6-méthylergoline-8-carboxamide
 9,10-Didehydro-*N*-(2-hydroxy-1-méthylethyl)-6-méthylergoline-8 \hat{a} -carboxamide
 Ergotetrine
 Ergobasine
 Ergokline
 Ergoline-8-carboxamide, 9,10 didehydro-*N*-(2-hydroxy-1-méthylethyl)-6-méthyl-
 Ergoline-8-carboxamide, 9,10-didehydro-*N*-(2-hydroxy-1-méthylethyl)-
 -6-méthyl-, [8 \hat{a} (S)]-
 Ergometrinin
 Ergometrinum
 Ergonovine
 Ergostetrine
 Ergotocine
 Hydroxyméthylethyllysergamide
N-(2-Hydroxy-1-méthylethyl)-*D*(+)-lysergamide
N-[(S)-2-Hydroxy-1-méthylethyl]lysergamide
N-[(S)-2-Hydroxy-1-méthylethyl]-*D*-lysergamide
N-[\hat{a} -(Hydroxyméthyl)éthyl]-*D*-lysergamide
N-[1-(Hydroxyméthyl)éthyl]-*D*-lysergamide

Hydroxypropyllysergamide
D(+)-Lysergic acid α -hydroxyisopropylamide
D-Lysergic acid 1-(hydroxymethyl)ethylamide
Lysergic acid propanolamide
D-Lysergic acid 1,2-propanolamide
D-Lysergic acid *L*-2-propanolamide
Dextro-Lysergic acid *levo*-2-propanolamide
Margonovine
Secacornine

maleate:

Arconovina
Cornocentin
Cryovinal
9,10-Didehydro-*N*-[(*S*)-2-hydroxy-1-methylethyl]-6-methylergoline-
-8 α -carboxamide maleate (1:1)
Ergofar
Ergoline-8-carboxamide, 9,10-didehydro-*N*-(2-hydroxy-1-methylethyl)-
-6-methyl-, [8 α (*S*)]-, (*Z*)-2-butenedioate (1:1)
Ergomal
Ergomed
Ergomet
Ergometrina maleato
Ergométrine (maléate d')
Ergometrine Maleate
Ergometrinhydrogenmaleat
Ergometrini hydrogenomaleas
Ergometrini maleas
Ergometrinium hydrogenmaleinicum
Ergometrinum hydrogenmaleinicum
Ergometrinum maleicum
Ergomine
Ergonovine Bimaleate
Ergonovine Maleate
Ergostabil
Ergoton-B
Ergotrate
Ergotrate Maleate
Ermalate
Ermetrin, -e
Hemogen
(6*aR*,9*R*)-4,6,6*a*,7,8,9-Hexahydro-*N*-[(2*S*)-1-hydroxyprop-2-yl]-
-7-methylindolo[4,3-*fg*]quinoline-9-carboxamide
(+)-*N*-[(2*S*)-1-Hydroxyprop-2-yl]-*D*-lysergamide
Margonovine
Metriclavin
Metrisanol

Novergo

Panergal
Secometrine
Syntometrine
Takimetrin
Uteron

tartrate:

Basergin
Ergomar "Nordson"
Ergobasine tartrate
Ergonovine tartrate
Ergonovinum tartaricum
Ergostetrine tartrate
Ergotocine tartrate
Neofemergen
Neo-Femergen

Physical Appearance:

base: Tends to form solvated colourless crystals.
hydrochloride: Needles.
maleate: White or yellowish, odourless, crystalline powder.
tartrate: White or slightly reddish yellow crystals.

Chemical/Physical Properties:

Melting Point:

base: 162°C
hydrochloride: 246°C (decomposition)
maleate: 167°C
oxalate: 193°C

Solubility:

base: Freely soluble in lower alcohols, ethyl acetate, acetone, slightly soluble in water and chloroform.
hydrochloride: Partly soluble in water.
maleate: Slightly soluble in water, scarcely soluble in ethanol, almost insoluble in chloroform and ethyl ether.
tartrate: Soluble in water and ethanol, slightly soluble in chloroform and ethyl ether.

!!! SAFETY WARNING !!!

- *highly toxic*
- *Ingestion results in vomiting, diarrhoea, unquenchable thirst, confusion and unconsciousness.*
- *Chronic poisoning arises from ingestion of grain contaminated with ergot.*

STORAGE/HANDLING

- *Store in tightly closed amber-coloured containers in cool, dry areas and at a temperature of 2 °C to 8 °C.*
- *Handle at a well ventilate place.*
- *Wear safety goggles, gloves and a dust mask.*
- *Avoid contact with skin and eyes.*
- *Do not eat, drink or smoke while handling the substance.*
- *In case of:*
 - contact with skin: →remove contaminated clothing,*
→wash with plenty of water and soap,
→seek medical advice if necessary;
 - contact with eyes: →immediately rinse with plenty of water (min. 10 minutes),*
→seek medical advice;
 - ingestion: →rinse mouth with plenty of water,*
→if feeling unwell, immediately seek medical advice.

Legitimate Use:

Oxytocic for obstetrical use and vasoconstrictor in the treatment of migraine.

Illicit Use:

In the clandestine manufacture of lysergic acid and LSD. (also see annex)

ERGOTAMINE

	Molecular Formula:	Molecular Weight:
base:	C ₃₃ H ₃₅ N ₅ O ₅	581.65
hydrochloride:	C ₃₃ H ₃₅ N ₅ O ₅ ·HCl	618.11
succinate:	C ₃₃ H ₃₅ N ₅ O ₅) ₂ ·C ₄ H ₆ O ₄	1281.39
tartrate:	(C ₃₃ H ₃₅ N ₅ O ₅) ₂ ·C ₄ H ₆ O ₆	1313.39

International Control: Table I, 1988 Convention.

Harmonized System Number*:	Adjusted Harmonized System Number**:
base: 2939.60.0000	base: 2939.60.2000
hydrochloride: 2939.60.0000	hydrochloride: 2939.60.2001
succinate: 2939.60.0000	succinate: 2939.60.2002
tartrate: 2939.60.0000	tartrate: 2939.60.2003

Other Names:

base:

N-(5-(Benzyl-10*b*-hydroxy-2-methyl)-3,6-dioxoperhydrooxazolo(3,2-*a*)pyrrolo-(2,1-*c*)pyrazin-2-yl)-*D*-lysergamide
5'-Benzyl-12'-hydroxy-2'-methylergotaman-3',6',18-trione
Ergotaman-3',6',18-trione, 12'-hydroxy-2'-methyl-5-phenylmethyl-
Ergotaman-3',6',18-trione, 12'-hydroxy-2'-methyl-5'-(phenylmethyl)-, (5'á)-
12-Hydroxy-2-methyl-5-*alpha*-(phenylmethyl)-ergotaman-3,6,18-trione
12'-Hydroxy-2'-methyl-5'-(phenylmethyl)-ergotaman-3',6',18-trione
12'-Hydroxy-2'-methyl-5'á-(phenylmethyl)-ergotaman-3',6',18-trione
12'-Hydroxy-2'-methyl-3',6',18-trioxo-5-benzylergotaman
(5'*S*)-12'-Hydroxy-2'-methyl-3',6',18-trioxo-5-benzylergotaman, (+)-

succinate:

Ergoton-A

tartrate:

Avetol
Bellergal
Cafergot
Cornutamin
Effergot
Ergkatal
Ergocaf
Ergo Caffein
Ergomar
Ergostat
Ergotamina tartrato

Ergotamine (tartrate d')
Ergotamine tartrate
Ergotamini tartras
Ergotaminium tartaricum
Ergotamintartrat
Ergotaminum tartaricum
Ergotan
Ergotartrat
Ergotatropin
Exmigra
Exmigrex
Femergin
Gynergeen
Gynergen
Lantrate
Lingraine
Lingrän
Lingrene
Medihaler-Ergotamine
Migral Rigetamine
Migretamine
Migril
Migwell
Secagyn
Secupan
Wigraine

Physical Appearance:

base: Very hygroscopic crystals.
hydrochloride: Crystals (small rectangular plates).
tartrate: Slightly hygroscopic, colourless, odourless crystals or
a white or yellowish white crystalline powder.

Chemical/Physical Properties:

Melting Point:

base: 212 - 214°C (decomposition)
hydrochloride: 212°C (decomposition)
tartrate: 203°C (decomposition)

Solubility:

base: Freely soluble in chloroform, pyridine and glacial acetic acid,
moderately soluble in ethyl acetate, slightly in benzene and
ethanol, almost insoluble in water and petroleum ether.

hydrochloride: Soluble in water-alcohol mixtures, sparingly soluble in water or alcohol.

tartrate: Slightly soluble in water and alcohol, almost insoluble in ethyl ether and chloroform.

!!! SAFETY WARNING !!!

- *highly toxic*
- *Ingestion results in vomiting, diarrhoea, unquenchable thirst, confusion and unconsciousness.*
- *Chronic poisoning arises from ingestion of grain contaminated with ergot.*

STORAGE/HANDLING

- *Store in tightly closed amber-coloured containers in cool, dry areas and at a temperature of 2 °C to 8 °C.*
- *Handle at a well ventilate place.*
- *Wear safety goggles, gloves and a dust mask.*
- *Avoid contact with skin and eyes.*
- *Do not eat, drink or smoke while handling the substance.*
- *In case of:*
 - contact with skin: → remove contaminated clothing,
→ wash with plenty of water and soap,
→ seek medical advice if necessary;*
 - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
→ seek medical advice;*
 - ingestion: → rinse mouth with plenty of water,
→ if feeling unwell, immediately seek medical advice.*

Legitimate Use:

Ergotamine tartrate is used in the treatment of acute attacks of migraine and as an oxytocic in obstetrics.

Illicit Use:

In the clandestine manufacture of lysergic acid and LSD. (also see annex)

ETHYL ETHER

Molecular Formula: C₄H₁₀O

Molecular Weight: 74.12

International Control: Table II, 1988 Convention

Harmonized System Number*: 2909.11.0000

Other Names: Aether anaestheticus

Ether

Anaesthetic ether

Ether anesthésique

Anesthesia ether

Ether éthylique

Anesthetic ether

Ether pro narcosi

Diäthyläther

Ether sulfurique

Diethoxyethane

Ethoxyethane

Diethyl ether

Ethyl oxide

Diethyl oxide

Etoxietano

Dioxyde d'éthyle

3-Oxapentane

Dwuetylowy eter

1,1'-Oxybisethane

Etere dietilico

1,1'-Oxybis [ethane]

Etere etilico

Oxyde d'éthyle

Eter etílico

Pronarcol

Eter sulfúrico

RCRA Waste Number U117

Ethane, 1,1'-oxybis-

Solvent ether

Ethane oxyéthane

Sulfuric ether

Physical Appearance:

Colourless mobile volatile liquid with a sweet pungent odour and burning taste.

Chemical/Physical Properties:

Melting Point: -116.2°C

Boiling Point: 34.6°C

Density (g/cm³, 20°C): 0.7138

Solubility: Miscible with chloroform, ethanol and fatty oils; soluble in water.

!!! SAFETY WARNING !!!

- **EXTREMELY FLAMMABLE**
- *may form explosive peroxides*
- *mildly toxic by inhalation, moderately toxic by ingestion*
- *skin and severe eye irritant*

ETHYLIDENE DIACETATE

Molecular Formula: C₆H₁₀O₄

Molecular Weight: 146.14

International Control: Not under International Control

Other Names: Äthylidendiacetat

Diacétate d'éthylidène
1,1-Diacetoxyethane
1,1-Ethenediol diacetate
1,1-Ethenediol, diacetate

Physical Appearance:

Colourless liquid with a sharp, fruity odour.

Chemical/Physical Properties:

Melting Point: 19°C

Boiling Point: 169°C

Density (g/cm³, 20°C): 1.070

Solubility: Slightly soluble in water, miscible with alcohol.

!!!!!! SAFETY WARNING !!!!!

- *skin and eye irritant*
- *can react vigorously with strong oxidants*

STORAGE/HANDLING

- *Store at room temperature.*
- *Separate from oxidants.*

- *Handle at a well ventilate place, under a hood or with respiratory protection.*
- *Wear safety goggles and gloves.*

- *In case of:*
 - inhalation: →fresh air, rest,*
→seek medical advice;
 - contact with skin: →remove contaminated clothing,*
→wash with plenty of water and soap,
→seek medical advice if necessary;
 - contact with eyes: →immediately rinse with plenty of water (min. 10 minutes),*
→seek medical advice;
 - ingestion: →drink a lot of water,*
→seek medical advice.

Legitimate Use:

Agricultural fungicide; intermediate in the production of vinyl acetate.

Illicit Use:

In the clandestine manufacture of heroin. (also see annex)

HYDROCHLORIC ACID

Molecular Formula: HCl

Molecular Weight: 36.46

International Control: Table II, 1988 Convention

Harmonized System Number* : 2805.10.0000

Other Names: Acide chlorhydrique

Acido clorhídrico

Acido cloridrico

Acidum hydrochloricum

Acidum hydrochloricum concentratum

Chlorohydric acid

Chlorowodor

Chloorwaterstof

Chlorwasserstoff

Concentrated hydrochloric acid

Hydrogen chloride

Muriatic acid

Salzsäure

Spirit of salt

Physical Appearance:

Clear, colourless to light yellow fuming liquid with a pungent odour.

Chemical/Physical Properties:

Melting Point: -35°C

Boiling Point: 85°C (32% HCl)

Density (g/cm³, 20°C): 1.16 (32% HCl)

Solubility: Miscible with water and alcohol.

!!! SAFETY WARNING !!!

- *strongly corrosive*
- *vapours irritant to the mucous membranes, to the eyes and the respiratory tract*
- *More severe exposures result in pulmonary edema.*

STORAGE/HANDLING

- *Store below 30 °C in airtight containers of glass or other inert material.*
- *Separate from oxidants and strong bases.*

- *Handle at a well ventilate place, under a hood or with respiratory protection.*
- *Wear safety goggles or a face shield, protective clothing and gloves.*

- *In case of:*
 - inhalation: → fresh air, rest, place in half-sitting position,
→ seek medical advice;*
 - contact with skin: → remove contaminated clothing,
→ flush skin with plenty of water or shower,
→ seek medical advice;*
 - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
→ immediately seek medical advice;*
 - ingestion: → drink a lot of water,
→ DO NOT induce vomiting,
→ immediately seek medical advice.*

Legitimate Use:

In the production of chlorides and hydrochlorides; for the neutralization of basic systems; as a catalyst and solvent in organic syntheses, in the cleaning of metal products.

Illicit Use:

In the clandestine manufacture of heroin hydrochloride and of other controlled substances such as amphetamine, phencyclidine (PCP), fentanyl and their analogues; cocaine, methaqualone, mecloqualone, mescaline, LSD, psilocine, diethyltryptamine (DET) and PEPAP. (also see annex)

ISOSAFROLE

Molecular Formula: C₁₀H₁₀O₂

Molecular Weight: 162.18

International Control: Table I, 1988 Convention.

Harmonized System Number*:

Adjusted Harmonized System Number:**

2932.90.4100

2932.90.4101

Other Names: Benzene, 1,2-(methylenedioxy)-4-propenyl-
1,3-Benzodioxole, 5-(1-propenyl)-
1,2-(Methylenedioxy)-4-propenylbenzene
3,4-(Methylenedioxy)-1-propenylbenzene
5-(1-Propenyl)-1,3-benzodioxole
4-Propenylcatechol methylene ether
4-Propenyl-1,2-methylenedioxybenzene

Physical Appearance:

Colourless, viscous liquid with a sweet, anise-like odour.

Chemical/Physical Properties:

Melting Point:

trans-isomer: 8.2°C

cis-isomer: -21.5°C

Boiling Point:

trans-isomer: 250 - 254°C; 85 - 86°C at 3.5 mm Hg

cis-isomer: 77 - 79°C at 3.5 mm Hg

Density: (g/cm³, 20°C): 1.1224

Solubility: Soluble in ethanol, ethyl ether and benzene; insoluble in water.

!!! SAFETY WARNING !!!

- *moderately toxic by ingestion*
- *poisonous by parenteral routes*
- *experimental carcinogen and tumorigen*
- *skin irritant*
- *When heated to decomposition, isosafrole emits acrid smoke and fumes.*

STORAGE/HANDLING

- *Keep in cool place protected from light.*
- *Handle at a well ventilate place, under a hood or with respiratory protection.*
- *Wear safety goggles and gloves.*

- *In case of:*
 - inhalation: →fresh air, rest,*
→seek medical advice;
 - contact with skin: →remove contaminated clothing,*
→wash with plenty of water and soap,
→seek medical advice if necessary;
 - contact with eyes: →immediately rinse with plenty of water (min. 10 minutes),*
→seek medical advice;
 - ingestion: →drink a lot of water,*
→seek medical advice.

Legitimate Use:

In the manufacture of piperonal; to modify oriental perfumes; to strengthen soap perfumes; in small quantities together with methyl salicylate in root beer and sarsaparilla flavours; also used as a pesticide.

Illicit Use:

In the clandestine synthesis of tenamfetamine (MDA), *N*-ethyltenamfetamine (MDE), 3,4-methylenedioxymetamfetamine (MDMA), *N*-hydroxytenamfetamine (N-OH MDA). (also see annex)

LYSERGIC ACID

Molecular Formula: C₁₆H₁₆N₂O₂

Molecular Weight: 268.32

International Control: Table I, 1988 Convention.

Harmonized System Number*: 2939.60.0000

Other Names: Acide ergoline-8-carboxylique, didéhydro-9,10 méthyl-6

Acide indolo(4,3-*fg*)quinoline ergoline-8-carboxylique

Acide lysergique

(8 α)-9,10-Didehydro-6-methylergoline-8-carboxylic acid

9,10-Didehydro-6-methylergoline-8-carboxylic acid

Ergoline-8-carboxylic acid, 9-10-didehydro-6-methyl-

(+)-Lysergic acid

D(+)-Lysergic acid

D-Lysergic acid

d-Lysergic acid

Physical Appearance:

Crystal plates or white crystalline powder.

Chemical/Physical Properties:

Melting Point: 240°C (decomposition)

Solubility: Moderately soluble in pyridine, sparingly soluble in water and in neutral organic solvents, soluble in alkali and acid solutions.

!!! SAFETY WARNING !!!

- *highly toxic*

- *Ingestion results in vomiting, diarrhoea, unquenchable thirst, confusion and unconsciousness.*

STORAGE/HANDLING

- *Store in tightly closed containers in a cool place, protected from light.*
- *Handle at a well ventilate place.*
- *Wear safety goggles, gloves and a dust mask.*
- *Avoid contact with skin and eyes.*
- *Do not eat, drink or smoke while handling the substance.*

- *In case of:*
 - contact with skin: →remove contaminated clothing,*
→wash with plenty of water and soap,
→seek medical advice if necessary;
 - contact with eyes: →immediately rinse with plenty of water (min. 10 minutes),*
→seek medical advice;
 - ingestion: →rinse mouth with plenty of water,*
→if feeling unwell, immediately seek medical advice.

Legitimate Use:

In organic syntheses.

Illicit Use:

In the clandestine manufacture of LSD. (also see annex)

3,4-METHYLENEDIOXY- PHENYL-2-PROPANONE

Molecular Formula: C₁₀H₁₀O₃

Molecular Weight: 178.19

International Control: Table I, 1988 Convention.

Harmonized System Number*:

Adjusted Harmonized System Number:**

2932.90.4100

2932.90.4103

Other Names: 5-Acetyl-1,3-benzodioxole

1-(Acetyl)-3,4-methylenedioxybenzene

1-(1,3-Benzodioxol-5-yl)-2-propanone

1,3-Benzodioxol-5-ylpropan-2-one

3,4-MDP-2-P

MD-P2P

3,4-Methylenedioxybenzyl methyl ketone

3,4-Methylenedioxyphenylacetone

3,4-Methylenedioxyphenyl-2-propanone

1-(3,4-Methylenedioxyphenyl)-2-propanone

Methyl piperonyl ketone

Piperonalacetone

Piperonyl methyl ketone

PMK

2-Propanone, 1-(1,3-benzodioxol-5-yl)-

2-Propanone, 1-[3,4-(methylenedioxy)phenyl]-

2-Propanone, (3,4-(methylenedioxy)phenyl)-

Physical Appearance:

Liquid; odour of anise.

Chemical/Physical Properties:

Boiling Point: 120 - 122°C

Solubility: Soluble in most organic solvents; insoluble in water.

!!! SAFETY WARNING !!!

- irritating to skin and eyes

STORAGE/HANDLING

- *Store in stainless steel or containers with a thin lining for long-term storage.*
- *For short term storage and transportation carbon steel containers are suitable.*

- *Handle at a well ventilate place, under a hood or with respiratory protection.*
- *Wear safety goggles and gloves.*

- *In case of:*
 - inhalation: →fresh air, rest,*
→seek medical advice;
 - contact with skin: →remove contaminated clothing,*
→wash with plenty of water and soap,
→seek medical advice if necessary;
 - contact with eyes: →immediately rinse with plenty of water (min. 10 minutes),*
→seek medical advice;
 - ingestion: →drink a lot of water,*
→immediately seek medical advice.

Legitimate Use:

In the manufacture of perfume components.

Illicit Use:

In the clandestine synthesis of tenamfetamine (MDA), *N*-ethyltenamfetamine (MDE), 3,4-methylenedioxytenamfetamine (MDMA), *N*-hydroxytenamfetamine (N-OH MDA).
(also see annex)

METHYL ETHYL KETONE

Molecular Formula: C₄H₈O

Molecular Weight: 72.12

International Control: Table II, 1988 Convention

Harmonized System Number*: 2914.12.0000

Other Names: Acetonersatz

Aethylmethylketon

Butanone

2-Butanone

Butane-2-one

Butanone-2

3-Butanone

Ethyl methyl cetone

Ethylméthylcétone

Ethylmethylketon

Ethyl methyl ketone

MEC

MEETCO

MEK

Methyl acetone

Méthyléthylcétone

Methylethylketon, -e

Methyloethyloketone

Metiletilchetone

Metyloetyloketone

Ketobutan

Physical Appearance:

Colourless liquid, with a fragrant mint-like moderately sharp odour.

Chemical/Physical Properties:

Melting Point: -86°C

Boiling Point: 79.6°C

Density (g/cm³, 20°C): 0.8054

Solubility: Miscible with water and many other organic solvents.

!!! SAFETY WARNING !!!

- *highly flammable*
- *skin and severe eye irritant*
- *inhalation and ingestion produce headaches, dizziness and vomiting (less toxic than acetone)*

STORAGE/HANDLING

- *Store in closed containers, at a temperature not exceeding 15 °C.*
- *Keep containers in a well-ventilated place, away from heat, sparks and flames.*
- *Separate from oxidants.*

- *Keep away from open flame and sparks, no smoking.*
- *Handle at a well ventilate place, under a hood or with respiratory protection.*
- *Wear safety goggles and gloves.*

- *In case of:*
 - inhalation: → fresh air, rest,
→ seek medical advice;*
 - contact with skin: → remove contaminated clothing,
→ flush skin with plenty of water or shower,
→ seek medical advice if necessary;*
 - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
→ seek medical advice;*
 - ingestion: → drink a lot of water,
→ **DO NOT** induce vomiting,
→ seek medical advice.*

Legitimate Use:

In the manufacture of coatings, degreasing agents, lacquers, resins, and smokeless powders; commonly used solvent.

Illicit Use:

A solvent used in converting cocaine base to cocaine hydrochloride. (also see annex)

PHENYLACETIC ACID

Molecular Formula: C₈H₈O₂

Molecular Weight: 136.14

International Control: Table II, 1988 Convention,

Harmonized System Number*: 2916.33.1000

Other Names: Acide benzène acétique

Acide phénylacétique

Acide *o*-toluique

Acido bencenoacético

Acido fenilacético

Acido *o*-toluico

Benzeneacetic acid

Fema No. 2878

PAA

2-Phenylacetic acid

o-Phenylacetic acid

omega-Phenylacetic acid

Phenylethanoic acid

Phenylethanoic acid

o-Toluic acid

Toluylic acid

Physical Appearance:

White powder with a very disagreeable pungent odour.

Chemical/Physical Properties:

Melting Point: 76.5°C

Boiling Point: 265.5°C

Solubility: Soluble in ethyl ether and alcohol, slightly soluble in cold water; freely soluble in hot water.

!!! SAFETY WARNING !!!

- *moderately toxic by ingestion, subcutaneous, and intraperitoneal routes*
- *experimental teratogen*
- *combustible when exposed to heat or flame*
- *When heated to decomposition it emits acrid smoke and irritating fumes.*

STORAGE/HANDLING

- *Store in dark bottles in a cool, dry area.*
- *Handle at a well ventilate place.*
- *Wear safety goggles, gloves and a dust mask.*
- *Avoid contact with skin and eyes.*
- *Do not eat, drink or smoke while handling the substance.*

- *In case of:*
 - contact with skin: →remove contaminated clothing,*
→wash with plenty of water and soap,
→seek medical advice if necessary;
 - contact with eyes: →immediately rinse with plenty of water (min. 10 minutes),*
→seek medical advice;
 - ingestion: →rinse mouth with plenty of water,*
→if feeling unwell, immediately seek medical advice.

Legitimate Use:

In chemical/pharmaceutical industry to manufacture phenylacetate esters, amfetamine and some of its derivatives; for the synthesis of a few penicillins; in fragrance applications and cleaning solutions.

Illicit Use:

In the clandestine synthesis of amfetamine, metamfetamine and 1-phenyl-2-propanone (P2P).
(also see annex)

1-PHENYL-2-PROPANONE

Molecular Formula: C₉H₁₀O

Molecular Weight: 134.18

International Control: Table I, 1988 Convention

Harmonized System Number*: 2914.30.0000

Other Names: Benzyl methyl ketone
BMK
Methyl benzyl ketone
Phenylacetone
â-Phenylacetone
Phenylmethyl methyl ketone
Phenyl-2-propanone
3-Phenyl-2-propanone
P2P
2-Propanone, 1-phenyl-

Physical Appearance:

Colourless or yellowish moderately viscous liquid.

Chemical/Physical Properties:

Melting Point: -15°C

Boiling Point: 100°C

Density (g/cm³, 20°C): 1.0157

Solubility: Miscible with organic solvents; insoluble in water.

!!! SAFETY WARNING !!!

- *flammable*
- *irritating to skin and eyes.*

STORAGE/HANDLING

- *Store in tightly closed containers in a cool, dry area, protected from light.*
- *Keep away from open flame and sparks, no smoking.*
- *Handle at a well ventilate place, under a hood or with respiratory protection.*
- *Wear safety goggles and gloves.*

- *In case of:*
 - inhalation: → fresh air, rest,*
→ seek medical advice;
 - contact with skin: → remove contaminated clothing,*
→ flush skin with plenty of water or shower,
→ seek medical advice if necessary;
 - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),*
→ seek medical advice;
 - ingestion: → drink a lot of water,*
→ seek medical advice.

Legitimate Use:

In chemical and pharmaceutical industry to manufacture amphetamine, metamphetamine and some of their derivatives; for synthesis of propylhexedrine; and a compound of a cleaning solution additive.

Illicit Use:

In the clandestine synthesis of amphetamine, metamphetamine and some of their derivatives.
(also see annex)

PHOSPHOROUS PENTACHLORIDE

Molecular Formula: PCl_5 (= Cl_5P)

Molecular Weight: 208.24

International Control: Not under International Control

Other Names: Pentachlorure de phosphore

Pentacloruro di fosforo

Pentachlorophosphorane

Phosphoric chloride

Phosphoric perchloride

Phosphorous, chloride, penta-

Phosphorous perchloride

Phosphorpentachlorid

Physical Appearance:

White to pale yellow, fuming, deliquesce, crystalline mass with an unpleasant, pungent odour.

Chemical/Physical Properties:

Melting Point: sublimation (148°C under pressure) **Boiling Point:** 160°C

Density (g/dm^3 , 296°C (gas)): 4.65

Solubility: Soluble in carbon disulfide and carbon tetrachloride.
It is decomposed by water and by alcohols.

!!!!!! SAFETY WARNING !!!!!

- *corrosive*
- *vapours/fumes irritating to the eyes and the respiratory tract*
- *More sever exposures to vapours/fumes result in pulmonary edema.*
- *reacts with air to form corrosive vapours*
- *reacts violently with water*
- *Many chemical reactions can cause fire and explosions.*

STORAGE/HANDLING

- *Keep in tightly closed containers in a dry place.*
- *Separate from strong bases.*

- *Handle at a well ventilate place, under a hood or with respiratory protection.*
- *Wear safety goggles or a face shield, protective clothing and gloves.*

- *In case of:*
 - inhalation: → fresh air, rest, place in half-sitting position,
→ seek medical advice;*
 - contact with skin: → remove contaminated clothing,
→ flush skin with plenty of water or shower,
→ seek medical advice;*
 - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
→ immediately seek medical advice;*
 - ingestion: → drink a lot of water,
→ immediately seek medical advice.*

- *In case of fire in immediate vicinity, DO NOT use water-based extinguishers.*

Legitimate Use:

Catalyst, e.g. in the manufacture of acetyl cellulose; chlorinating agent, particularly for converting acids into acid chlorides; dehydrating and phosphorylating agent.

Illicit Use:

In the clandestine manufacture of heroin; in the clandestine synthesis of mescaline and metamfetamine. (also see annex)

PHOSPHOROUS TRICHLORIDE

Molecular Formula: PCl_3 (= Cl_3P)

Molecular Weight: 137.33

International Control: Not under International Control

Other Names: Chloride of phosphorous

Fosfortrichloride

Phosphorous chloride

Phosphorous, chloride, tri-

Phosphortrichlorid

Trichlorophosphine

Trichlorure de phosphore

Tricloruro di fosforo

Physical Appearance:

Colourless, clear, fuming liquid with a pungent odour.

Chemical/Physical Properties:

Melting Point: -112°C

Boiling Point: 76°C

Density (g/cm^3 , 21°C): 1.574

Solubility: Soluble in benzene, chloroform, dichloromethane, ethyl ether, carbon tetrachloride, carbon disulfide.
It is decomposed by water and by alcohols.

!!!!!! SAFETY WARNING !!!!!

- *highly corrosive*
- *vapours/fumes irritating to the eyes and the respiratory tract*
- *More severe exposures result in pulmonary edema.*
- *reacts with air to form corrosive vapours*
- *reacts violently with water, alcohols, bases, nitric acid and reducing agents with the risk of fire and explosions*
- *When heated to decomposition it emits highly toxic fumes.*

STORAGE/HANDLING

- *Keep dry, under inert gas, in tightly closed containers.*
- *Separate from all other substances.*
- *Ventilate at floor level.*

- *Handle at a well ventilate place, under a hood or with respiratory protection.*
- *Wear safety goggles or a face shield, protective clothing and gloves.*

- *In case of:*
 - inhalation: → fresh air, rest, place in half-sitting position,*
→ seek medical advice;
 - contact with skin: → remove contaminated clothing,*
→ flush skin with plenty of water or shower,
→ seek medical advice;
 - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),*
→ immediately seek medical advice;
 - ingestion: → drink a lot of water,*
→ immediately seek medical advice.

- *In case of fire in immediate vicinity: DO NOT use water-based extinguishers.*

Legitimate Use:

Chlorinating agent, especially to replace oxygen in organic compounds; phosphinylating agent; as solvent in cryoscopy; used in the manufacture of saccharin; etchant.

Illicit Use:

In the clandestine manufacture of heroin; in the clandestine synthesis of methaqualone and mecloqualone. (also see annex)

PIPERIDINE

	Molecular Formula:	Molecular Weight:
base:	C ₅ H ₁₁ N	85.15
aurichloride:	C ₅ H ₁₁ N·HAuCl ₄	424.93
bitartrate:	C ₅ H ₁₁ N·C ₄ H ₆ O ₆	229.94
hydrochloride:	C ₅ H ₁₁ N·HCl	121.61
nitrate:	C ₅ H ₁₁ N·HNO ₃	147.97
picrate	C ₅ H ₁₁ N·C ₆ H ₃ N ₃ O ₇	314.26
platinichloride:	(C ₅ H ₁₁ N) ₂ ·H ₂ PtCl ₆	580.12

International Control: Table II, 1988 Convention

Harmonized System Number * :

Adjusted Harmonized System Number ** :

base:	2933.39.5000	base:	2933.39.5000
		aurichloride:	2933.39.5001
		bitartrate:	2933.39.5002
hydrochloride:	2933.39.5000	hydrochloride:	2933.39.5003
nitrate:	2933.39.5000	nitrate:	2933.39.5004
		phosphate:	2933.39.5005
picrate:	2933.39.5000	picrate:	2933.39.5006
		platinichloride:	2933.39.5007
thiocyanate:	2933.39.5000	thiocyanate:	2933.39.5008

Other Names: Azacyclohexane

Cyclopentimine
Cypentil
Hexahydropyridin, -e
Hexazane
Pentamethylenimin, -e
Perhydropyridine
Piperidin, -e

Physical Appearance:

base: Colourless or yellowish liquid with intensive characteristic unpleasant odour.

Chemical/Physical Properties:

	Melting Point:	Boiling Point:
base:	-10°C	106°C
hydrochloride:	245 - 248°C	
nitrate:	110°C	
picrate:	150°C (decomposition)	

Density (g/cm³, 20°C): base: 0.8606

Solubility:

base: miscible with water, soluble in most organic solvents.

!!! SAFETY WARNING !!!

- *highly flammable*
- *corrosive*
- *toxic by inhalation and in contact with skin*

STORAGE/HANDLING

- *Store in tightly closed containers in a cool, dry and fireproof place.*
- *Separate from oxidants and acids.*

- *Keep away from open flame and sparks, no smoking.*
- *Handle at a well ventilate place, under a hood or with respiratory protection.*
- *Wear safety goggles or a face shield, protective clothing and gloves.*

- *In case of:*
 - inhalation:* → *fresh air, rest, place in half-sitting position,*
→ *seek medical advice;*
 - contact with skin:* → *remove contaminated clothing,*
→ *flush skin with plenty of water or shower,*
→ *seek medical advice;*
 - contact with eyes:* → *immediately rinse with plenty of water (min. 10 minutes),*
→ *immediately seek medical advice;*
 - ingestion:* → *drink a lot of water,*
→ *immediately seek medical advice.*

Legitimate Use:

Commonly used solvent and reagent in chemical laboratories and chemical/pharmaceutical industry; also used in the manufacture of rubber products and plastics.

Illicit Use:

In the clandestine synthesis of phencyclidine (PCP) and tenocyclidine (TCP). (also see annex)

PIPERONAL

Molecular Formula: C₈H₆O₃

Molecular Weight: 150.13

International Control: Table I, 1988 Convention

Harmonized System Number*:

Adjusted Harmonized System Number:**

2932.90.4100

2932.90.4102

Other Names: 1,3-Benzodioxole-5-carboxaldehyde

3,4-Dihydroxybenzaldehyde methylene ketal

3,4-Dimethylenedioxybenzaldehyde

Dioxymethyleneprotocatechuic aldehyde

5-Formyl-1,3-benzodioxole

5-Formylbenzodioxole

Geliotropin

Heliotropin

3,4-(Methylenedioxy)benzaldehyde

Piperonaldehyde

Piperonylaldehyde

Protocatechuic aldehyde methylene ether

Physical Appearance:

Colourless, lustrous needle-shaped crystals, heliotrope odour.

Chemical/Physical Properties:

Melting Point: 37°C

Boiling Point: 263°C

Solubility: Slightly soluble in water; freely soluble in ethanol and ethyl ether.

!!! SAFETY WARNING !!!

- moderately toxic by ingestion and intraperitoneal routes
- can cause central nervous system depression
- irritant to skin
- combustible when exposed to heat or flame

- can react with oxidizing materials

STORAGE/HANDLING

- *Store at a cool place protected from light.*
- *Handle at a well ventilate place.*
- *Wear safety goggles, gloves and a dust mask.*
- *Avoid contact with skin and eyes.*
- *Do not eat, drink or smoke while handling the substance.*
- *In case of:*
 - contact with skin: →remove contaminated clothing,*
→wash with plenty of water and soap,
→seek medical advice if necessary;
 - contact with eyes: →immediately rinse with plenty of water (min. 10 minutes),*
→seek medical advice;
 - ingestion: →rinse mouth with plenty of water,*
→if feeling unwell, immediately seek medical advice.

Legitimate Use:

In perfumery, in cherry and vanilla flavours; in organic synthesis and as component for mosquito repellent.

Illicit Use:

In the clandestine synthesis of tenamfetamine (MDA), *N*-ethyltenamfetamine (MDE), 3,4-methylenedioxytenamfetamine (MDMA), *N*-hydroxytenamfetamine (N-OH MDA). (also see annex)

POTASSIUM PERMANGANATE

Molecular Formula: KMnO_4

Molecular Weight: 158.03

International Control: Table II, 1988 Convention

Harmonized System Number*: 2841.60.0010

Other Names: Cairox

Chameleon mineral
Condy's crystals
Kalii Permanganas
Kaliumpermanganaat
Kaliumpermanganat
Permanganate de potassium
Permanganate of potash
Permanganato de potasio
Permanganato di potasio
Permanganic acid (HMnO_4), potassium salt

Physical Appearance:

Dark purple or bronze-like, odourless crystals. Almost opaque by transmitted light and of a blue metallic luster by reflected light. Sweet with a stringent aftertaste; stable in air.

Chemical/Physical Properties:

Melting Point: 240°C (decomposition)

Solubility: Soluble in water, decomposed by alcohol and other organic solvents.

!!! SAFETY WARNING !!!

- Explosions may occur in case of contact with organic or other oxidizable substances, in solution or in the dry state.

STORAGE/HANDLING

- *Store in well closed containers (bottles and drums) at ambient temperature with open vents.*
- *Avoid contact with organic substances.*

- *Handle at a well ventilate place.*
- *Wear safety goggles, gloves and a dust mask.*
- *Avoid contact with skin and eyes.*
- *Do not eat, drink or smoke while handling the substance.*

- *In case of:*
 - inhalation: → fresh air, rest, place in half-sitting position,
→ seek medical advice;*
 - contact with skin: → remove contaminated clothing,
→ flush skin with plenty of water or shower,
→ seek medical advice;*
 - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
→ seek medical advice;*
 - ingestion: → drink a lot of water,
→ immediately seek medical advice.*

Legitimate Use:

Important reagent in analytical and synthetic organic chemistry. Bleaching applications, disinfectants, antibacterials and antifungal agents.

Illicit Use:

In the converting process of coca paste into cocaine base. (also see annex)

PSEUDOEPHEDRINE

	Molecular Formula:	Molecular Weight:
base:	$C_{10}H_{15}NO$	165.23
hydrochloride:	$C_{10}H_{15}NO \cdot HCl$	201.70
sulfate:	$(C_{10}H_{15}NO)_2 \cdot H_2SO_4$	428.55

International Control: Table I, 1988 Convention

Harmonized System Number*: **Adjusted Harmonized System Number**:**

base:	2939.40.1000	base:	
			<i>d</i> -ø-ephedrine: 2939.40.1001
			<i>l</i> -ø-ephedrine: 2939.40.1002
			<i>dl</i> -ø-ephedrine: 2939.40.1003
hydrochloride:	2939.40.1000	hydrochloride:	
			<i>d</i> -ø-ephedrine: 2939.40.1004
			<i>l</i> -ø-ephedrine: 2939.40.1005
			<i>dl</i> -ø-ephedrine: 2939.40.1006
sulfate:	2939.40.1000	sulfate:	2939.40.1007

Other Names:

base:

- Benzenemethanol, α -[1-(methylamino)ethyl]-, [*S*-(*R*^{*},*R*^{*})]-
- Ephedrin(e)
- ø-Ephedrine
- (-)-Ephedrin(e)
- d*-ø-Ephedrine
- (+)-ø-Ephedrine
- l*-Ephedrine
- L*(+)-ø-Ephedrine
- trans*-Ephedrine
- (-)-(1*R*,2*S*)-Ephedrine
- (-)-*erythro*-Ephedrine
- 1(*R*),2(*S*)-*erythro*-(*-*)-Ephedrine
- α -Hydroxy- α -methylaminopropylbenzene
- Isoephedrine
- d*-Isoephedrine
- α -[1-(Methylamino)ethyl]benzene methanol
- α -[1-(Methylamino)ethyl]benzenemethanol
- [*S*-(*R*^{*},*R*^{*})]- α -[1-(Methylamino)ethyl]benzenemethanol
- α -[1-(Methylamino)ethyl]benzyl alcohol

2-Methylamino-1-phenyl-1-propanol

(+)-2-methylamino-1-phenylpropan-1-ol
(1*R*,2*S*)-2-Methylamino-1-phenyl-1-propanol
(+)-(1*S*,2*R*)-2-(Methylamino)-1-phenyl-1-propanol
DL-threo-2-(Methylamino)-1-phenylpropan-1-ol
(1*R*,2*S*)-2-Methylamino-1-phenylpropan-1-ol hemihydrate
1-Phenyl-1-hydroxy-2-methylaminopropane
1-Phenyl-2-methylaminopropanol
1-Phenyl-2-methylamino-1-propanol
L-(+)-Pseudoephedrine
d-Pseudoephedrine
(+)-(1*S*,2*S*)-Pseudoephedrine
Sudafed

hydrochloride:

Actifed
Afrinol
Allent
Ambenyl-D
Atridine
Benafed
Benazma
Benylin
Brexin
Benzenemethanol, α -[1-(methylamino)ethyl], [*S*-(*R*^{*},*R*^{*})]-, hydrochloride
Cenafed
Congestac
Co Tylenol
Daycare
Decofed
Deconamine
Decongestant Syrup
Dimacol
Dorcol
d- \emptyset -Ephedrine hydrochloride
D-Feda
d-Isoephedrine hydrochloride
Eltor
Emprazil
Fedahist
Fedrazil
First Sign
Galpseud
Halofed
Histalet
(α *R*, α *R*)- α -Hydroxy- α -methylphenethyl-*N*-methylammonium chloride
(+)-(α *S*, α *S*)- α -Hydroxy- α -methylphenethyl-*N*-methylammonium chloride

Intensin
Isoclor

Isofedrin
Kronofed-A
Linctifed
(+)-(1*S*,2*S*)-2-Methylamino-1-phenylpropan-1-ol hydrochloride
Myfedrine
Naldegesic
Narixan
Nasa-12
Neofed
Novafed 120
Novahistine
Oranyl
Otrinol
Paragesic
PediaCare
Phenergan-D
Profedrine
(+)-Pseudoephedrine hydrochloride
Pseudofrin
Repedrina
Rhinalair
Robidrine
Robitussin
Ro-Fedrin
Rondec
Sancos Co
Seudotabs
Sinarest
Sine-Aid
Sine-Off
Sinufed
Sudafed
Sudanyl
Sudomyl
Sudelix
Sufedrin
Suolelix
Symptom 2
Triocos
Triphed
Tusaphed
Tussafed
Tussifed
Tylenol
Ursinus
Wal-Phed

resinate:

Pseudoephedrine Polistirex

sulfate:

Afrinol
Benzenemethanol, α -[1-(methylamino)ethyl]-, [*S*-(*R*^{*},*R*^{*})]-, sulfate (2:1)
Chlor-trimeton Decongestant
Congesteze
Disophrol
Drixora
Drixoral
Halin
Polaramine
(+)-Pseudoephedrine sulfate (2:1)

Physical Appearance:

base: Crystals.
hydrochloride: Needles.
sulfate: White odourless crystals or crystalline powder.

Chemical/Physical Properties:

		Melting Point:
base:	(<i>d</i> -isomer)	119°C
	(racemate)	118°C
hydrochloride:	(<i>d</i> -isomer)	181 - 182°C

Solubility:

base: Sparingly soluble in water, freely soluble in alcohol or ethyl ether.
hydrochloride: Soluble in water, alcohol and chloroform.
sulfate: Freely soluble in alcohol.

!!! SAFETY WARNING !!!

- *Harmful if swallowed*
- *Do not breathe dust!*
- *Avoid contact with skin and eyes!*

STORAGE/HANDLING

- *Keep in well-closed containers, protected from light.*
- *Handle at a well ventilate place.*
- *Wear safety goggles, gloves and a dust mask.*
- *Avoid contact with skin and eyes.*
- *Do not eat, drink or smoke while handling the substance.*

- *In case of:*
 - contact with skin:* → *remove contaminated clothing,*
 → *wash with plenty of water and soap,*
 → *seek medical advice if necessary;*
 - contact with eyes:* → *immediately rinse with plenty of water (min. 10 minutes),*
 → *seek medical advice;*
 - ingestion:* → *rinse mouth with plenty of water,*
→ *if feeling unwell, immediately seek medical advice.*

Legitimate Use:

In the manufacture of bronchodilators and nasal decongestant.

Illicit Use:

In the clandestine synthesis of metamfetamine. (also see annex)

SAFROLE

Molecular Formula: C₁₀H₁₀O₂

Molecular Weight: 162.18

International Control: Table I, 1988 Convention

Harmonized System Number* : 2932.90.3700

Other Names: 5-Allyl-1,3-benzodioxole

Allylcatechol methylene ether
Allyldioxybenzene methylene ether
4-Allyl-1,2-methylenedioxybenzene
4-Allyl-1,2-(methylenedioxy)benzene
1-Allyl-3,4-methylenedioxybenzene
m-Allylpyrocatechin methylene ether
4-Allylpyrocatechol formaldehyde acetal
Allylpyrocatechol methylene ether
1,3-Benzodioxole, 5-(2-propenyl)-
1,2-Methylenedioxy-4-allylbenzene
3,4-Methylenedioxyallylbenzene
5-(2-Propenyl)-1,3-benzodioxole
Rhyuno oil
Safrol
Safrole MF
Shikimole
Shikomol

Physical Appearance:

Colourless or slightly yellow liquid or crystals; sassafras odour.

Chemical/Physical Properties:

Melting Point: 11°C

Boiling Point: 235 - 237°C

Density (g/cm³, 20°C): 1.1000

Solubility: Insoluble in water, very soluble in alcohol, miscible with chloroform and ethyl ether.

!!! SAFETY WARNING !!!

- *moderately toxic by ingestion*
- *poisonous by parenteral routes*
- *experimental carcinogen and neoplastigen*
- *irritant to skin*
- *combustible when exposed to heat or flame*
- *When heated to decomposition it emits acrid smoke and irritating fumes.*

STORAGE/HANDLING

- *Keep in a cool place protected from light.*
- *Handle at a well ventilate place, under a hood or with respiratory protection.*
- *Wear safety goggles and gloves.*
- *In case of:*
 - inhalation: → fresh air, rest,
→ seek medical advice;*
 - contact with skin: → remove contaminated clothing,
→ wash with plenty of water and soap,
→ seek medical advice if necessary;*
 - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
→ seek medical advice;*
 - ingestion: → drink a lot of water,
→ seek medical advice.*

Legitimate Use:

In perfumery, e.g. in manufacture of piperonal, denaturing fats in soap manufacture.

Illicit Use:

In the clandestine synthesis of tenamfetamine (MDA), *N*-ethyltenamfetamine (MDE), 3,4-methylenedioxytenamfetamine (MDMA), *N*-hydroxytenamfetamine (N-OH MDA).
(also see annex)

SULFURIC ACID

Molecular Formula: H₂SO₄

Molecular Weight: 98.08

International Control: Table II, 1988 Convention

Harmonized System Number*: 2807.00.0000

Other Names: Acide sulfurique

Acido sulfurico

Bov

Dipping acid

Hydroot

Hydrogen sulfate

Matting acid

Nordhausen acid

Schwefelsäurelösungen

Schwefelsäure

Spent sulfuric acid

Spirit of Sulfur

Sulphuric acid

Vitriol brown oil

Vitriol, oil of

Zwavelzuuroplossingen

Oil of Vitriol

Physical Appearance:

Clear, colourless, odourless oily liquid, more viscous than water.

Chemical/Physical Properties:

Melting Point: 10.5°C

Boiling Point: 290°C

Density (g/cm³, 20°C): 1.841

Solubility: Miscible with water and with alcohol.

!!! SAFETY WARNING !!!

- *extremely corrosive to all body tissues*
- *Reacts with water or steam to produce heat.*

STORAGE/HANDLING

- *Store in airtight containers of glass or other inert material (unbreakable packaging if possible).*
- *Keep separate from combustible substances, reducing agents and bases*
- *Ventilate at floor level.*

- *Handle at a well ventilate place, under a hood or with respiratory protection.*
- *Wear safety goggles or a face shield, protective clothing and gloves.*
- ***UNDER NO CIRCUMSTANCES ADD WATER TO SULFURIC ACID. WHEN DILUTING ALWAYS ADD SULFURIC ACID TO WATER SLOWLY, STIRRING CONSTANTLY.***

- *In case of:*
 - inhalation:*** → *fresh air, rest, place in half-sitting position, seek medical advice;*
 - contact with skin:*** → *remove contaminated clothing, flush with plenty of water of shower, seek medical advice;*
 - contact with eyes:*** → *immediately rinse with plenty of water (min. 10 minutes), immediately seek medical advice;*
 - ingestion:*** → *drink a lot of water,*
- *DO NOT induce vomiting,*
- *immediately seek medical advice.*

- *In case of fire in immediate vicinity, DO NOT use water-based extinguishers.*

Legitimate Use:

In the production of sulfates; as an acidic oxidizer, a dehydrating and purifying agent; for the neutralization of alkaline solutions; as a catalyst in organic synthesis, in the manufacture of fertilizers, explosives, dyestuffs, paper; as a component of drain and metal cleaners, anti-rust compounds and automobile battery fluids.

Illicit Use:

In the extraction process of coca leaves (leading to cocaine), in the conversion process of coca paste to cocaine base; in the production of sulfate salts of mescaline and morphine; in the clandestine synthesis of amfetamine and its derivatives, pethidine and MPPP. (also see annex)

THIONYL CHLORIDE

Molecular Formula: SOCl₂ (= Cl₂OS)

Molecular Weight: 118.97

International Control: Not under International Control

Other Names: Chlorure de thionyle

Oxychlorure de soufre

Sulfinyl chloride

Sulfurous dichloride

Sulfurous oxychloride

Sulfur chloride oxide

Sulfur oxychloride

Thionylchlorid

Thionyl dichloride

Physical Appearance:

Colourless to pale yellow or reddish, fuming, refractive liquid with a suffocating, pungent odour.

Chemical/Physical Properties:

Melting Point: -104.5°C

Boiling Point: 79°C

Density (g/cm³, 20°C): 1.638

Solubility: Miscible with benzene, chloroform, carbon tetrachloride.
It is decomposed by water and by alcohols.

!!!!!! SAFETY WARNING !!!!!!

- *strongly corrosive*
- *vapours/fumes corrosive to the eyes and the respiratory tract*
- *More severe exposures result in pulmonary edema.*
- *reacts with air to form corrosive fumes*
- *When heated to decomposition (≥ 140 °C) it emits toxic fumes.*
- *reacts violently with water, alcohols and many organic compounds with the risk of fire and explosions*

STORAGE/HANDLING

- *Keep in a dry, dark place.*
- *Separate from bases, alcohols and many other organic compounds.*

- *Handle at a well ventilate place, under a hood or with respiratory protection.*
- *Wear safety goggles or a face shield, protective clothing and gloves.*

- *In case of:*
 - inhalation: → fresh air, rest, place in half-sitting position,
→ seek medical advice;*
 - contact with skin: → remove contaminated clothing,
→ flush with plenty of water or shower,
→ seek medical advice;*
 - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
→ immediately seek medical advice;*
 - ingestion: → drink a lot of water,
→ immediately seek medical advice.*

Legitimate Use:

Chlorinating agent, especially to form acyl chlorides; chemical intermediate and catalyst.

Illicit Use:

In the clandestine manufacture of heroin; in the clandestine synthesis of mescaline, metamfetamine and pethidine. (also see annex)

TOLUENE

Molecular Formula: C₇H₈

Molecular Weight: 92.13

International Control: Table II, 1988 Convention.

Harmonized System Number*: 2902.30.0000
2707.20.0000

Other Names: Antisal 1a

Benzene, methyl-
Methacid, -e
Methane, phenyl-
Methyl benzene
Methylbenzene
Méthylbenzène
Méthylphène
Methylbenzol
NCI-C07272
Phenyl methane
Phenylmethane
Phénylméthane
RCRA Waste Number U220
Toluen
Toluène
Toluene
Tolu-sol
Toluol
Toluolo

Physical Appearance:

Mobile refractive colourless highly inflammable liquid with a benzene-like odour.

Chemical/Physical Properties:

Melting Point: -94.5°C

Boiling Point: 110°C

Density (g/cm³, 20°C): 0.8669

Solubility: Miscible with alcohol, chloroform, ethyl ether, benzene and glacial acetic acid. Slightly soluble in water.

!!! SAFETY WARNING !!!

- *highly flammable*
- *moderately toxic by ingestion and inhalation*
- *Inhalation of higher doses results in headache, nausea, impairment of coordination and reaction time.*
- *skin and severe eye irritant*
- *experimental teratogen, mutation data reported*
- *incompatible with strong oxidants*

STORAGE/HANDLING

- *Store in airtight containers at a fireproof place.*
- *Separate from oxidants.*

- *Keep away from open flame and sparks, no smoking.*
- *Handle at a well ventilate place, under a hood or with respiratory protection.*
- *Wear safety goggles and gloves.*

- *In case of:*

inhalation: → *fresh air, rest,*

→ *seek medical advice;*

contact with skin: → *remove contaminated clothing,*

→ *wash with plenty of water and soap,*

→ *seek medical advice if necessary;*

contact with eyes: → *immediately rinse with plenty of water (min. 10 minutes),*

→ *seek medical advice;*

ingestion: → *drink a lot of water,*

→ *DO NOT induce vomiting,*

→ *immediately seek medical advice.*

Legitimate Use:

In the manufacture of explosives, dyes, coatings, other organic substances and as a gasoline additive and industrial solvent.

Illicit Use:

A solvent used in the clandestine synthesis of controlled substances such as fentanyl, amphetamine, phencyclidine (PCP) and their analogues; methaqualone, mecloqualone, methadone, cocaine and psilocine. (also see annex)

REFERENCES

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USA Notification and Supporting Documentation to Add 3,4-Methylenedioxyphenyl-
-2-propanone, *N*-Acetylanthranilic Acid, Hydrochloric Acid, Methyl Ethyl Ketone,
Piperonal, Potassium Permanganate, Toluene, Safrole, Isosafrole and Sulfuric Acid to
Table II of the Annex to the 1988 United Nations Convention against Illicit Traffic in
Narcotic Drugs and Psychotropic Substances (1991).

ANNEX

**Substances most frequently used
in the illicit manufacture of drugs under international control**

Table I

DRUGS UNDER INTERNATIONAL CONTROL	SUBSTANCES FREQUENTLY USED
Heroin	Acetic acid Acetic anhydride Acetone Acetyl chloride Chloroform Ethyl ether Ethylidene diacetate Hydrochloric acid Methyl ethyl ketone Phosphorous pentachloride Phosphorous trichloride Sulfuric acid Thionyl chloride
Cocaine	Acetic acid Acetic anhydride Acetone Chloroform Ethyl ether Hydrochloric acid Methyl ethyl ketone Potassium permanganate Sulfuric acid Toluene
Amfetamine, Metamfetamine	Acetic acid Acetic anhydride Acetone Chloroform Ephedrine Ethyl ether Hydrochloric acid Phenylacetic acid 1-Phenyl-2-propanone Phosphorous pentachloride Pseudoephedrine Sulfuric acid Thionyl chloride Toluene
Ring-Substituted Derivatives of Amfetamine and Metamfetamine (e.g. tenamfetamine (MDA), 3,4-methylenedioxyamfetamine (MDMA), brolamfetamine (DOB), 2,5-dimethoxyamfetamine (DMA))	Acetic acid Acetone Chloroform Ethyl ether Hydrochloric acid Isosafrole 3,4-Methylenedioxyphenyl-2-propanone Piperonal

DRUGS UNDER INTERNATIONAL CONTROL	SUBSTANCES FREQUENTLY USED
	Safrole Sulfuric acid Toluene
(+) - Lysergide (LSD)	Acetone Chloroform Ergometrine Ergotamine Ethyl ether Hydrochloric acid Lysergic acid
Methaqualone, Mecloqualone	Acetic anhydride <i>N</i> -Acetylanthranilic acid Anthranilic acid Chloroform Ethyl ether Hydrochloric acid Phosphorous trichloride Toluene

Table II

SUBSTANCES FREQUENTLY USED	DRUGS UNDER INTERNATIONAL CONTROL						
	Heroin	Cocaine	Amfetamine Metamfetamine	Ring-substituted derivatives of amfetamine and metamfetamine	(+)-Lysergide (LSD)	Methaqualone, Mecloqualone	Miscellaneous *
Acetic acid	X	X	X	X			X (7)
Acetic anhydride	X	X	X			X	X (2,8)
Acetone	X	X	X	X	X		
<i>N</i> -Acetylanthranilic acid						X	
Acetyl chloride	X						X (8)
Anthranilic acid						X	
Chloroform	X	X	X	X	X	X	X (3,4,5,6)
Ephedrine			X				
Ergometrine					X		
Ergotamine					X		
Ethyl ether	X	X	X	X	X	X	X (1,2,3,4,5,6,7,8)
Ethylidene diacetate	X						
Hydrochloric acid	X	X	X	X	X	X	X (1,2,3,4,5,6,8)
Isosafrole				X			
Lysergic acid					X		

SUBSTANCES FREQUENTLY USED	DRUGS UNDER INTERNATIONAL CONTROL						
	Heroin	Cocaine	Amfetamine Metamfetamine	Ring-substituted derivatives of amfetamine and metamfetamine	(+)-Lysergide (LSD)	Methaqualone, Mecloqualone	Miscellaneous *
3,4-Methylenedioxyphenyl- -2-propanone				X			
Methyl ethyl ketone	X	X					
Phenylacetic acid			X				
1-Phenyl-2-propanone			X				
Phosphorous pentachloride	X		X				X (3)
Phosphorous trichloride	X					X	
Piperidine							X (1)
Piperonal				X			
Potassium permanganate		X					
Pseudoephedrine			X				
Safrole				X			
Sulfuric acid	X	X	X	X			X (3,7)
Thionyl chloride	X		X				X (3,7)
Toluene		X	X	X		X	X (1,2,4,6)

- * 1 = Phencyclidine (PCP) and its analogues
- 2 = Fentanyl and its derivatives and analogues
- 3 = Mescaline
- 4 = Psilocine
- 5 = DET (*N,N*-diethyltryptamine) and DMT (*N,N*-dimethyltryptamine)
- 6 = Methadone
- 7 = Pethidine and MPPP (1-methyl-4-phenyl-4-propionoxypiperidine)
- 8 = PEPAP (1-(2-phenylethyl)-4-phenyl-4-acetyloxypiperidine)