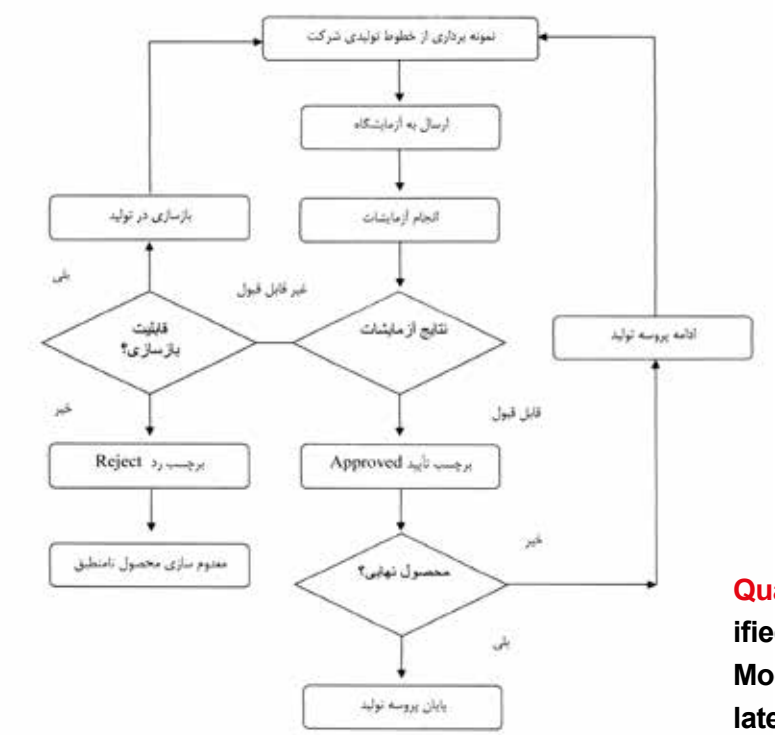
Neutron Pharmachemical Company is one of the biggest manufacturers of chemical Material laboratory products in Iran.
Our team with More than 15 years of Experience in Chemical, Pharmaceutical, Hygiene and cosmetics, Laboratory, Water and wastewater industries, Present wide range of Solvents, acids, bases, Indicator reagent and Standard solution with Best Quality In Iranian Market.

شرکت شیمی دارویی نوترون یکی از بزرگترین تولیدکنندگان مواد شیمیایی آزمایشگاهی در ایران می باشد.
تیم ما بیش از پانزده سال تجربه در صنایع شیمیایی، دارویی، آرایشی، بهداشتی، آزمایشگاهی و آب و فاضلاب، رنج متنوعی از حلالها ، اسیدها، بازها، معرفها و محلول های استاندارد را با بالاترین کیفیت تهیه کرده و به بازار ایران عرضه می دارد.

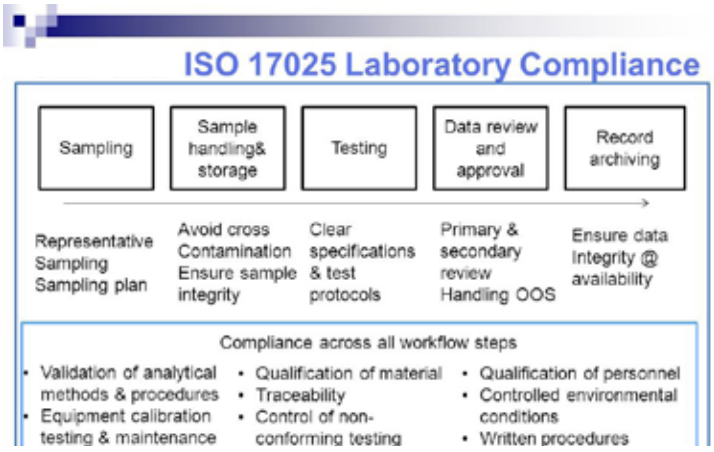
Quality Assurance Department in Neutron Pharmachemical company, has founded a quality management system and Structured a Quality documentation, to gain customer Satisfaction and Increase Our share in Domestic and international Market by Finding Proper Respond along the lines of customer requirements.

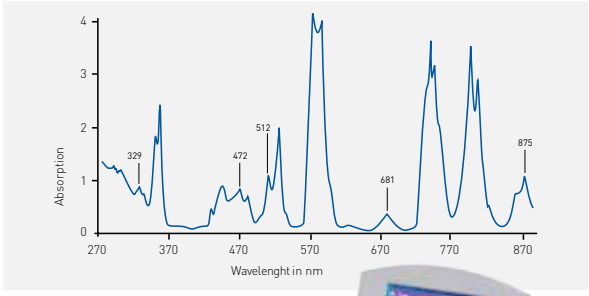
واحد تضمین کیفیت شرکت شیمی دارویی نوترون با پایه گذاری سیستم مدیریت کیفیت و ایجاد ساختار مستندات کیفی، قصد دارد با پاسخ گویی مناسب ، در راستای نیازهای مشتری، رضایت مشتریان را جلب و سهم فروش خود را در بازارهای داخلی و خارجی افزایش دهد.



Quality Control Laboratory with the support of Qualified and Educated Personnel and Possession of the Modern Analysis Instruments and also applying the latest International Standards WHO, ASTM, BP, USP, JP, FDA, EPA, ISO, Asses the Quality of Raw Material, Finished Products and Manufacture Process in accordance with GLP Rules and ISO 17025.

آزمایشگاه کنترل کیفیت شرکت شیمی دارویی نوترون با پشتیبانی پرسنل آموزش دیده و شایسته، با برخورداری از مدرن ترین دستگاههای آنالیز و همچنین بکارگیری آخرین دستورالعملها و استانداردهای بین المللی **ISO, EPA, FDA, JP, USP, BP, ASTM, WHO** مواد اولیه ، محصول نهایی و فرایندهای تولیدی خود را مطابق الزامات **GLP, ISO ۱۷۰۲۵** مورد ارزیابی کیفی قرار می دهد.





Neutron Pharmachemical Company Research and Validation Lab with highly Skilled Personnel with advantage of several years of involvement in in Chemical, Pharmaceutical, Hygiene, cosmetics, Laboratory industries and Serving Individuals, Legal Entities and various Organizations in terms of MoU in following Fields:

- **Chemical Material Analysis**
- **Formulation of Chemical and Pharmaceutical Material**
- **Presenting Analyzing Methods**
- **Analityical Metod Validation Training.**
- **Analityical Instrument Qualification Training Like, HPLC, GC, UV_VIS, TOC, KF, Titrotor and etc.**

آزمایشگاه تحقیقات و معتبرسازی شرکت شیمی دارویی نوترون با کادرعلمی مجرب و با بهره گیری از تجارب چندین ساله در صنایع شیمیایی ، آزمایشگاهی، دارویی، آرایشی و بهداشتی، آمادگی و توانمندی خود راجهت ارائه خدمات به اشخاص حقیقی، حقوقی و ارگانهای مختلف در قالب ارائه تفاهم نامه فی ما بین در زمینه های زیر را دارد:

۱. آنالیز مواد شیمیایی
۲. فرمولاسیون موادشیمیایی و دارویی
۳. ارائه روشهای آنالیز
۴. مشاوره و آموزش معتبرسازی روش های آنالیز
۵. مشاوره و آموزش کیفیت سنجی دستگاههای آنالیز مانند:

HPLC , GC, UVVIS, TOC, KF,Titrator, Dissolution …

Our Programming, Storage and Sales Department by Compliance to (GSP) Rules and Communicating effectively with the Customers tries to Present Scientific Data and Appropriate Service in the Allocated Period to Meet the Customers Satisfaction

واحدبرنامه ریزی ، انبارداری و فروش شرکت شیمی دارویی نوترون با رعایت الزامات انبارداری **(GSP)** و برقراری ارتباط موثر و کارآمد با مشتریان خود سعی میکند با ارائه اطلاعات علمی، خدمات مناسبی را در مدت زمان تعهد داده شده به مشتری ارائه دهد و نیاز مشتریان خود را بر آورده سازد.

Material Safety Data Sheet
Methyl alcohol MSDS

Section 1: Chemical Product and Company Identification

Product Name: Methyl alcohol

Catalog Codes: SLM3064, SLM3952

CAS#: 67-56-1

RTECS: PC1400000

TSCA: TSCA 8(b) inventory: Methyl alcohol

CI#: Not applicable.

Synonym: Wood alcohol, Methanol; Methylol; Wood Spirit; Carbinol

Chemical Name: Methanol

Chemical Formula: CH3OH

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Methyl alcohol	67-56-1	100

Toxicological Data on Ingredients: Methyl alcohol: ORAL (LD50): Acute: 5628 mg/kg [Rat]. DERMAL (LD50): Acute: 15800 mg/kg [Rabbit]. VAPOR (LC50): Acute: 64000 ppm 4 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator). Severe over-exposure can result in death.

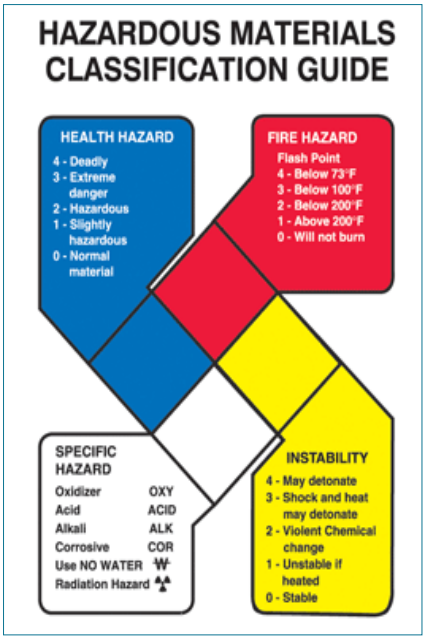
Potential Chronic Health Effects:
Slightly hazardous in case of skin contact (sensitizer). CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Classified POSSIBLE for human. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to eyes. The substance may be toxic to blood, kidneys, liver, brain, peripheral nervous system, upper respiratory tract, skin, central nervous system (CNS), optic nerve. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Neutron Pharmachemical Co.
Physicochemical Quality Control Laboratory
CERTIFICATE OF ANALYSIS

Product Name	*Sodium Hydroxide flake*	***Product Code***	*1.1510*
Batch No.	*024*	***Sub Batch No.***	*0252016D09*
Quantity	*500 kg*	***QC No.***	*FP003*
Mfg. Date	*2016.04.06*	***Date of release***	*2016.04.09*
Minimum shelf life	*2019.04.06*	***Grade***	*Laboratory USP Reagent*

Tests	Specifications	Results	Unit
	ite ,or practically white , fused mass , in ll pellets , in flaks, or sticks & in other as. is hard & brittle & shows a crystalline ture. Exposed to the air , it rapidly absorb on dioxide & moisture.	Conforms	
	soluble in water & in alcohol.	Conforms	
	h potassium pyroantimoanate a dense ipitate is formed & intense yellow color to nluminous flame	Conforms	
	olution is complete ,clear,& colorless to ttly colored	Conforms	
	precipitate is formed	Conforms	
	I.T 0.003	Conforms	%
	I.T 3.0	1.5	%
	ween 95.0 – 100.5 % of total alkali, ulated as NaOH	98.2	%



Grades of Chemicals

- **Ultar Pure For Choromatography -** for Choromatography application.
- **Laboratoary -** A grade suitable for general use.
- **USP -** Chemical that meet the requirements of the US Pharmacopiea.
- **BP -** Chemical that meet the requirements of the BP Pharmacopiea.
- **Extra Pure -** A grade suitable for general use.
- **Cleaning & Disinfect Solution -** A grade suitable for Cleaning & Disinfect use.
- **Histology -** A grade suitable for medical laboratoary Use.
- **ASTM -** Chemical that meet the requirements of the ASTM Standard.
- **Indicator -** A grade suitable for Indicate of colour change.

Product code: 1.1240.

Technical Information:

Formula:	CH_4O
Chemical formula:	CH_3OH
Density:	0.79 g/cm3 (20 °C)
Molar mass:	32.04 g/mol
CAS number:	67-56-1
EC index number:	603-001-00-X
HS code:	29051100
EC number:	200-659-6
Storage (temperature):	Without limitation
SDS:	available
RTECS:	PC1400000
R phrase:	R 11-23/24/25-39/23/24/25
S phrase:	S 7-16-36/37-45
Odour:	characteristic
Form:	liquid
Color:	colourless
Explosion limit:	5.5 -36.5 Vol %
Ignition temperature:	455 °C (DIN 51794)
Solubility in water:	(20 °C) soluble
Flash point:	11 °C (c.c.)
Boiling point:	64.5 °C (1013 hPa)
Melting point:	-98 °C
Vapour pressure:	128 hPa (20 °C)
Viscosity dynamical:	0.597 mPa*s (20 °C)
Saturation concentration (air):	166 g/m3 (20 °C)

Methanol

For Isocratic Liquid chromatography

CH_3OH

M= 32.04 g/mol

1lit= 0.79 g/cm^3

Specification:

Assay	≥	99.8	%
Solubility		Conforms	
Color & Description		Conforms	
Identification		Conforms	
Alkalinity	≤	3.0	ppm
Acidity	≤	0.45	ml
Acetone & aldehyde		Conforms	
Residue on evaporation	≤	3.0	mg/l
Transmission at 225nm	≥	50	%
Transmission at 240nm	≥	80	%
Transmission from 265nm	≥	98	%
Absorbance at 235nm	≤	2.0	mAU
Absorbance at 254nm	≤	1.0	mAU
Boiling Point		64.0 – 65.0	°C
Filtered by 0.2 µm suitable filter			
Water	≤	0.03	%

Neutron
Pharmachemical Co.

www.neutronpharmachemical.com
info@neutronpharmachemical.com
Responsible For Quality
Tel: +98 21 66906733
Made in IRAN For Export

Batch No. Sub Batch No. Packaging

016 0042016D06 2.5 Lit

Minimum shelf life 2019 04

Version NO. 00

Packaging

Pakcaging

- **1 and 2.5 Liter glass bottles for liquid chemicals.**
- **250 ml, 500 ml, 1000 ml, 2.5, 5, 10 and 20 liter plastic containers for liquid chemicals.**
- **5, 25, 50, 100, 800, 1000, 5000 and 10000 gram plastic containers for soild chemicals.**

Furthermore we can also packages our products according to customer's request.

Pharmacopoeia Reagent Grade

Acetic acid 100% glacial

Product Code: **1.1010.**

Laboratory USP Reagent Grade

$C_2H_4O_2$
M= 60.05 g/mole
1lit= 1.05 g/cm^3

Specification:

Assay		**99.5 – 100.5**	**%**
Color & Description		**Conforms**	
Solubility		**Conforms**	
Identification		**Conforms**	
Chloride (Cl)		**Conforms**	
Sulfate		**Conforms**	
Heavy metals	≤	**0.001**	**%**
Nonvolatile residue	≤	**0.005**	**%**
Ready oxidizable substance		**Conforms**	

Glass Bottles		
1	Liter	☒
2.5	Liter	☒

Plastic container		
1	Liter	☐
2.5	Liter	☒

Plastic Gallon		
5	Liter	☒
10	Liter	☒
20	Liter	☒

Technical Information

Formula:	**C2H4O2**
Chemical formula:	**CH3COOH**
Density:	**1.05 g/cm3 (20 ˚C)**
Molar mass:	**60.05 g/mol**
CAS number:	**64-19-7**
EC index number:	**607-002-00-6**
HS code:	**29152100**
EC number:	**200-580-7**
Storage (temperature):	**Store at +20 ˚C to +25 ˚C**
SDS	**available**
RTECS:	**AF1225000**
R phrase:	**R 10-35**
S phrase:	**S 23.2-26-45**
Odour:	**pungent**
Form:	**liquid**
Color:	**colourless**
Explosion limit:	**4 -19.9 Vol %**
Ignition temperature:	**485 ˚C**
PH value:	**2.5 (50 g/l 20 ˚C)**
Solubility in water:	**(20˚C) soluble**
Solubility in ethanol:	**soluble**
Refractive index:	**1.37 (20 ˚C)**
Flash point:	**39 ˚C (c.c.)**
Boiling point:	**116 - 118 ˚C (1013 hPa)**
Melting point:	**17 ˚C**
Vapour pressure:	**15.4 hPa (20 ˚C)**
Viscosity dynamical :	**1.22 mPa*s (20 ˚C)**
Viscosity kinematic:	**1.17 mPa*s (20 ˚C)**
Saturation concentration (air):	**38 g/m3 (20 ˚C)**

Acetone

Product Code: **1.1040.**

Laboratory USP Reagent Grade

C_3H_6O
M= 58.08 g/mole
1lit= 0.79 g/cm^3

Specification:

Assay	**≥**	**99.0**	**%**
Description		**Conforms**	
Solubility		**Conforms**	
Identification		**Conforms**	
Specific gravity		**0.789 – 0.791**	**g/cm^3**
Nonvolatile residue	**≤**	**0.004**	**%**
Readily carbonizable substance		**Conforms**	
Water	**≤**	**0.5**	**%**

Glass Bottles		
1	Liter	☒
2.5	Liter	☒

Plastic container		
1	Liter	☐
2.5	Liter	☒

Plastic Gallon		
5	Liter	☒
10	Liter	☒
20	Liter	☒

Technical Information

Formula:	**C3H6O**
Chemical formula:	**CH3COCH3**
Density:	**0.79 g/cm3 (20 ˚C)**
Molar mass:	**58.08 g/mol**
CAS number:	**67-64-1**
EC index number:	**606-001-00-8**
HS code:	**29141100**
EC number:	**200-662-2**
Storage (temperature):	**Store at +15 ˚C to +25 ˚C**
MSDS	**available**
RTECS:	**AL3150000**
R phrase:	**R 11-36-66-67**
S phrase:	**S 9-16-26**
Odour:	**fruity**
Form:	**liquid**
Color:	**colourless**
Explosion limit:	**2.6 -12.8 Vol %**
Ignition temperature:	**465 ˚C (DIN 51794)**
PH value:	**5 - 6 (395 g/l 20 ˚C)**
Solubility in water:	**(20˚C) soluble**
Solubility in ethanol:	**soluble**
Solubility in chloroform:	**soluble**
Flash point:	**< -20 ˚C (c.c.)**
Boiling point:	**56.2 ˚C (1013 hPa)**
Melting point:	**-95 ˚C**
Vapour pressure:	**233 hPa (20 ˚C)**
Viscosity dynamical :	**0.32 mPa*s (20 ˚C)**
Saturation concentration (air):	**533 g/m3 (20 ˚C)**

Chloroform

Product Code: **1.1080.**

Laboratory BP Reagent Grade

$CHCl_3$
M= 119.38 g/mol
1lit= 1.48 g/cm^3

Specification:

Assay	**≥**	**99.0**	**%**
Solubility		**Conforms**	
Description		**Conforms**	
Identification		**Conforms**	
Specific gravity		**1.474 – 1.479**	**g/cm^3**
Acidity or Alkalinity		**Conforms**	
Chloride		**Conforms**	
Free chlorine		**Conforms**	
Aldehyde		**Conforms**	
Ethanol	**≤**	**1.0**	**%**
Nonvolatile residue	**≤**	**0.001**	**%**
Foreign chlorine compounds		**Conforms**	
Total impurity	**≤**	**0.001**	**%**
Water	**≤**	**0.1**	**%**

Glass Bottles		
1	Liter	☒
2.5	Liter	☒

Plastic container		
1	Liter	☐
2.5	Liter	☒

Plastic Gallon		
5	Liter	☒
10	Liter	☒
20	Liter	☒

Technical Information

Formula:	**CHCl3**
Density:	**1.48 g/cm3 (20 ˚C)**
Molar mass:	**119.38 g/mol**
CAS number:	**67-66-3**
EC index number:	**602-006-00-4**
HS code:	**29031300**
EC number:	**200-663-8**
Storage (temperature):	**Store at +15 ˚C to +25 ˚C**
SDS	**available**
RTECS:	**FS9100000**
R phrase:	**R 22-38-40-48/20/22**
S phrase:	**S 36/37**
Odour:	**sweetish**
Form:	**liquid**
Color:	**colourless**
Solubility in water:	**8 g/l (20 ˚C)**
Boiling point:	**61 ˚C**
Melting point:	**-63 ˚C**
Vapour pressure:	**213 hPa (20 ˚C)**
Viscosity dynamical:	**0.56 mPa*s (20 ˚C)**
Saturation concentration (air):	**1027 g/m3 (20 ˚C)**

Citric acid anhydrous

Product Code: 1.1090.

Laboratory USP Reagent Grade

$C_6H_8O_7$
M= 192.13 g/mole

Specification:

Assay		99.5 – 100.5	%
Description		Conforms	
Identification		Conforms	
Solubility		Conforms	
Heavy metals	≤	0.001	%
Sulfate	≤	0.015	%
Residue on ignition	≤	0.1	%
Melting point	~	153	%
Clarity of solution		Conforms	
Color of solution		Conforms	
Limit of oxalic acid	≤	0.036	%
Water	≤	1.0	%
Readily carbonizable sub.		Conforms	

Glass Bottles		
1	Litr	☐
2.5	Litr	☐
25	gr	☐
Plastic container		
100	gr	☐
250	gr	☐
800	gr	☐
Plastic Gallon		
5	Litr	☒
15	Litr	☒
200	Litr	☒

Technical Information

Formula:	C6H8O7
Chemical formula:	(HOOCCH2)2C(OH)COOH
Density:	1.665 g/cm3 (18 ˚C)
Molar mass:	192.13 g/mol
Bulk density:	~ 560 kg/m3
CAS number:	77-92-9
HS code:	29181400
EC number:	201-069-1
Storage (temperature):	Without limitations.
SDS	available
RTECS:	GE7350000
R phrase:	R 36
S phrase:	S 26
Odour:	odourless
Form:	powder
Color:	white
Ignition temperature:	345 ˚C
PH value:	~ 1.7 (100 g/l 20 ˚C)
Solubility in water:	1330 g/l (20 ˚C)
Solubility in ethanol:	383 g/l (25 ˚C)
Solubility in chloroform:	insoluble
Boiling point:	(decomposition)
Melting point:	~ 153 ˚C (decomposition)
Vapour pressure:	< 0.1 hPa (20 ˚C)
Thermal decomposition:	175 ˚C

Dichloromethane

Product Code: 1.1100.

Laboratory USP Reagent Grade

$CH_2 CL_2$
M= 84.93 g/mole
1lit= 1.32 g/cm^3

Specification:

Assay	≥	99.0	%
Solubility		Conforms	
Description		Conforms	
Identification		Conforms	
Specific gravity		1.318– 1.322	g/cm^3
Free Chlorine		Conforms	
Limit of hydrogen chloride	≤	0.01	%
Limit of nonvolataile residue	≤	0.002	%
Heavy metals	≤	1.0	ppm
Water	≤	0.02	%

Glass Bottles		
1	Litr	☒
2.5	Litr	☒
Plastic container		
1	Litr	☐
2.5	Litr	☒
Plastic Gallon		
5	Litr	☒
10	Litr	☒
20	Litr	☒

Technical Information

Formula:	CH2Cl2
Density:	1.33 g/cm3 (20 ˚C)
Molar mass:	84.93 g/mol
CAS number:	75-09-2
EC index number:	602-004-00-3
HS code:	29031200
EC number:	200-838-9
Storage (temperature):	Store at +15˚C to +25 ˚C
SDS	available
RTECS:	PA8050000
R phrase:	R 40
S phrase:	S 23.2-24/25-36/37
Odour:	seweetish
Form:	liquid
Color:	colourless
Explosion limit:	13 -22 Vol %
Ignition temperature:	605 ˚C
Solubility in water:	20 g/l (20 ˚C)
Boiling point:	40 ˚C (1013 hPa)
Melting point:	-95 ˚C
Vapour pressure:	475 hPa (20 ˚C)
Evaporation number:	1.9 ˚C
Thermal decomposition:	> 120 ˚C
Viscosity dynamical:	0.43 mPa*s (20 ˚C)
Saturation concentration (air):	1549 g/m3 (20 ˚C)

Ethyl acetate

Product Code: 1.1130.

Laboratory USP Reagent Grade

$C_4H_8O_2$
M= 88.10 g/mole
1lit= 0.90 g/cm^3

Specification:

Assay		99.0 – 100.5	%
Description		Conforms	
Solubility		Conforms	
Specific gravity		0.894 – 0.898	g/cm^3
Identification		Conforms	
Acidity	≤	0.1	%
Readily carbonizable sub.		Conforms	
Limit of methyl compounds		Conforms	
Limit of nonvolatile residue	≤	0.002	%
Water	≤	0.1	%

Glass Bottles		
1	Liter	☒
2.5	Liter	☒

Plastic container		
1	Liter	☐
2.5	Liter	☒

Plastic Gallon		
5	Liter	☒
10	Liter	☒
20	Liter	☒

Technical Information

Formula:	C4H8O2
Chemical formula:	CH3COOC2H5
Density:	0.90 g/cm3 (20˚C)
Molar mass:	88.11 g/mol
CAS number:	141-78-6
EC index number:	607-022-00-5
HS code:	29153100
EC number:	205-500-4
Storage (temperature):	Without limitations.
SDS	available
RTECS:	AH5425000
R phrase:	R 11-36-66-67
S phrase:	S 9-16-26-33
Odour:	fruit-like
Form:	liquid
Color:	colourless
Explosion limit:	2.1 -11.5 Vol %
Ignition temperature:	460 ˚C (DIN 51794)
Solubility in water:	85.3 g/l (20 ˚C)
Solubility in ethanol:	soluble
Flash point:	-4 ˚C c.c., (DIN 51794)
Boiling point:	77 ˚C
Melting point:	-83 ˚C
Vapour pressure:	97 hPa (20 ˚C)
Viscosity dynamical:	0.44 mPa*s (20 ˚C)
Saturation concentration (air):	336 g/m3 (20 ˚C)

Ethylene glycol

Product Code: 1.1140.

Laboratory USP Reagent Grade

$C_2H_6O_2$
M= 62.07 g/mol
1lit= 1.11 g/cm^3

Specification:

Assay	≥	99.0	%
Solubility		Conforms	
Description		Conforms	
Identification (GC)		Conforms	
Acidity	≤	0.01	ml
Specification gravity	~	1.110	g/cm^3
Chloride (Cl)	≤	5	ppm
Boiling Range		194 - 200	°C
Water	≤	0.2	%
Residue on ignition	≤	0.005	%

Glass Bottles		
1	Liter	☒
2.5	Liter	☒

Plastic container		
1	Liter	☐
2.5	Liter	☒

Plastic Gallon		
5	Liter	☒
10	Liter	☒
20	Liter	☒

Technical Information

Formula:	C2H6O2
Chemical formula:	HOCH2CH2OH
Density:	1.11 g/cm3 (20˚C)
Molar mass:	62.07 g/mol
CAS number:	107-21-1
EC index number:	603-027-00-1
HS code:	29053100
EC number:	203-473-3
Storage (temperature):	Without limitations.
SDS	available
R phrase:	R 22
Odour:	almost odourless
Form:	liquid
Color:	colourless
Explosion limit:	3.2 -15.3 Vol %
Ignition temperature:	410 ˚C (DIN 51794)
PH value:	6 – 7.5 ˚C (100 g/l 20 ˚C)
Solubility in water:	1000 g/l (20 ˚C)
Solubility in ethanol:	freely soluble
Flash point:	111 ˚C (c.c.)
Boiling point:	-13 ˚C
Melting point:	-83 ˚C
Vapour pressure:	0.053 hPa (20 ˚C)
Thermal decomposition:	> 200 - 250 ˚C
Viscosity dynamical:	21 mPa*s (20 ˚C)
Saturation concentration (air):	0.15 g/m3 (20 ˚C)

Glycerol anhydrous

Product Code: 1.1170.

Laboratory USP Reagent Grade

$C_3H_8O_3$
M= 92.10 g/mol
1lit= 1.26 g/cm³

Specification:

Assay		99.0 – 101.0	%
Description		Conforms	
Solubility		Conforms	
Identification		Conforms	
Specifc density	≥	1.249	g/cm³
Chloride	≤	0.001	%
Sulfate	≤	0.002	%
Heavy metals	≤	0.0005	%
Residue on ignition	≤	0.01	%
Limit of chlorinated compounds	≤	0.003	%
Fatty acids & esters	≤	1.0	%
Diethylene glycol impurity	≤	0.1	%
Ethylene glycol impurity	≤	0.1	%
Other impurity	≤	0.1	%
Total impurity	≤	1.0	%
Water	≤	0.5	%

Glass Bottles
1 Liter
2.5 Liter

Plastic container
1 Liter
2.5 Liter

Plastic Gallon
5 Liter
10 Liter
20 Liter

Technical Information

Formula:	C3H8O3
Density:	1.26 g/cm3 (20˚C)
Molar mass:	92.10 g/mol
CAS number:	56-81-5
HS code:	29054500
EC number:	200-298-5
Storage (temperature):	Store at +5˚C to +30˚C.
SDS	available
RTECS:	MA8050000
Odour:	almost odourless
Form:	liquid
Color:	colourless
Explosion limit:	2.6 – 11.3 Vol %
Ignition temperature:	400˚C
PH value:	~ 5 (100 g/l 20˚C)
Solubility in water:	(20˚C) soluble
Solubility in ethanol:	soluble
Solubility in chloroform:	insoluble
Flash point:	~ 180 ˚C
Boiling point:	290 ˚C (1013 hPa)
Melting point:	~ 18 ˚C
Vapour pressure:	< 0.001 hPa (20 ˚C)
Thermal decomposition:	> 290 ˚C
Viscosity dynamical:	1412 mPa*s (20 ˚C)

Hydrochloric acid 32%

Product Code: 1.1180.

Laboratory BP Reagent Grade

Hcl
M= 36.46 g/mol
1lit= 1.16 g/cm³

Specification:

Assay		30.0 – 34.0	%
Description		Conforms	
Identification		Conforms	
Solubility		Conforms	
Relative density at 20 °C	~	1.16	g/cm³
Sulfate	≤	0.002	%
Appearance of solution		Conforms	
Heavy metals	≤	2	ppm
Residue on evapo-ration	≤	0.01	%
Free Chlorine	≤	4	ppm

Glass Bottles
1 Liter
2.5 Liter

Plastic container
1 Liter
2.5 Liter

Plastic Gallon
5 Liter
10 Liter
20 Liter

Technical Information

Density:	~ 1.16 g/cm3 (20 ˚C)
HS code:	28061000
Storage (temperature):	with out limitation
SDS	available
R phrase:	R 34-37
S phrase:	S 26-36/37/39-45
Odour:	pungent
Form:	liquid
Color:	colourless
Solubility in water:	(20˚C) soluble
Vapour pressure:	21.3 hPa (20 ˚C)
Viscosity dynamical:	1.9 mPa*s (15 ˚C)

Hydrochloric acid 37%

Product Code: 1.1190.

Laboratory BP Reagent Grade

Hcl
M= 36.46 g/mol
1lit= 1.18 g/cm³

Specification:

Assay		35.0 – 39.0	%
Description		Conforms	
Identification		Conforms	
Solubility		Conforms	
Relative density at 20 °C	~	1.18	g/cm³
Sulfate	≤	0.002	%
Appearance of solution		Conforms	
Heavy metals	≤	2	ppm
Residue on evapo-ration	≤	0.01	%
Free Chlorine	≤	4	ppm

Glass Bottles		
1	Liter	☒
2.5	Liter	☒

Plastic container		
1	Liter	☐
2.5	Liter	☒

Plastic Gallon		
5	Liter	☒
10	Liter	☒
20	Liter	☒

Technical Information

Density:	~ 1.18 g/cm3 (20 ˚C)
HS code:	28061000
Storage (temperature):	Store at +2 ˚C to +25 ˚C
SDS	available
R phrase:	R 34-37
S phrase:	S 26-36/37/39-45
Odour:	pungent
Form:	liquid
Color:	colourless
Solubility in water:	(20˚C) soluble
Vapour pressure:	190 hPa (20 ˚C)
Viscosity dynamical:	2.3 mPa*s (15 ˚C)

Methanol

Product Code: 1.1220.

Laboratory USP Reagent Grade

CH_3OH
M= 32.04 g/mol
1lit= 0.79 g/cm³

Specification:

Assay	≥	99.5	%
Solubility		Conforms	
Color & Description		Conforms	
Identification		Conforms	
Alkalinity	≤	3.0	ppm
Acidity	≤	0.45	ml
Readily carbonizable substances		Conforms	
Acetone & aldehyde		Conforms	
Nonvolatile residue	≤	0.001	%
Readily oxidaizable substance		Conforms	
Water	≤	0.1	%

Glass Bottles		
1	Liter	☒
2.5	Liter	☒

Plastic container		
1	Liter	☐
2.5	Liter	☒

Plastic Gallon		
5	Liter	☒
10	Liter	☒
20	Liter	☒

Technical Information

Formula:	CH4O
Chemical formula:	CH3OH
Density:	0.79 g/cm3 (20 ˚C)
Molar mass:	32.04 g/mol
CAS number:	67-56-1
EC index number:	603-001-00-X
HS code:	29051100
EC number:	200-659-6
Storage (temperature):	Without limitation
SDS	available
RTECS:	PC1400000
R phrase:	R 11-23/24/25-39/23/24/25
S phrase:	S 7-16-36/37-45
Odour:	characteristic
Form:	liquid
Color:	colourless
Explosion limit:	5.5 -36.5 Vol %
Ignition temperature:	455 ˚C (DIN 51794)
Solubility in water:	(20˚C) soluble
Flash point:	11 ˚C (c.c.)
Boiling point:	64.5 ˚C (1013 hPa)
Melting point:	-98 ˚C
Vapour pressure:	128 hPa (20 ˚C)
Viscosity dynamical :	0.597 mPa*s (20 ˚C)
Saturation concentration (air):	166 g/m3 (20 ˚C)

Paraffin Liquid

Product Code: 1.1750.

Laboratory USP Reagent Grade

1lit= 0.88 g/cm^3

Specification:

Solubility		Conforms	
Description		Conforms	
Identification		Conforms	
Relative density		0.845 – 0.905	g/cm^3
Acidity or alkalinity	≤	0.1	ml
Dynamic viscosity at 20 °C		25.0 – 80.0	mPa.s
Polycyclic aromatic hydrocarbones		Conforms	
Readily carbonizable substances		Conforms	
Solid paraffin		Conforms	
Kinematic viscosity at 40 °C	≤	34.5	cS

Glass Bottles

1	Liter	☐
2.5	Liter	☒

Plastic container

1	Liter	☐
2.5	Liter	☒

Plastic Gallon

5	Liter	☒
10	Liter	☒
20	Liter	☒

Technical Information

Density:	0.86 g/cm3 (20 ˚C)
CAS number:	8012 - 95 -1 kg/m3
HS code:	27122090
EC number:	232-315-6
Storage (temperature):	Without limitations.
SDS	available
RTECS:	PY8030000
Odour:	odourless
Form:	liquid
Color:	colourless to white
Solubility in water:	(20 ˚C) insoluble
Flash point:	~230˚C
Boiling point:	~ 300 - 500 ˚C
Vapour pressure:	< 0.0001 hPa (20 ˚C)

Phosphoric acid 85%

Product Code: 1.1360.

Laboratory USP Reagent Grade

H_3PO_4
M= 98.00 g/mol
1lit= 1.71 g/cm^3

Specification:

Assay		85.0 – 88.0	%
Description		Conforms	
Solubility		Conforms	
Identification		Conforms	
Specific gravity	~	1.71	g/cm^3
Phosphorus and hypo phosphorus		Conforms	
Sulfate		Conforms	
Heavy metals	≤	0.001	%
Alkali phosphates		Conforms	
Limit of nitrate		Conforms	

Glass Bottles

1	Liter	☒
2.5	Liter	☒

Plastic container

1	Liter	☐
2.5	Liter	☒

Plastic Gallon

5	Liter	☒
10	Liter	☒
20	Liter	☒

Technical Information

Formula:	H_3PO_4
Density:	1.71 g/cm3 (20 ˚C)
HS code:	28092000
Storage (temperature):	Store above +15 ˚C
SDS	available
R phrase:	R 34
S phrase:	S 26-36/37/39-45
Odour:	odourless
Form:	liquid
Color:	colourless
PH value:	< 0.5 (100 g/l 20 ˚C)
Solubility in water:	(20 ˚C) soluble
Solubility in ethanol:	(20 ˚C) soluble
Boiling point:	~ 158 ˚C
Melting point:	~ 21 ˚C
Vapour pressure:	2 hPa (20 ˚C)
Viscosity kinematic:	30.5 mm2/s (25 ˚C)

Potassium hydroxide

Product Code: 1.1390.

Laboratory USP Reagent Grade

KOH
M= 56.11 g/mole

Specification:

Assay	≥	85.0	%
Description		Conforms	
Solubility		Conforms	
Identification		Conforms	
K_2Co_2	≤	3.5	%
Heavy metals	≤	0.003	%
Insoluble substances		Conforms	

Glass Bottles		
5	gr	☐
10	gr	☐
25	gr	☐
Plastic container		
100	gr	☐
500	gr	☐
800	gr	☐
Plastic Gallon		
1	kg	☒
5	kg	☒
10	kg	☒

Technical Information

Formula(Hill):	HKO
Chemical formula:	KOH
Density:	2.04 g/cm3 (20 ˚C)
Molar mass:	56.11 g/mol
CAS number:	1310-58-3
EC index number:	019-002-00-8
HS code:	28152010
EC number:	215-181-3
Storage (temperature):	store at +5 ˚C to+30 ˚C
SDS	available
RTECS:	TT2100000
R phrase:	R 22-35
S phrase:	S 26-36/37/39-45
Odour:	odourless
Form	solid
Color:	colourless
Ph value:	~14 (56 g/l 20 ˚C)
Solubility in water:	1130 g/l (20 ˚C)
Solubility in ethanol:	~400 g/l (20 ˚C)
Boiling point:	1320 ˚C
Melting point:	360 ˚C

Potassium iodide

Product Code: :1.1400.

Laboratory USP Reagent Grade

KI
M= 166.01 g/mole

Specification:

Assay		99.0 -101.5	%
Description & Solubility		Conforms	
Identification		Conforms	
Heavy metals	≤	0.001	%
Alkalinity		Conforms	
Iodate	≤	4	µg/gr
Thiosulfate & barium		Conforms	g/cm³
Limit of nitrate, nitrite & ammonia		Conforms	
Loss on drying	≤	1.0	%

Glass Bottles		
5	gr	☐
10	gr	☐
25	gr	☒
Plastic container		
100	gr	☐
500	gr	☒
800	gr	☐
Plastic Gallon		
1	kg	☒
5	kg	☐
10	kg	☐

Technical Information

Formula :	IK
Density:	3.13 g/cm3
Molar mass:	166.01 g/mole
Bulk density:	~ 1500 kg/m3
CAS number:	7681-11-0
HS code:	28276000
EC number:	231-659-4
Storage :	Without limitations
SDS:	available
RTECS:	TT2975000

2-Propanol

Product Code: 1.1420.

Laboratory USP Reagent Grade

C_3H_8O
M= 60. 10 g/mole
1lit= 0.78 g/cm^3

Specification:

Assay	≥	99.0	%
Solubility		Conforms	
Description		Conforms	
Identification		Conforms	
Limit of nonvolatile residue	≤	0.005	%
Acidity	≤	0.7	ml
Specification gravity		0.783 – 0.787	g/cm^3
Refractive index		1.376 – 1.378	

Glass Bottles		
1	Liter	☒
2.5	Liter	☒
Plastic container		
1	Liter	☐
2.5	Liter	☒
Plastic Gallon		
5	Liter	☒
10	Liter	☒
20	Liter	☒

Technical Information

Formula:	C3H8O
Chemical formula:	CH3CH(OH)CH3
Density:	0.786 g/cm3 (20 ˚C)
Molar mass:	60.10 g/mol
CAS number:	67-63-0
EC index number:	603-117-00-0
HS code:	29051200
EC number:	200-661-7
Storage (temperature):	Store at +5 ˚C to +30 ˚C
SDS	available
RTECS:	NT8050000
R phrase:	R 11-36-67
S phrase:	S 7-16-24/25-26
Odour:	alcohol-like
Form:	liquid
Color:	colourless
Explosion limit:	2 - 12.7 Vol %
Ignition temperature:	425 ˚C (DIN 51794)
Solubility in water:	(20 ˚C) soluble
Solubility in ethanol:	soluble
Solubility in chloroform:	soluble
Flash point:	12 ˚C (c.c.)
Boiling point:	82.4 ˚C (1013 hPa)
Melting point:	-89.5 ˚C
Vapour pressure:	43 hPa (20 ˚C)
Viscosity dynamical:	2.2 mPa*s (20 ˚C)
Saturation concentration (air):	105 g/m3 (20 ˚C)

Silver nitrate

Product Code: 1.1430.

Laboratory USP Reagent Grade

$AgNO_3$
M= 169.87 g/mole

Specification:

Assay	99.8 – 100.5	%
Description	Conforms	
Solubility	Conforms	
Identification	Conforms	
Clarity & color of solution	Conforms	
Copper	Conforms	

Glass Bottles		
5	gr	☒
10	gr	☒
25	gr	☒
Plastic container		
100	gr	☐
500	gr	☐
800	gr	☐
Plastic Gallon		
1	kg	☐
5	kg	☐
10	kg	☐

Technical Information

Formula:	AgNO3
Density:	4.35 g/cm3 (20 ˚C)
Molar mass:	196.87 g/mol
Bulk density:	~ 2350 kg/m3
CAS number:	7761-88-8
EC index number:	047-001-00-2
HS code:	28432100
EC number:	231-853-9
Storage	Without limitations.
SDS	available
R phrase:	R 34-50/53
S phrase:	S 26-45-60-613

Sodium acetate anhydrous

Product Code: 1.1440.

Laboratory USP Reagent Grade

$C_2H_3Na_2$
M= 82.03 g/mole

Specification:

Assay		**99.0 – 101.0**	**%**
Description		**Conforms**	
Solubility		**Conforms**	
Identification		**Conforms**	
Sulfate	≤	**0.005**	**%**
Chloride	≤	**0.035**	**%**
Calcium & magnesium		**Conforms**	
pH (30mg/ml)		**7.5 – 9.2**	**%**
Heavy metals	≤	**0.001**	**%**
Insoluble matter	≤	**0.05**	**%**
Potassium		**Conforms**	
Loss on drying	≤	**1.0**	**%**

Glass Bottles		
5	gr	☐
10	gr	☐
25	gr	☐
Plastic container		
100	gr	☐
500	gr	☐
800	gr	☐
Plastic Gallon		
1	kg	☒
5	kg	☒
10	kg	☒

Technical Information

Formula:	**C2H3NaO2**
Chemical formula:	**CH3COONa**
Density:	**1.52 g/cm3 (20 ˚C)**
Molar mass:	**82.03 g/mol**
Bulk density:	**320 - 470 kg/m3**
CAS number:	**127-09-3**
HS code:	**29152200**
EC number:	**204-823-8**
Storage (temperature):	**Without limitations.**
SDS	**available**
RTECS:	**AJ4300010**
Odour:	**odourless**
Form:	**powder**
Color:	**colourless**
Ignition temperature:	**607 ˚C**
PH value:	**7.5 – 9.2 (30 g/l 20 ˚C)**
Solubility in water:	**365 g/l (20˚C)**
Solubility in ethanol:	**sparingly soluble**
Flash point:	**> 250 ˚C (c.c.)**
Boiling point:	**> 400 ˚C (decomposition)**
Melting point:	**324 ˚C (decomposition)**

Sodium carbonate

Product Code: 1.1450.

Laboratory USP Reagnt Grade

Na_2CO_3
M= 105.99 g/mole

Specification:

Assay		**99.5 -100.5**	**%**
Description		**Conforms**	
Solubility		**Conforms**	
Identification		**Conforms**	
Heavy metals	≤	**0.001**	**%**
water	≤	**0.5**	**%**

Glass Bottles		
5	gr	☐
10	gr	☐
25	gr	☐
Plastic container		
100	gr	☐
500	gr	☒
800	gr	☐
Plastic Gallon		
1	kg	☒
5	kg	☒
10	kg	☒

Technical Information

Formula(Hill):	**CNa_2CO_3**
Chemical formula:	**CNa_2CO_3**
Density:	**2.53g/cm3 (20 ˚C)**
Molar mass:	**105.99 g/mol**
Bulk density:	**~ 1100kg/m3**
CAS number:	**497-19-8**
EC index number:	**011-005-00-2**
HS Code:	**28362000**
EC number:	**207-838-8**
Storge (temperature):	**Without limitations.**
SDS:	**available**
RTECS:	**VZ4050000**
R phrase:	**R 36**
S phrase:	**S 22-26**

Sodium chloride

Product Code: 1.1460.

Laboratory USP Reagent Grade

NaCl

M= 58.44 g/mol

Specification:

Assay		99.0 – 100.5	%
Description		Conforms	
Solubility		Conforms	
Identification		Conforms	
Appearance of solution		Conforms	
Sulfate		Conforms	
Chloride		Conforms	
Barium		Conforms	
Iodides		Conforms	
Ferro cyanides		Conforms	
Magnesium & alkaline earth metals	≤	0.01	%
Iron	≤	2.0	µg/g
Acidity or Alkalinity	≤	0.5	ml
Arsenic	≤	1	µg/g
Heavy metals	≤	5	ppm
Limit of Bromides	≤	0.01	%
Limit of Phosphates	≤	0.0025	%
Nitrate	≤	0.01	AU
Loss on drying	≤	0.5	%

Glass Bottles		
5	gr	☐
10	gr	☐
25	gr	☐
Plastic container		
100	gr	☐
500	gr	☒
800	gr	☐
Plastic Gallon		
1	kg	☒
5	kg	☒
10	kg	☒
20	Litr	☐

Technical Information

Formula:	ClNa
Chemical formula:	NaCl
Density:	2.17 g/cm3 (20 ˚C)
Molar mass:	58.44 g/mol
Bulk density:	~ 1140 kg/m3
CAS number:	7647-14-5
HS code:	25010091
EC number:	231-598-3
Storage (temperature):	Without limitations.
SDS	available
RTECS:	VZ4725000
Odour:	odourless
Form:	solid
Color:	colourless
PH value:	4.5 – 7.0 (100 g/l 20 ˚C)
Solubility in water:	358 g/l (20˚C)
Solubility in ethanol:	0.51 g/l (25˚C)
Boiling point:	1461 ˚C (1013 hPa)
Melting point:	801 ˚C
Vapour pressure:	1.3 hPa (865 ˚C)

tri - Sodium citrate dihydrate

Product Code: 1.1490.

Laboratory USP Reagent Grade

C6H5Na3O7 × 2H2O

M= 294.10 g/mol

Specification:

Assay		99.0 – 100.5	%
Description		Conforms	
Solubility		Conforms	
Identification		Conforms	
Tartrate		Conforms	
Alkalinity		Conforms	
Heavy metals	≤	0.001	%
Water		10.0 – 13.0	%

Glass Bottles		
5	gr	☐
10	gr	☐
25	gr	☐
Plastic container		
100	gr	☐
500	gr	☒
800	gr	☐
Plastic Gallon		
1	kg	☒
5	kg	☒
10	kg	☒

Technical Information

Formula:	C6H5Na3O7 × 2H2O
Molar mass:	294.10 g/mol
Bulk density:	~ 600 kg/m3
CAS number:	6132-04-3
HS code:	29181500
EC number:	200-675-3
Storage (temperature):	Without limitations.
SDS	available
Odour:	odourless
Form:	powder
Color:	white
PH value:	7.5 – 9.0 (50 g/l 25 ˚C)
Solubility in water:	720 g/l (25 ˚C)
Solubility in ethanol:	(25 ˚C) insoluble
Melting point:	150 ˚C
Thermal decomposition:	> 230 ˚C

Sodium dodecyl sulfate (SLS)

Product Code: 1.1500.

Laboratory USP Reagent Grade

$C_{12}H_{25}NaO_4S$
M= 288.38 g/mole

Glass Bottles		
5	gr	☐
10	gr	☐
25	gr	☐
Plastic container		
100	gr	☐
500	gr	☒
800	gr	☐
Plastic Gallon		
1	kg	☒
5	kg	☒
10	kg	☒

Specification:

Description		Conforms	
Solubility		Conforms	
Identification		Conforms	
Heavy metals	≤	0.002	%
Assay (Sodium chloride & Sodium sulfate)	≤	8.0	%
Alkalinity	≤	0.6	ml
Unsulfonated alcohols	≤	4.0	%
Total alcohols	≥	59.0	%

Technical Information

Formula:	C12H25NaO4S
Chemical formula:	C12H25OSO2ONa
Density:	1.1 g/cm3 (20 ˚C)
Molar mass:	288.38 g/mol
Bulk density:	~ 200 -300 kg/m3
CAS number:	151-21-3
HS code:	29209010
EC number:	205-788-1
Storage (temperature):	Store at +5 ˚C to +30 ˚C
SDS	available
R phrase:	R 11-21/22-36/37/38
S phrase:	S 26-36/37
Odour:	almost odourless
Form:	powder
Color:	light yellowish
PH value:	6 – 9 (10 g/l 20 ˚C)
Solubility in water:	150 g/l (20 ˚C)
Solubility in ethanol:	9.96 g/l (20 ˚C)
Flash point:	> 150 ˚C
Melting point:	204 - 207 ˚C
Thermal decomposition:	380 ˚C

Sodium hydroxide granulated

Product Code: 1.1520.

Laboratory USP Reagent Grade

NaOH
M= 40.00 g/mol

Glass Bottles		
5	gr	☐
10	gr	☐
25	gr	☐
Plastic container		
100	gr	☐
500	gr	☒
800	gr	☐
Plastic Gallon		
1	kg	☒
5	kg	☒
10	kg	☒

Specification:

Assay		95.0 - 100.5	%
Description		Conforms	
Solubility		Conforms	
Identification		Conforms	
Heavy metals	≤	0.003	%
Na2Co 3	≤	3.0	%
Potassium		Conforms	
Insoluble substance & organic matter		Conforms	

Technical Information

Formula:	HNaO
Chemical formula:	NaOH
Density:	2.13 g/cm3 (20˚C)
Molar mass:	40.00 g/mol
CAS number:	1310-73-2
EC index number:	011-002-00-6
HS code:	28151100
EC number:	215-185-5
Storage (temperature):	Without limitations.
SDS	available
RTECS:	WB4900000
R phrase:	R 35
S phrase:	S 26-36/27/39-45
Odour:	odourless
Form:	solid
Color:	colourless
PH value:	~ 14 (50 g/l 20 ˚C)
Solubility in water:	1090 g/l (20 ˚C)
Solubility in ethanol:	139 g/l
Boiling point:	1390 ˚C (1013 hPa)
Melting point	323 ˚C

Sodium hydroxide flake

Product Code: 1.1510.

Laboratory USP Reagent Grade

NaOH
M= 40.00 g/mol

Specification:

Assay		95.0 - 100.5	%
Description		Conforms	
Solubility		Conforms	
Identification		Conforms	
Heavy metals	≤	0.003	%
Na2Co3	≤	3.0	%
Potassium		Conforms	
Insoluble substance & organic matter		Conforms	

Glass Bottles		
5	gr	☐
10	gr	☐
25	gr	☐
Plastic container		
100	gr	☐
500	gr	☒
800	gr	☐
Plastic Gallon		
1	kg	☒
5	kg	☒
10	kg	☒

Technical Information

Formula:	HNaO
Chemical formula:	NaOH
Density:	2.13 g/cm3 (20˚C)
Molar mass:	40.00 g/mol
CAS number:	1310-73-2
EC index number:	011-002-00-6
HS code:	28151100
EC number:	215-185-5
Storage (temperature):	Without limitations.
SDS	available
RTECS:	WB4900000
R phrase:	R 35
S phrase:	S 26-36/27/39-45
Odour:	odourless
Form:	solid
Color:	colourless
PH value:	~ 14 (50 g/l 20 ˚C)
Solubility in water:	1090 g/l (20 ˚C)
Solubility in ethanol:	139 g/l
Boiling point:	1390 ˚C (1013 hPa)
Melting point	323 ˚C

Sodium sulfate anhydrous

Product Code: 1.1540.

Laboratory USP Reagent Grade

Na_2SO_4
M= 142.04 g/mole

Specification:

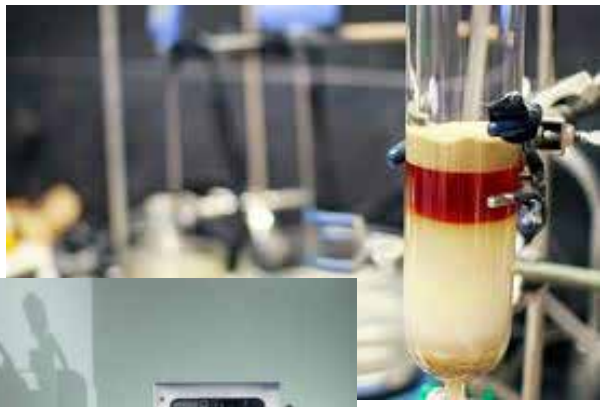
Assay	≥	99.0	%
Description		Conforms	
Solubility		Conforms	
Identification		Conforms	
Chloride	≤	0.02	%
Heavy metals	≤	0.001	ml
Acidity or Alkalinity	≤	0.5	%
Loss on drying	≤	0.5	

Glass Bottles		
5	gr	☐
10	gr	☐
25	gr	☐
Plastic container		
100	gr	☐
500	gr	☒
800	gr	☐
Plastic Gallon		
1	kg	☒
5	kg	☒
10	kg	☒

Technical Information

Formula:	Na2O4S
Chemical formula:	Na2SO4
Density:	2.70 g/cm3 (20 ˚C)
Molar mass:	142.04 g/mol
Bulk density:	~ 1400 - 1600 kg/m3
CAS number:	7757-82-6
HS code:	28331100
EC number:	231-820-9
Storage (temperature):	Without limitations.
SDS	available
RTECS:	WE1650000
Odour:	odourless
Form:	solid
Color:	white
PH value:	5.2 – 8.0 (50 g/l 20 ˚C)
Solubility in water:	200 g/l (20˚C)
Solubility in ethanol:	insoluble
Melting point:	888 ˚C
Thermal decomposition:	> 890 ˚C

Extra Pure Grade



Acetic acid glacial

Product Code: 1.1020.

Extra Pure Grade

$C_2H_4O_2$
M= 60.05 g/mole
1lit= 1.05 g/cm^3

Specification:

Assay	≥	**99.0**	**%**
Color & Description		**Conforms**	
Solubility		**Conforms**	
Identification		**Conforms**	
Specific gravity		**1.048-1.052**	**g/cm^3**

Glass Bottles		
1	Liter	☒
2.5	Liter	☒

Plastic container		
1	Liter	☐
2.5	Liter	☒

Plastic Gallon		
5	Liter	☒
10	Liter	☒
20	Liter	☒

Technical Information

Formula:	**C2H4O2**
Chemical formula:	**CH3COOH**
Density:	**1.05 g/cm3 (20 ˚C)**
Molar mass:	**60.05 g/mol**
CAS number:	**64-19-7**
EC index number:	**607-002-00-6**
HS code:	**29152100**
EC number:	**200-580-7**
Storage (temperature):	**Store at +15 ˚C to +25 ˚C**
SDS	**available**
RTECS:	**AF1225000**
R phrase:	**R 10-35**
S phrase:	**S 23.2-26-45**
Odour:	**pungent**
Form:	**liquid**
Color:	**colourless**
Explosion limit:	**4 -19.9 Vol %**
Ignition temperature:	**485 ˚C**
PH value:	**2.5 (50 g/l 20 ˚C)**
Solubility in water:	**(20˚C) soluble**
Solubility in ethanol:	**soluble**
Refractive index:	**1.37 (20 ˚C)**
Flash point:	**39 ˚C (c.c.)**
Boiling point:	**116 - 118 ˚C (1013 hPa)**
Melting point:	**17 ˚C**
Vapour pressure:	**15.4 hPa (20 ˚C)**
Viscosity dynamical :	**1.22 mPa*s (20 ˚C)**
Viscosity kinematic:	**1.17 mPa*s (20 ˚C)**
Saturation concentration (air):	**38 g/m3 (20 ˚C)**

Benzoic Acid

Product Code: 1.1640.

Extra Pure Grade

$C_7H_6O_2$
M= 122.12 g/mole

Specification:

Assay		99.5 – 100.5	%
Description		Conforms	
Solubility		Conforms	
Identification		Conforms	
Heavy metals	≤	0.001	%
Congealing range		121 - 123	°C
Readily carbonizable substances		Conforms	
Residue on ignition	≤	0.05	%
Readily oxidazable substances	≤	0.5	ml
Water	≤	0.7	%

Glass Bottles

5	gr	☐
1 10	Litr	☐
2.5 25	Litr gr	☐

Plastic container

100	gr	☐
1 500	Litr gr	☒
2.5 800	Litr g	☐

Plastic Gallon

1	kg	☒
5	Litr kg	☒
10	Litr kg	☒
20	Litr	☐

Technical Information

Formula (Hill):	C7H6O2
Chemical formula:	C6H5COOH
Density:	1.321 g/cm3 (20 °C)
Molar mass:	122.12 g/mol
Bulk density:	~ 500 kg/m3
CAS number:	65-85-0
HS code:	29163100
EC number:	200-618-2
Storage (temperature):	Store at +5°C to +30°C
SDS	Available
R phrase:	R 22-36
S phrase:	S 24
Odour:	Characteristic
Form:	Solid
Color:	White
Ignition temperature:	532 °C
PH value:	3.1 (1 g/l 20 °C)
Solubility in water:	2.9 g/l (25°C)
Solubility in chloroform:	(20 °C) soluble
Flash point:	121 °C (c.c)
Boiling point:	249 °C (1013 h Pa)
Melting point:	121 – 123 °C
Vapour pressure:	1.3 Pa (20 °C)

Methanol

Product Code: 1.1250.

Extra Pure Grade

CH_3OH
M= 32.04 g/mol
1lit= 0.79 g/cm^3

Specification:

Assay	≥	99.0	%
Solubility		Conforms	
Color & Description		Conforms	
Identification		Conforms	
Evaporation residue	≤	0.001	%
Specific gravity		0.791 – 0.792	g/cm^3
Boiling Point		64.0 – 65.0	°C
Water	≤	0.1	%

Glass Bottles

1	Litr	☐
2.5	Litr	☒

Plastic container

1	Litr	☐
2.5	Litr	☒

Plastic Gallon

5	Litr	☒
10	Litr	☒
20	Litr	☒

Technical Information

Formula:	CH4O
Chemical formula:	CH3OH
Density:	0.79 g/cm3 (20 ˚C)
Molar mass:	32.04 g/mol
CAS number:	67-56-1
EC index number:	603-001-00-X
HS code:	29051100
EC number:	200-659-6
Storage (temperature):	Without limitation
SDS	available
RTECS:	PC1400000
R phrase:	R 11-23/24/25-39/23/24/25
S phrase:	S 7-16-36/37-45
Odour:	characteristic
Form:	liquid
Color:	colourless
Explosion limit:	5.5 -36.5 Vol %
Ignition temperature:	455 ˚C (DIN 51794)
Solubility in water:	(20˚C) soluble
Flash point:	11 ˚C (c.c.)
Boiling point:	64.5 ˚C (1013 hPa)
Melting point:	-98 ˚C
Vapour pressure:	128 hPa (20 ˚C)
Viscosity dynamical :	0.597 mPa*s (20 ˚C)
Saturation concentration (air):	166 g/m3 (20 ˚C)

Nitric acid 55%

Product Code: 1.1300.

Extra Pure Grade

HNO_3
M= 63.01 g/mol
1lit= 1.3 g/cm^3

Specification:

Assay	~	**55.0**	**%**
Description		**Conforms**	
Identification		**Conforms**	
Chloride	≤	**0.005**	**%**
Sulfate	≤	**0.001**	**%**
Heavy metals	≤	**0.002**	**%**
Relative density at 20 °C	~	**1.3**	**g/cm^3**
Residue on ignition	≤	**5**	**ppm**

Glass Bottles		
1	Litr	☐
2.5	Litr	☒

Plastic container		
1	Litr	☐
2.5	Litr	☒

Plastic Gallon		
5	Litr	☒
10	Litr	☒
20	Litr	☒

Technical Information

HS code:	**28080000**
Storage (temperature):	**store at +2˚C to +25˚C**
SDS:	**available**
R phrase:	**R35**
S phrase:	**S 23.2-26-36/37/39-45**
Odour:	**pungent**
Form:	**liquid**
Color:	**colourless**
Solubility in water:	**(20 ˚C) soluble**
Boiling point:	**121 ˚C**
Melting point:	**~ -32˚C**
Vapour pressure:	**~ 9.4 hpa(20˚C)**

Nitric acid 65%

Product Code: 1.1320.

Extra Pure Grade

HNO_3
M= 63.01 g/mol
1lit= 1.37 g/cm^3

Specification:

Assay	~	**65.0**	**%**
Description		**Conforms**	
Identification		**Conforms**	
Chloride	≤	**0.0005**	**%**
Sulfate	≤	**0.001**	**%**
Heavy metals	≤	**0.0002**	**%**
Iron	≤	**0.0002**	**%**
Residue on ignition	≤	**0.005**	**%**

Glass Bottles		
1	Litr	☐
2.5	Litr	☒

Plastic container		
1	Litr	☐
2.5	Litr	☒

Plastic Gallon		
5	Litr	☒
10	Litr	☒
20	Litr	☒

Technical Information

Density:	**~ 1.37 g/m^3 (20 ˚C)**
HS code:	**28080000**
Storage (temperature):	**store at +2Oc to +25˚C**
SDS:	**available**
R phrase:	**R35**
S phrase:	**S 23.2-26-36/37/39-45**
Odour:	**pungent**
Form:	**liquid**
Color:	**colourless**
Solubility in water:	**(20 ˚C) soluble**
Boiling point:	**121 ˚C**
Melting point:	**~ -32˚C**
Vapour pressure:	**~ 9.4 hpa(20 ˚C)**
Boiling point:	**~ 158 ˚C**

Potassium dichromate

Product Code: **1.1380.**

Extra Pure Grade

K2Cr2O7
M= 294.19 g/mole

Specification:

Assay	**≥**	**99.5**	**%**
Description		**Conforms**	
Solubility		**Conforms**	
Identification		**Conforms**	
Sulfate	**≤**	**0.005**	**%**
Chloride	**≤**	**0.001**	**%**
Clarity & color of solution		**Conforms**	
Loss on drying	**≤**	**0.5**	**%**

Glass Bottles		
5	gr	☐
10	gr	☐
25	gr	☐
Plastic container		
100	gr	☐
500	gr	☐
800	gr	☐
Plastic Gallon		
1	kg	☒
5	kg	☒
10	kg	☒

Technical Information

Formula:	**Cr2K2O7**
Chemical formula:	**K2Cr2O7**
Density:	**2.69 g/cm3 (20˚C)**
Molar mass:	**294.19 g/mol**
Bulk density:	**1250 kg/m3**
CAS number:	**7778-50-9**
EC index number:	**024-002-00-6**
HS code:	**28415000**
EC number:	**231-906-6**
Storage (temperature):	**Without limitations.**
SDS	**available**
R phrase:	**R 45-46-60-61-8-E...**
S phrase:	**S 53-45-60-61**
Odour:	**odourless**
Form:	**solid**
Color:	**orange**
PH value:	**3.57 (100 g/l)**
Solubility in water:	**130 g/l (20 ˚C)**
Boiling point:	**> 500 ˚C**
Melting point:	**398 ˚C**
Thermal decomposition	**~ 500 ˚C**

Potassium Chloride

Product Code: **1.1370.**

Extra pure Grade

KCL
M= 74.55 g/mole

Specification:

Assay		**99.5 – 100.5**	**%**
Description		**Conforms**	
Solubility		**Conforms**	
Identification		**Conforms**	
Heavy metals	**≤**	**0.001**	**%**
Acidity or alkalinity		**Conforms**	
Iodide	**≤**	**0.005**	**%**
Bromide	**≤**	**0.1**	**%**
Clarity & color of solution		**Conforms**	
Sodium		**Conforms**	
Calcium & Magnesium		**Conforms**	
Loss on drying	**≤**	**1.0**	**%**

Glass Bottles		
5	gr	☐
10	gr	☐
25	gr	☐
Plastic container		
100	gr	☐
500	gr	☒
800	gr	☐
Plastic Gallon		
1	kg	☒
5	kg	☒
10	kg	☒

Technical Information

Formula:	**ClK**
Chemical formula:	**KCl**
Density:	**1.98 g/cm3 (20 ˚C)**
Molar mass:	**74.55 g/mol**
Bulk density:	**~ 1000 kg/m3**
CAS number:	**7447-40-7**
HS code:	**31042090**
EC number:	**231-211-8**
Storage (temperature):	**Without limitations.**
SDS	**available**
RTECS:	**TS8050000**
Odour:	**odourless**
Form:	**solid**
Color:	**white**
PH value:	**5.5 - 8.0 (50 g/l 25 ˚C)**
Solubility in water:	**347 g/l (20˚C)**
Solubility in ethanol:	**(20˚C) almost insoluble**
Boiling point:	**1413 ˚C (1013 hPa)**
Melting point:	**773 ˚C**
Vapour pressure:	**low**

Potassium dihydrogen phosphate

Product Code: 1.1620.

Extra Pure Grade

KH2PO4
M= 136.08 g/mole

Glass Bottles		
5	gr	☒
10	gr	☐
25	gr	☐
Plastic container		
100	gr	☐
500	gr	☒
800	gr	☐
Plastic Gallon		
1	kg	☒
5	kg	☒
10	kg	☒

Specification:

Assay		**98.0 – 100.5**	**%**
Description		**Conforms**	
Solubility		**Conforms**	
Identification		**Conforms**	
Heavy metals	**≤**	**0.002**	**%**
pH (1/100)	**~**	**4.5**	
Insoluble substances	**≤**	**0.2**	**%**
Loss on drying	**≤**	**1.0**	**%**

Technical Information

Formula (Hill):	**KH2PO4**
Density:	**KH2PO4**
Molar mass:	**2.34 g/cm3(20˚C)**
Bulk density:	**136.09 g/mol**
CAS number:	**~1200 kg/m3**
HS code:	**7778-77-0**
EC number:	**28352400**
Storage (temperature):	**231-913-4**
SDS	**Without limitations.**
RTECS:	**available**
Odour:	**TC6615500**
Form:	**Odourless**
Color:	**Solid**
PH value:	**Colourless**
Solubility in water:	**~4.4 (50 g/l 20˚C)**
Solubility in ethanol:	**222 g/l (20˚C)**
Melting point:	**(20˚C) insolubie**
Thermal decomposition:	**~ 253 ˚C (decomposition)**

Sodium chloride

Product Code: 1.1470.

Extra Pure Grade

NaCl
M= 58.44 g/mol

Glass Bottles		
5	gr	☐
10	gr	☐
25	gr	☐
Plastic container		
100	gr	☐
500	gr	☒
800	gr	☐
Plastic Gallon		
1	kg	☒
5	kg	☒
10	kg	☒

Specification:

Assay	**≥**	**99.0**	**%**
Description		**Conforms**	
Solubility		**Conforms**	
Identification		**Conforms**	
Appearance of solution		**Conforms**	
Chloride		**Conforms**	
Ferro cyanides		**Conforms**	
Magnesium & alka-line earth metals	**≤**	**0.01**	**%**
Acidity or Alkalinity	**≤**	**0.5**	**ml**
Limit of Phosphates	**≤**	**0.0025**	**%**
Loss on drying	**≤**	**0.5**	**%**
Heavy metals	**≤**	**5.0**	**ppm**

Technical Information

Formula:	**ClNa**
Chemical formula:	**NaCl**
Density:	**2.17 g/cm3 (20 ˚C)**
Molar mass:	**58.44 g/mol**
Bulk density:	**~ 1140 kg/m3**
CAS number:	**7647-14-5**
HS code:	**25010091**
EC number:	**231-598-3**
Storage (temperature):	**Without limitations.**
SDS	**available**
RTECS:	**VZ4725000**
Odour:	**odourless**
Form:	**solid**
Color:	**colourless**
PH value:	**4.5 – 7.0 (100 g/l 20 ˚C)**
Solubility in water:	**358 g/l (20˚C)**
Solubility in ethanol:	**0.51 g/l (25˚C)**
Boiling point:	**1461 ˚C (1013 hPa)**
Melting point:	**801 ˚C**
Vapour pressure:	**1.3 hPa (865 ˚C)**
Solubility in chloroform:	**soluble**

di Sodium Edetate (EDTA)

Product Code: 1.1600.

Extra Pure Grade

C10H14N2Na2O8*2H2O
M= 372.24 g/mole

Specification:

Assay		99.0 – 101.0	%
Description		Conforms	
Solubility		Conforms	
Identification		Conforms	
Heavy metals	≤	0.005	%
pH (1/20)		4.0 – 6.0	
Calcium		Conforms	
Loss on drying		8.7 – 11.4	%

Glass Bottles		
5	gr	☐
10	gr	☐
25	gr	☐
Plastic container		
100	gr	☐
500	gr	☒
800	gr	☐
Plastic Gallon		
1	kg	☒
5	kg	☒
10	kg	☒
1	Litr	☐
2.5	Litr	☐
5	Litr	☐
10	Litr	☐
20	Litr	☐

Technical Information

Formula (Hill):	C10H14N2Na2O8*2H2O
Molar mass:	372.24 g/mol
Bulk density:	~700 kg/m3
CAS number:	6381-92-6
HS code:	29224995
EC number:	205-358-3
Storage (temperature):	Store at + 15 ºC to +25 ºC
SDS	Available
RTECS	AH4410000
Odour:	Odourless
Form:	Crystals
Color:	White
Ph value:	4 – 5 (50g/l 20 ºC)
Solubility in water:	100 g/l (20 ºC)
Melting point:	110 ºC
Thermal decomposition	255 ºC

Sodium Thiosulfate pantahydrate

Product Code: 1.1610.

Extra pure Grade

Na2S2O3.5H2O
M= 248.19 g/mole

Specification:

Assay		99.0 – 100.5	%
Description		Conforms	
Solubility		Conforms	
Identification		Conforms	
Heavy metals	≤	0.002	%
Calcium		Conforms	
Water		32.0 – 37.0	%

Glass Bottles		
5	gr	☐
10	gr	☐
25	gr	☐
Plastic container		
100	gr	☐
500	gr	☒
800	gr	☐
Plastic Gallon		
1	kg	☒
5	kg	☒
10	kg	☒

Technical Information

Formula (Hill):	Na2S2O3.5H2O
Density:	1.74 g/cm3 (20 ˚C)
Molar mass:	248.21 g/mol
Bulk density:	~ 1000 kg/m3
CAS number:	10102-17-7
HS code:	28323000
EC number:	231-867-5
Storage (temperature):	Without limitations.
SDS	Available
RTECS:	WE6660000
Odour:	Odourless
Form:	Solid
Color:	Colourless
PH value:	6.0 – 7.5 (100 g/l 20 ˚C)
Solubility in water:	701 g/l (20 ˚C)
Solubility in ethanol:	Insoluble
Melting point:	48 ˚C
Thermal decomposition	100 ˚C

Sodium Benzoate

Product Code: 1.1630.

Extra Pure Grade

C7H5NaO2
M= 144.10 g/mole

Glass Bottles		
5	gr	☐
10	gr	☐
25	gr	☐
Plastic container		
100	gr	☐
500	gr	☒
800	gr	☐
Plastic Gallon		
1	kg	☒
5	kg	☒
10	kg	☒

Specification:

Assay		**99.0 – 100.5**	**%**
Description		**Conforms**	
Solubility		**Conforms**	
Identification		**Conforms**	
Heavy metals	**≤**	**0.001**	**%**
Alkalinity		**Conforms**	
Water	**≤**	**1.5**	**%**

Technical Information

Formula (Hill):	**C7H5NaO2**
Chemical formula:	**C6H5COONa**
Densiyt:	**1.44g/cm3**
Molar mass:	**144.11g/mol**
Bulk density:	**~ 350 kg/m3**
CAS number:	**532-32-1**
HS code:	**29163100**
EC number:	**208-534-8**
Storage (temperature):	**Store at +5 ˚C to +30 ˚C**
SDS:	**available**
RTECS:	**DH6650000**
Odour:	**Odourless**
Form:	**Solid**
Color:	**White**
Ignition temperature:	**>500 ˚C**
pH value:	**~ 9 (100g/l 20 ˚C)**
Solubility in water:	**660 g /l (20 ˚C)**
Flash Point:	**>100 ˚C**
Meltiing point:	**410 – 430 ˚C**

di Sodium hydrogen phosphate

Product Code: 1.1650.

Extra Pure Grade

Na2HPO4
M= 141.96 g/mole

Glass Bottles		
5	gr	☐
10	gr	☐
25	gr	☐
Plastic container		
100	gr	☐
500	gr	☒
800	gr	☐
Plastic Gallon		
1	kg	☒
5	kg	☒
10	kg	☒

Specification:

Assay		**98.0 – 100.5**	**%**
Description		**Conforms**	
Solubility		**Conforms**	
Identification		**Conforms**	
Heavy metals	**≤**	**0.002**	**%**
Sulfate	**≤**	**0.2**	**%**
Chloride	**≤**	**0.06**	**%**
Insoluble substances	**≤**	**0.4**	**%**
Loss on drying	**≤**	**5.0**	**%**

Technical Information

Formula (Hill):	**Na2HPO4**
Chemical formula:	**Na2HPO4**
Molar mass:	**141.96 g/mol**
Bulk density:	**~ 880 kg/m3**
CAS NUMBER:	**7558-79-4**
HS code:	**28352200**
EC number:	**231-448-7**
Storage (temperature)	**Without limitations.**
SDS	**Available**
RTECS:	**WC4500000**
Odour:	**Odourless**
Form:	**Solid**
Color:	**Colourless**
pH value:	**8.7 9.3 (20g/l 20 ºC)**
Solubility in water:	**77 g/l (20 ºC)**
Solubility in ethanol:	**Slightly soluble**
Melting point:	**~ 250 ºC**
Thermal decomposition:	**>250 ºC**

Sulfuric acid 95 - 98%

Product Code: **1.1560.**

Extra pure Grade

H_2SO_4
M= 98.08 g/mol
1lit= 1.84 g/cm^3

Specification:

Assay	**≥**	**95.0**	**%**
Description		**Conforms**	
Solubility		**Conforms**	
Identification		**Conforms**	
Chloride	**≤**	**0.005**	**%**
Heavy metals	**≤**	**5.0**	**ppm**
Residue on ignition	**≤**	**0.005**	**%**
Reducing Substances		**Conforms**	

Glass Bottles
1 Litr ☒
Glass Bottles
1 2.5 Litr ☒
2.5 Litr ☐
Plastic container
1 Litr ☐
Plastic container
1 2.5 Litr ☒
2.5 Litr ☐
Plastic Gallon
5 Litr ☒
Plastic Gallon
5 10 Litr ☐ ☒
10 20 Litr ☐ ☒
20 Litr ☐

Technical Information

Formula:	**H2O4S**
Chemical formula:	**H2SO4**
Density:	**1.84 g/cm3 (20 ˚C)**
Molar mass:	**98.08 g/mol**
CAS number:	**7664-93-9**
EC index number:	**016-020-00-8**
HS code:	**28070010**
EC number:	**231-639-5**
Storage (temperature):	**Without limitations.**
SDS	**available**
RTECS:	**WS5600000**
R phrase:	**R 35**
S phrase:	**S 26-30-45**
Odour:	**odourless**
Form:	**liquid**
Color:	**colourless**
PH value:	**0.3 (49 g/l 25 ˚C)**
Solubility in water:	**(20˚C) soluble,**
Solubility in ethanol:	**soluble,**
Boiling point:	**~ 335 ˚C**
Melting point:	**~ 3 ˚C**
Vapour pressure:	**~ 0.0001 hpa (20 ˚C)**
Thermal decomposition:	**~ 338 ˚C**
Viscosity dynamical:	**~ 24 mPa*s (20 ˚C)**

Neutron Pharmachemical Co.

pH-INDICATORS & Stains

	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 pH
Malachite green oxalate	green — green-blue — blue — colorless
Brilliant green	yellow — green
Eosin Y	yellow — green fluorescence
Erythrosin B	orange — red
Methyl green	yellow — blue
Methyl violet	yellow — Violett
Picric acid	colorless — yellow
Cresol red	Rot — yellow — orange — purple
Crystal violet	yellow — blue-violet
Cresol purple	red — yellow — yellow — purple
Thymol blue	red — yellow — yellow — blue
Thymol blue sodium salt	red — yellow — green-yellow — blue
Xylenol blue	red — yellow — yellow — blue
2,2',2'',4,4' Pentamethoxytriphenylcarbinol	red — colorless
Eosin B	colorless — pink fluorescence
Quinaldine red	colorless — pink
2.4-Dinitrophenol	colorless — yellow
4-(Dimethylamino) azobenzenel	red — yellow-orange
Bromochlorophenol blue	yellow — blue-violet
Bromophenol blue	yellow — blue-violet
Bromphenol blue sodium salt	green yellow — blue-violet
Congo red	Blau — yellow-orange
Methyl orange	red — yellow-orange
Methyl orange solution	red — yellow-orange
Bromocresol green	yellow — blue
Bromocresol green sodium salt	yellow — blue
2.5-Dinitrophenol	colorless — yellow
Mixed indicator 4.5 acc. to Mortimer	red — blue
Alizarin sulfonic acid sodium salt	yellow — violet
Methyl red	red — yellow-orange
Methyl red sodium salt	red — yellow-orange
Mixed indicator 5	red-violet — green
Chlorophenol red	yellow — purple
Bromocresol purpley	yellow — purple
Bromophenol red	orange-yellow — purple
4-Nitrophenol	colorless — yellow
Bromoxylenol blue	yellow — blue
Alizarin	yellow — red — red — purple
Bromothymol blue sodium salt	yellow — blue
Bromothymol blue	yellow — blue
Phenol red	yellow — red-violet
Phenol red sodium salt	yellow — red-violet
3-Nitrophenol	colorless — yellow-orange
Neutral red	blue-red — yellow-orange
1-Naphtholphthalein	brown — blue-Grün
Phenolphthalein	colorless — red-violet
Phenolphthalein solution (1% in ethanol)	colorless — red-violet
Phenolphthalein solution (0.375% in methanol)	colorless — red-violet
Thymolphthalein	colorless — blue
Alkali blue	violet — pink
Alizarin yellow GG	light yellow — brownish-yellow
Indigo carmine	blue — yellow
Epsilon blue	orange — violet
Titan yellow	yellow — red

Bromophenol blue

Product Code: 1.1070

Laboratory USP Indicator Grade

$C_{19}H_{10}Br_4O_5S$
M= 669.96 g/mole

Specification:

Appearance & Description		Conforms	
Solubility		Conforms	
Identification		Conforms	
Melting point	~	273	°C
Transition Range		Conforms	
Appearance of solution		Conforms	
Sensitivity test		Conforms	
Loss on drying	≤	1.0	%

Glass Bottles
5 gr ☒
10 gr ☒
25 gr ☒
Plastic container
100 gr ☐
500 gr ☐
800 gr ☐
Plastic Gallon
1 kg ☐
5 kg ☐
10 kg ☐

Technical Information

Formula:	C19H10Br4O5S
Molar mass:	669.96 g/mole
Bulk density:	~ 730 kg/m3
CAS number:	115-39-9
HS code:	29349990
EC number:	204-086-2
Storage	Store at 5-30˚C
SDS	available
Storage (temperature):	Store at +5 ˚C to +30 ˚C
SDS	available

Bromothymol blue

Product Code: 1.1000.

Laboratory USP Indicator Grade

$C_{27}H_{26}Br_2O_5S$
M= 624.40 g/mole

Specification:

Appearance & Description		Conforms	
Solubility		Conforms	
Identification		Conforms	
Transition Range		Conforms	
Loss on drying	≤	3.0	%

Glass Bottles
5 gr ☒
10 gr ☒
25 gr ☒
Plastic container
100 gr ☐
500 gr ☐
800 gr ☐
Plastic Gallon
1 kg ☐
5 kg ☐
10 kg ☐

Technical Information

Formula:	C27H26Br2O5S
Molar mass:	624.40 g/mol
Bulk density:	~ 450 kg/m3
CAS number:	76-59-5
HS code:	29349990
EC number:	200-971-2
Storage	Store at 5-30 °C
SDS	available

Eriochrome black T (C.I. 14645)

Product Code: 1.1120.

Laboratory USP Indicator Grade

$C_{20}H_{12}N_3NaO_7S$
M= 461.38 g/mole

Glass Bottles		
5	gr	☒
10	gr	☒
25	gr	☒
Plastic container		
100	gr	☐
500	gr	☐
800	gr	☐
Plastic Gallon		
1	kg	☐
5	kg	☐
10	kg	☐

Specification:

Solubility		**Conforms**	
Appearance & Description		**Conforms**	
pH Value (10 g/l)	~	**3.7**	
Identification		**Conforms**	
Absorption maximum lambda		**612.0 – 616.0**	**nm**
Loss on drying	≤	**7.0**	**%**

Technical Information

Formula:	**C20H12N3NaO7S**
Molar mass:	**461.38 g/mol**
Bulk density:	**~ 400 – 600 kg/m3**
CAS number:	**1787-61-7**
HS code:	**32041900**
EC number:	**217-250-3**
Storage	**Store at +15 ˚C**
SDS	**available**
R phrase:	**R 36-51/53**
S phrase:	**S 26-61**

Eosin Y (C.I. 45380)

Product Code: 1.1110.

Indicator reagent for microscopy Grade

C20H6Br4Na2O5
M= 691.86 g/mole

Glass Bottles		
5	gr	☒
10	gr	☒
25	gr	☒
Plastic container		
100	gr	☐
500	gr	☐
800	gr	☐
Plastic Gallon		
1	kg	☐
5	kg	☐
10	kg	☐

Specification:

Description	**Conforms**	
Solubility	**Conforms**	
Melting point	**295 – 296**	**° C**

Technical Information

Formula:	**C20H6Br4Na2O5**
Molar mass:	**691.86 g/mol**
Bulk density:	**~ 710 kg/m3**
CAS number:	**17372-87-1**
HS code:	**32041200**
EC number:	**241-409-6**
Storage	**Store at 5 - 30˚C**
SDS	**available**
R phrase:	**R 36**
S phrase:	**S 22-26**

Methyl orange (C.I.13025)

Product Code: 1.1270.

Laboratory USP Indicator Grade

C14H14N3NaO3
M= 327.34 g/mole

Specification:

Solubility		Conforms	
Appearance & De-scription		Conforms	
Transmittance Range		Conforms	
Melting Point	≥	300	°C
Loss on drying	≤	5.0	%

Glass Bottles		
1 5	Litgr	☒
2.510	Litgr	☒
25	gr	☒
Plastic container		
1 100	Litgr	☐
2.500	Litgr	☐
800	gr	☐
Plastic Gallon		
5 1	Litkg	☐
105	Litkg	☐
2010	Likg	☐

Technical Information

Formula:	C14H14N3NaO3
Molar mass:	327.34 g/mol
Bulk density:	~ 200 - 400 kg/m3
CAS number:	547-58-0
HS code:	29270000
EC number:	208-925-3
Storage	Store at 5 - 30˚C
SDS	available
R phrase:	R 25
S phrase:	S 37-45

Methyl red (C.I.13020)

Product Code: 1.1280.

Laboratory USP Indicator Grade

$C_{15}H_{15}N_3O_2$
M= 269.31 g/mole

Specification:

Solubility		Conforms	
Appearance & Description		Conforms	
Identification		Conforms	
Absorption max		523.0 – 526.0	nm
Absorption max		427.0 – 437.0	nm
Melting Point		178.0 – 182.0	°C
Clarity of alcoholic solution		Conforms	
Loss on drying	≤	5.0	%

Glass Bottles		
5	gr	☒
10	gr	☒
25	gr	☒
Plastic container		
100	gr	☐
500	gr	☐
800	gr	☐
Plastic Gallon		
1	kg	☐
5	kg	☐
10	kg	☐

Technical Information

Formula (Hill):	C15 H15 N3 O2
Molar mass:	269.31 g/mol
Bulk density:	~ 300 – 500 kg/m^3
CAS number:	493-52-7
HS code:	29270000
EC number:	207-776-1
Storage:	Store at + 5to + 30 °C
SDS:	Available

Methylene blue (C.I. 52015)

Product Code: 1.1260.

Laboratory USP Indicator Grade

$C_{16}H_{18}ClN_3xH_2O$

Specification:

Solubility		Conforms	
Appearance & De-scription		Conforms	
Absorption maxi-mum lambda	~	660.0 – 665.0	nm
Melting Point		180.0	°C
Transmittance Range		Conforms	
Sulfated ash	≤	1.0	mg
pH value (10 g/l)	~	3.0	
Loss on drying		10.0 – 15.0	%

Glass Bottles		
5	gr	☒
10	gr	☒
25	gr	☒
Plastic container		
100	gr	☐
500	gr	☐
800	gr	☐
Plastic Gallon		
1	kg	☐
5	kg	☐
10	kg	☐

Technical Information

Formula :	$C_{16}H_{18}ClN_3xH_2O$
Bulk density:	~400-600 kg/m3
HS code:	32041300
EC number:	200-515-2
Storage :	Without Limitations
SDS:	available
RTECS:	R22

Orange G (C.I.13025)

Product Code: 1.1330.

Laboratory USP Indicator Grade

$C_{16}H_{10}N_2Na_2O_7S_2$
M= 452.37 g/mole

Specification:

Appearance & Description		Conforms
Solubility		Conforms
pH Value (10.0 g/l)	~	9.0

Glass Bottles		
5	gr	☒
10	gr	☒
25	gr	☒
Plastic container		
100	gr	☐
500	gr	☐
800	gr	☐
Plastic Gallon		
1	kg	☐
5	kg	☐
10	kg	☐

Technical Information

Formula :	C16 H10 N2 Na 2 O7S2
Molar mass:	452.37 g/mol
Bulk density:	~ 430 kg/m^3
CAS number:	1936-15-8
HS code:	32041200
EC number:	217-705-6
Storage :	at +5 to+30oC
SDS:	available
RTECS:	QJ6500000

Phenolphthalein

Product Code: 1.1350.

Laboratory USP Indicator Grade

$C_{20}H_{14}O_4$
M= 318.33 g/mole

Specification:

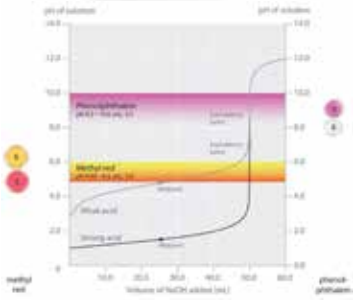
Solubility		Conform	
Description		Conforms	
Identification		Conforms	
Melting Point		285.0 – 262.0	°C
Clarity of alcoholic solution		Conforms	
Absorption maximum		551.0 –554.0	nm
Transition Range		Conforms	
Loss on drying	≤	1.0	%

Glass Bottles			
1	5	Lit	gr
2.5	10	Lit	gr
	25		gr
Plastic container			
1	100	Lit	gr
2.5	500	Lit	gr
	800		gr
Plastic Gallon			
5	1	Lit	kg
10	5	Lit	kg
20	10	Lit	kg

Technical Information

Formula:	C20H14O4
Density:	1.30 g/cm3 (20 °C)
Molar mass:	318.33 g/mol
Bulk density:	350 450 kg/m3
CAS number:	77-09-8
HS code:	29322910
EC number:	201-004-7
Storage :	Without limitations.
SDS	available

Standard Solution Grade (Buffer & Titrasol)



Buffer pH 4.00

Product Code: 1.1660.

Calibration Standard Solution Grade

Traceable to secondary reference material

Specification:

pH - Value 20 ^{0}C **4.00 ± 0.02**

0 ˚C	ΔpH	+0.01
5 ˚C	ΔpH	+0.01
10 ˚C	ΔpH	+0.01
15 ˚C	ΔpH	+0.01
20 ˚C	ΔpH	±0.00
25 ˚C	ΔpH	±0.00
30 ˚C	ΔpH	-0.02
35 ˚C	ΔpH	-0.02
40 ˚C	ΔpH	-0.04
50 ˚C	ΔpH	-0.05

Glass Bottles		
1	Liter	☐
2.5	Liter	☐

Plastic container		
250	ml	☒
500	ml	☒
1000	ml	☐

Plastic Gallon		
5	Liter	☐
10	Liter	☐
20	Liter	☐

Technical Information

Density:	1.002 g/cm3
HS code:	38220000
Storage (temperature):	Without limilations.
SDS	not required
Form:	liquid

Buffer pH 7.00

Product Code: 1.1670.

Calibration Standard Solution Grade

Traceable to secondary reference material

Specification:

pH - Value 20 ^{0}C **7.00 ± 0.02**

0 ˚C	ΔpH	+0.13
5 ˚C	ΔpH	+0.07
10 ˚C	ΔpH	+0.05
15 ˚C	ΔpH	+0.02
20 ˚C	ΔpH	±0.00
25 ˚C	ΔpH	-0.02
30 ˚C	ΔpH	-0.02
35 ˚C	ΔpH	-0.04
40 ˚C	ΔpH	-0.05
50 ˚C	ΔpH	-0.05

Glass Bottles		
1	Liter	☐
2.5	Liter	☐

Plastic container		
250	ml	☒
500	ml	☒
1000	ml	☐

Plastic Gallon		
5	Liter	☐
10	Liter	☐
20	Liter	☐

Technical Information

Density:	1.01g/cm3 (20 ˚C)
HS code:	38220000
Storage (temperature):	Without limitations.
SDS	Avalilable
Odour:	Odourless
Form:	Liquid
Color:	Colourless
Solubility in water:	(20 ˚C) soluble
Boiling point:	109 ˚C
Melting point:	-5 ˚C

Conductivity 12.86 mS/cm

Product Code: 1.1730.

Calibration Standard Solution Grade

Traceable to secondary reference

Specification:

Conductivity @ 25 C	12.86 ± 2.0 %	mS/cm
5 ˚C	8.20	mS/cm
10 ˚C	9.33	mS/cm
15 ˚C	10.48	mS/cm
20 ˚C	11.65	mS/cm
22 ˚C	12.12	mS/cm
24 ˚C	12.63	mS/cm
25 ˚C	12.86	mS/cm
26 ˚C	13.12	mS/cm
28 ˚C	13.63	mS/cm
30 ˚C	14.12	mS/cm
35 ˚C	15.40	mS/cm
40 ˚C	16.66	mS/cm
45 ˚C	17.99	mS/cm
50 ˚C	19.32	mS/cm

Glass Bottles
1 Liter ☐
2.5 Liter ☐
1 Litr ☐
2.5 Litr ☐
Plastic container
250 ml ☒
500 ml ☒
1000 ml ☐
Plastic Gallon
5 Liter ☐
10 Liter ☐
20 Liter ☐

Technical Information

Density:	1.003 g/cm3
HS code:	28273980
Storage (temperature):	Store at +15 °C to +25 °C
SDS	Not required
Odour:	Odourless
Form:	Liquid
Color:	Colourless
Boiling point	100 °C

Conductivity 1.41 mS/cm (1413µS/cm)

Product Code: 1.1740.

Calibration Standard Solution Grade

Traceable to secondary reference material

Specification:

Conductivity @ (25˚C)	1.41 ± 2.0 %	mS/cm
5 ˚C	0.890	mS/cm
10 ˚C	1.015	mS/cm
15 ˚C	1.145	mS/cm
20 ˚C	1.273	mS/cm
22 ˚C	1.324	mS/cm
24 ˚C	1.378	mS/cm
25 ˚C	1.408	mS/cm
26 ˚C	1.434	mS/cm
28 ˚C	1.491	mS/cm
30 ˚C	1.547	mS/cm
35 ˚C	1.685	mS/cm
40 ˚C	1.836	mS/cm
45 ˚C	1.981	mS/cm
50 ˚C	2.137	mS/cm

Glass Bottles
1 Liter ☐
2.5 Liter ☐

Plastic container
250 ml ☒
500 ml ☒
1000 ml ☐
Plastic Gallon
5 Liter ☐
10 Liter ☐
20 Liter ☐

Technical Information

Density:	1 g/cm3
HS code:	28273980
Storage (temperature):	Store at+15 °C to +25 °C
SDS	Not required
Odour:	Odourless
Form:	Liquid
Color:	Colourless
Boiling point:	100 °C

Sodium Hydroxide 1N

Product Code: 1.1680.

Standard Solution (Titrasol) Grade

Traceable to secondary reference material

Specification:

C (NaOH)	1.000±0.1% N

Glass Bottles		
1	Liter	☐
2.5	Liter	☐

Plastic container		
250	ml	☐
500	ml	☐
1000	ml	☒

Plastic Gallon		
5	Liter	☐
10	Liter	☐
20	Liter	☐

Technical Information

Density:	1.04 g/cm3 (20 ˚C)
HS code:	28151200
Storage (temperature):	Store at +15 ˚C to +25 ˚C
SDS	Available
R phrase:	R 34
S phrase:	S 26-36/37/39-45
Odour:	Odourless
Form:	Liquid
Color:	Colourless
Solubility in water:	(20 ˚C) soluble
PH value:	< 0.5 (100 g/l 20 ˚C)
Solubility in water:	(20 ˚C) soluble

Sodium Hydroxide 0.1N

Product Code: 1.1690.

Standard Solution (Titrasol) Grade

Traceable to secondary reference material

Specification:

C (NaOH)	0.100 ±0.2% N

Glass Bottles		
1	Liter	☐
2.5	Liter	☐

Plastic container		
250	ml	☐
500	ml	☐
1000	ml	☒

Plastic Gallon		
5	Liter	☐
10	Liter	☐
20	Liter	☐

Technical Information

Density:	1.00 g/cm3 (20 ˚C)
HS code:	28151200
Storage (temperature):	Store at +15 ˚C to +25 ˚C
SDS	Available
Odour:	Odourless
FORM:	liquid
Color:	colourless
Solubility in water:	(20 ˚C) soluble
Storage (temperature):	Store at +5 ˚C to +30 ˚C

Hydrochloric Acid 1N

Product Code: 1.1700.

Standard Solution (Titrasol) Grade

Traceable to secondary reference material

Specification:

C (HCL)	1.000 ±0.1 % N

Glass Bottles

1	Liter	☐
1	Litr	☐
2.5	Liter	☐
2.5	Litr	☐

Plastic container

250	ml	☐
1	Litr	☐
500	ml	☐
2.5	Litr	☐
1000	ml	☒

Plastic Gallon

5	Liter	☐
5	Litr	☐
10	Liter	☐
10	Litr	☐
20	Liter	☐
20	Litr	☐

Technical Information

Density:	1.02 g/cm3 (20 ˚C)
HS code:	28061000
Storage (temperature):	Store at +15 ˚C to +25 ˚C
SDS	available
Odour:	odourless
Form:	liquid
Color:	colourless
Solubility in water:	(20 ˚C) soluble

Potassium Chloride 3mol/l

Product Code: 1.1710.

pH electrolyte Solution Grade

Specification:

Concentration	3.0 ±0.1 % mol/l

Glass Bottles

1	Liter	☐
2.5	Liter	☐

Plastic container

250	ml	☒
500	ml	☒
1000	ml	☐

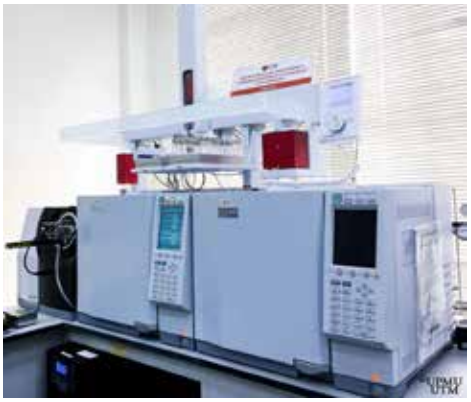
Plastic Gallon

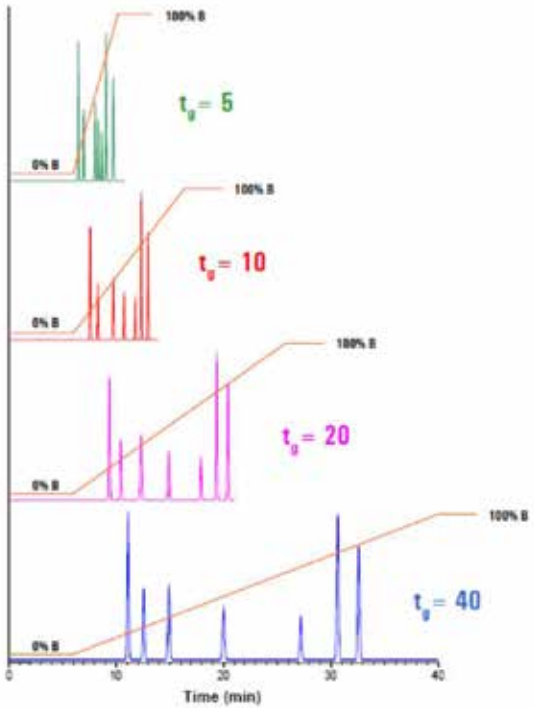
5	Liter	☐
10	Liter	☐
20	Liter	☐

Technical Information

Density:	1.13 g/cm3 (20 ˚C)
HS code:	28273980
Storage (temperature):	Store at +15˚C to +25˚C
SDS	Available
Odour:	Odourless
Form:	Liquid
Color:	Colourless
Solubility in water	(20 ˚C) soluble

Ultra pure chromatography Grade





$$k^* \propto \frac{t_g F}{S \Delta\%B \; V_m}$$

$1/k^*$ = gradient steepness = b

$\Delta\Phi$ – change in volume fraction of B solvent
S – constant
F – flow rate (mL/min.)
t_g – gradient time (min.)
V_m – column void volume (mL)

- S ≈ 4–5 for small molecules
- 10 < S < 1000 for peptides and proteins

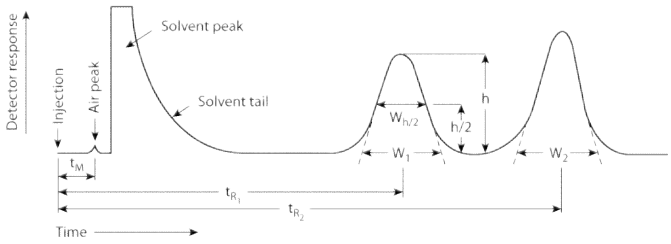


Figure 1. Chromatographic separation of two substances.

Column Chromatography

Solid Support: Purified siliceous earth is used for normal-phase separation. Silanized chromatographic siliceous earth is used for reverse-phase partition chromatography.

Stationary Phase: The solid support is modified by the addition of a stationary phase specified in the individual monograph. If a mixture of liquids is used as the stationary phase, mix the liquids before the introduction of the solid support.

Mobile Phase: The mobile phase is specified in the individual monograph. If the stationary phase is an aqueous solution, equilibrate with water. If the stationary phase is a polar organic fluid, equilibrate with that fluid.

Apparatus: Unless otherwise specified in the individual monograph, the chromatographic tube is about 22 mm in inside diameter and 200–300 mm long. Attached to it is a delivery tube, without stopcock, about 4 mm in inside diameter and about 50 mm long.

APPARATUS PREPARATION: Pack a pledget of fine glass wool in the base of the tube. Combine the specified volume of stationary phase and the specified amount of solid support to produce a homogeneous, fluffy mixture. Transfer this mixture to the chromatographic tube, and tamp, using gentle pressure, to obtain a uniform mass. If the specified amount of solid support is more than 3 g, transfer the mixture to the column in portions of approximately 2 g, and tamp each portion. If the assay or test requires a multisegment column with a different stationary phase specified for each segment, tamp after the addition of each segment, and add each succeeding segment directly to the previous one. Pack a pledget of fine glass wool above the completed column packing. [NOTE—The mobile phase should flow through a properly packed column as a moderate stream or, if reverse-phase chromatography is applied, as a slow trickle.]

If a solution of the analyte is incorporated into the stationary phase, complete the quantitative transfer to the chromatographic tube by scrubbing the beaker used for the preparation of the test mixture with a mixture of about 1 g of *Solid Support* and several drops of the solvent used to prepare the sample solution before adding the final portion of glass wool.

Procedure

(1) Transfer the mobile phase to the column space above the column packing, and allow it to flow through the column under the influence of gravity.

Gas Chromatography (GC)

Liquid Stationary Phase: This type of phase is available in packed or capillary columns.

Packed Column GC: The liquid stationary phase is deposited on a finely divided, inert solid support, such as diatomaceous earth, porous polymer, or graphitized carbon, which is packed into a column that is typically 2–4 mm in internal diameter and 1–3 m in length.

Capillary Column GC: In capillary columns, which contain no packed solid support, the liquid stationary phase is deposited on the inner surface of the column and may be chemically bonded to it.

Solid Stationary Phase: This type of phase is available only in packed columns. In these columns the solid phase is an active adsorbent, such as alumina, silica, or carbon, packed into a column. Polyaromatic porous resins, which are sometimes used in packed columns, are not coated with a liquid phase. [NOTE—Packed and capillary columns must be conditioned before use until the baseline and other characteristics are stable. The column or packing material supplier provides instructions for the recommended conditioning procedure.]

Apparatus: A gas chromatograph consists of a carrier gas source, injection port, column, detector, and recording device. The injection port, column, and detector are temperature controlled and may be varied as part of the analysis. The typical carrier gas is helium, nitrogen, or hydrogen, depending on the column and detector in use. The type of detector used depends on the nature of the compounds analyzed and is specified in the individual monograph. Detector output is recorded as a function of time, and the instrument response, measured as peak area or peak height, is a function of the amount present.

Temperature Program: The length and quality of a GC separation can be controlled by altering the temperature of the chromatographic column. When a temperature program is necessary, the individual monograph indicates the conditions in table format. The table indicates the initial temperature, rate of temperature change (ramp), final temperature, and hold time at the final temperature.

Procedure

(1) Equilibrate the column, injector, and detector with flowing carrier gas until a constant signal is received.
(2) Inject a sample through the injector septum, or use an autosampler.
(3) Begin the temperature program.
(4) Record the chromatogram.
(5) Analyze as indicated in the monograph.

Liquid Chromatography (LC)

The term *liquid chromatography*, as used in the compendia, is synonymous with high-pressure liquid chromatography and high-performance liquid chromatography. LC is a

separation technique based on a solid stationary phase and a liquid mobile phase.

Stationary Phase: Separations are achieved by partition, adsorption, or ion-exchange processes, depending on the type of stationary phase used. The most commonly used stationary phases are modified silica or polymeric beads. The beads are modified by the addition of long-chain hydrocarbons. The specific type of packing needed to complete an analysis is indicated by the "L" designation in the individual monograph (see also the section *Chromatographic Columns*, below). The size of the beads is often described in the monograph as well. Changes in the packing type and size are covered in the *System Suitability* section of this chapter.

Chromatographic Column: The term *column* includes stainless steel, lined stainless steel, and polymeric columns, packed with a stationary phase. The length and inner diameter of the column affects the separation, and therefore typical column dimensions are included in the individual monograph. Changes to column dimensions are discussed in the *System Suitability* section of this chapter. Compendial monographs do not include the name of appropriate columns; this omission avoids the appearance of endorsement of a vendor's product and natural changes in the marketplace. See the section *Chromatographic Columns* for more information.

Mobile Phase: The mobile phase is a solvent or a mixture of solvents, as defined in the individual monograph.

Apparatus: A liquid chromatograph consists of a reservoir containing the mobile phase, a pump to force the mobile phase through the system at high pressure, an injector to introduce the sample into the mobile phase, a chromatographic column, a detector, and a data collection device.

Gradient Elution: The technique of continuously changing the solvent composition during the chromatographic run is called gradient elution or solvent programming. The gradient elution profile is presented in the individual monograph as a gradient table, which lists the time and proportional composition of the mobile phase at the stated time.

Procedure

(1) Equilibrate the column and detector with mobile phase at the specified flow rate until a constant signal is received.
(2) Inject a sample through the injector, or use an autosampler.
(3) Begin the gradient program.
(4) Record the chromatogram.
(5) Analyze as directed in the monograph.

CHROMATOGRAPHIC COLUMNS

A complete list of packings (L), phases (G), and supports (S) used in *USP–NF* tests and assays is located in *USP–NF* and *PF, Reagents, Indicators, and Solutions—Chromatographic Columns*. This list is intended to be a convenient reference for the chromatographer in identifying the pertinent chromatographic column specified in the individual monograph.

DEFINITIONS AND INTERPRETATION OF CHROMATOGRAMS

Chromatogram: A chromatogram is a graphical representation of the detector response, concentration of analyte in the effluent, or other quantity used as a measure of effluent concentration versus effluent volume or time. In planar chromatography, *chromatogram* may refer to the paper or layer with the separated zones.

Figure 1 represents a typical chromatographic separation of two substances, 1 and 2. t_{R1} and t_{R2} are the respective retention times; and h is the height, h/2 the half-height, and $W_{h/2}$ the width at half-height, for peak 1. W_1 and W_2 are the respective widths of peaks 1 and 2 at the baseline. Air peaks are a feature of gas chromatograms and correspond to the solvent front in LC. The retention time of these air peaks, or unretained components, is designated as t_M.

Dwell Volume (D): The dwell volume (also known as gradient delay volume) is the volume between the point at which the eluents meet and the top of the column.

Hold-Up Time (t_M): The hold-up time is the time required for elution of an unretained component (see *Figure 1*, shown as an air or unretained solvent peak, with the baseline scale in min).

Hold-Up Volume (V_M): The hold-up volume is the volume of mobile phase required for elution of an unretained component. It may be calculated from the hold-up time and the flow rate F, in mL/min:

$$V_M = t_M \times F$$

In size exclusion chromatography, the symbol V_O is used.

Number of Theoretical Plates (N)[1]**:** N is a measure of column efficiency. For Gaussian peaks, it is calculated by:

$$N = 16(t_R/W)^2$$

where t_R is the retention time of the substance, and W is the peak width at its base, obtained by extrapolating the relatively straight sides of the peak to the baseline. The value of N depends upon the substance being chromatographed as well as the operating conditions, such as the flow rate and temperature of the mobile phase or carrier gas, the quality of the packing, the uniformity of the packing within the

[1]The parameters k, N, r, and r_G were developed for isothermal GC separations and isocratic HPLC separations. Because these terms are thermodynamic parameters, they are valid only for separations made at constant temperature, mobile phase composition, and flow rate. However, for separations made with a temperature program or solvent gradient, these parameters may be used simply as comparative means to ensure that adequate chromatographic conditions exist to perform the methods as intended in the monographs.

column, and, for capillary columns, the thickness of the stationary phase film and the internal diameter and length of the column.

Where electronic integrators are used, it may be convenient to determine the number of theorical plates, by the equation:

$$N = 5.54\left(\frac{t_R}{W_{h/2}}\right)^2$$

where $W_{h/2}$ is the peak width at half-height. However, in the event of dispute, only equations based on peak width at baseline are to be used.

Peak: The peak is the portion of the chromatographic recording of the detector response when a single component is eluted from the column. If separation is incomplete, two or more components may be eluted as one unresolved peak.

Peak-to-Valley Ratio (p/v): The p/v may be employed as a system suitability criterion in a test for related substances when baseline separation between two peaks is not achieved. *Figure 2* represents a partial separation of two substances, where H_p is the height above the extrapolated baseline of the minor peak and H_v is the height above the extrapolated baseline at the lowest point of the curve separating the minor and major peaks:

$$p/v = H_p/H_v$$

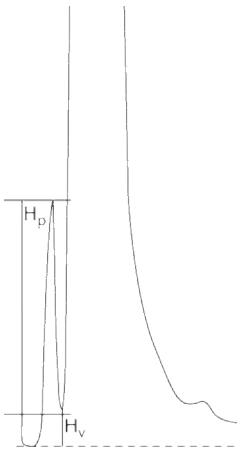


Figure 2. Peak-to-valley ratio determination.

Relative Retardation (R_{ret}): The relative retardation is the ratio of the distance traveled by the analyte to the distance simultaneously traveled by a reference compound (see *Figure 3*) and is used in planar chromatography.

$$R_{ret} = b / c$$

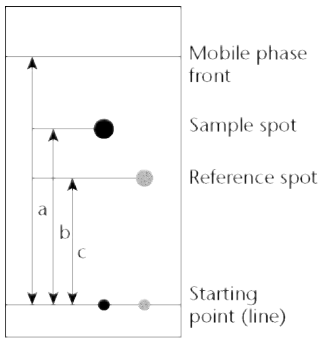


Figure 3. Typical planar chromatography.

Relative Retention (r)[1]: Is the ratio of the adjusted retention time of a component relative to that of another used as a reference obtained under identical conditions:

$$r = t_{R2} - t_M/t_{R1} - t_M$$

where t_{R2} is the retention time measured from the point of injection of the compound of interest; t_{R1} is the retention time measured from the point of injection of the compound used as reference; and t_M is the retention time of a nonretained marker defined in the procedure, all determined under identical experimental conditions on the same column.

Relative Retention Time (RRT): Also known as unadjusted relative retention. Comparisons in USP are normally made in terms of unadjusted relative retention, unless otherwise indicated.

$$RRT = t_{R2}/t_{R1}$$

The symbol r_G is also used to designate unadjusted relative retention values.

Relative Standard Deviation in Percentage

$$\%RSD = \frac{100}{\bar{x}}\left(\frac{\sum_{i=1}^{N}\left(x_i - \bar{x}\right)^2}{N-1}\right)^{1/2}$$

Retardation Factor (R_F): The retardation factor is the ratio of the distance traveled by the center of the spot to the distance simultaneously traveled by the mobile phase and is used in planar chromatography. Using the symbols in *Figure 3*:

$$R_F = b/a$$

Retention Factor (k)[1]: The retention factor is also known as the capacity factor (k′). Defined as:

$$k = \frac{\text{amount of substance in stationary phase}}{\text{amount of substance in mobile phase}}$$

or

$$k = \frac{\text{time spent by substance in stationary phase}}{\text{time spent by substance in mobile phase}}$$

The retention factor of a component may be determined from the chromatogram:

$$k = (t_R - t_M)/t_M$$

Retention Time (t_R): In liquid chromatography and gas chromatography, the retention time, t_R, is defined as the time elapsed between the injection of the sample and the appearance of the maximum peak response of the eluted sample zone. t_R may be used as a parameter for identification. Chromatographic retention times are characteristic of the compounds they represent but are not unique. Coincidence of retention times of a sample and a reference substance can be used as a partial criterion in construction of an identity profile but may not be sufficient on its own to establish identity. Absolute retention times of a given compound may vary from one chromatogram to the next.

Retention Volume (V_R): The retention volume is the volume of mobile phase required for elution of a component. It may be calculated from the retention time and the flow rate in mL/min:

$$V_R = t_R \times F$$

Resolution (R_S): The resolution is the separation of two components in a mixture, calculated by:

$$R_S = 2(t_{R2} - t_{R1})/(W_1 + W_2)$$

where t_{R2} and t_{R1} are the retention times of the two components; and W_2 and W_1 are the corresponding widths at the bases of the peaks obtained by extrapolating the relatively straight sides of the peaks to the baseline.

Where electronic integrators are used, it may be convenient to determine the resolution, by the equation:

$$R_S = 1.18(t_{R2} - t_{R1})/(W_{1,h/2} + W_{2,h/2})$$

Separation Factor (α): The separation factor is the relative retention calculated for two adjacent peaks (by convention, the value of the separation factor is always >1):

$$\alpha = k_2/k_1$$

Symmetry Factor (A_S)[2]: The symmetry factor (also known as the tailing factor) of a peak (see *Figure 4*) is calculated by:

$$A_S = W_{0.05}/2f$$

where $W_{0.05}$ is the width of the peak at 5% height and f is the distance from the peak maximum to the leading edge of the peak, the distance being measured at a point 5% of the peak height from the baseline.

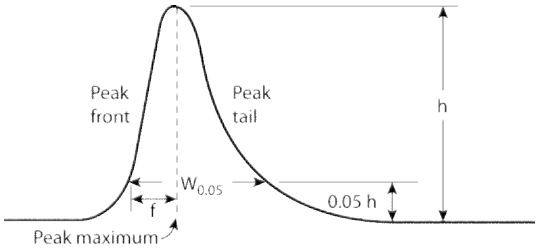


Figure 4. Asymmetrical chromatographic peak.

[2] It is also a common practice to measure the Asymmetry Factor as the ratio of the distance between the vertical line connecting the peak apex with the interpolated baseline and the peak front, and the distance between that line and the peak back measured at 10% of the peak height (see *Figure 4*), would be $(W_{0.10} - f_{0.10})/f_{0.10}$. However, for the purposes of USP, only the formula (As) as presented here is valid.

Tailing Factor (T): See *Symmetry Factor*.

SYSTEM SUITABILITY

System suitability tests are an integral part of gas and liquid chromatographic methods. These tests are used to verify that the chromatographic system is adequate for the intended analysis.

The tests are based on the concept that the equipment, electronics, analytical operations, and samples analyzed constitute an integral system that can be evaluated as such.

Factors that may affect chromatographic behavior include the following:

- Composition, ionic strength, temperature, and apparent pH of the mobile phase
- Flow rate, column dimensions, column temperature, and pressure
- Stationary phase characteristics, including type of chromatographic support (particle-based or monolithic), particle or macropore size, porosity, and specific surface area
- Reverse-phase and other surface modification of the stationary phases, the extent of chemical modification (as expressed by end-capping, carbon loading, etc.)

The resolution, R_S, is a function of the number of theoretical plates, N (also referred to as efficiency), the separation factor, α, and the capacity factor, k. [NOTE—All terms and symbols are defined in the preceding section *Definitions and Interpretation of Chromatograms*.] For a given stationary phase and mobile phase, N may be specified to ensure that closely eluting compounds are resolved from each other, to establish the general resolving power of the system, and to ensure that internal standards are resolved from the drug. This is a less reliable means to ensure resolution than is direct measurement. Column efficiency is, in part, a reflection of peak sharpness, which is important for the detection of trace components.

Replicate injections of a standard preparation or other standard solutions are compared to ascertain whether requirements for precision are met. Unless otherwise specified in the individual monograph, data from five replicate injections of the analyte are used to calculate the relative standard deviation, %RSD, if the requirement is 2.0% or less; data from six replicate injections are used if the relative standard deviation requirement is more than 2.0%.

For the *Assay* in a drug substance monograph, where the value is 100% for the pure substance, and no maximum relative standard deviation is stated, the maximum permitted %RSD is calculated for a series of injections of the reference solution:

$$\%RSD = KB\sqrt{n}/t_{90\%,\ n-1}$$

where K is a constant (0.349), obtained from the expression $K = (0.6/\sqrt{2}) \times (t_{90\%},5/\sqrt{6})$, in which $0.6/\sqrt{2}$ represents the required percentage relative standard deviation after six injections for B = 1.0; B is the upper limit given in the definition of the individual monograph minus 100%; n is the number of replicate injections of the reference solution ($3 \le n \le 6$); and $t_{90\%,\ n-1}$ is the Student's t at the 90% probability level (double sided) with n – 1 degrees of freedom.

Unless otherwise prescribed, the maximum permitted relative standard deviation does not exceed the appropriate value given in the table of repeatability requirements. This requirement does not apply to tests for related substances.

Relative Standard Deviation Requirements

	Number of Individual Injections			
	3	4	5	6
B (%)	Maximum Permitted RSD			
2.0	0.41	0.59	0.73	0.85

Relative Standard Deviation Requirements *(Continued)*

	Number of Individual Injections			
2.5	0.52	0.74	0.92	1.06
3.0	0.62	0.89	1.10	1.27

The symmetry factor, A_S, a measure of peak symmetry, is unity for perfectly symmetrical peaks; and its value increases as tailing becomes more pronounced (see *Figure 4*). In some cases, values less than unity may be observed. As peak symmetry moves away from values of 1, integration, and hence precision, become less reliable.

The signal-to-noise ratio (S/N) is a useful system suitability parameter. The S/N is calculated as follows:

$$S/N = 2H/h$$

where H is the height of the peak measured from the peak apex to a baseline extrapolated over a distance ≥5 times the peak width at its half-height; and h is the difference between the largest and smallest noise values observed over a distance ≥5 times the width at the half-height of the peak and, if possible, situated equally around the peak of interest (see *Figure 5*).

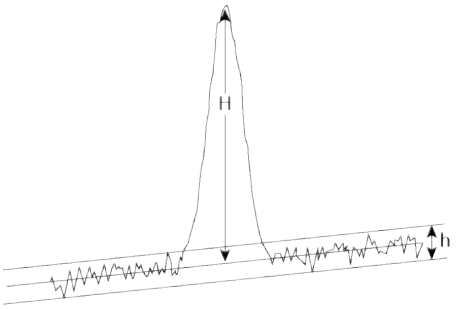


Figure 5. Noise and chromatographic peak, components of the S/N ratio.

These system suitability tests are performed by collecting data from replicate injections of standard or other solutions as specified in the individual monograph.

The specification of definitive parameters in a monograph does not preclude the use of other suitable operating conditions. Adjustments are permitted only when

- Suitable standards (including Reference Standards) are available for all compounds used in the suitability test; and
- Those standards show that the adjustments improved the quality of the chromatography with respect to the system suitability requirements.

Adjustments to chromatographic systems performed in order to comply with system suitability requirements are not to be made in order to compensate for column failure or system malfunction.

If adjustments of operating conditions are necessary in order to meet system suitability requirements, each of the items in the following list is the maximum variation that can be considered, unless otherwise directed in the monograph; these changes may require additional validation data. To verify the suitability of the method under the new conditions, assess the relevant analytical performance characteristics potentially affected by the change. Multiple adjustments can have a cumulative effect on the performance of the system and are to be considered carefully before implementation. Adjustments to the composition of the mobile phase in gradient elution are not recommended. If adjustments are necessary, only column changes (same packing material) or dwell volume adjustments are recommended.

pH of Mobile Phase (HPLC): The pH of the aqueous buffer used in the preparation of the mobile phase can be adjusted to within ±0.2 units of the value or range specified.

Concentration of Salts in Buffer (HPLC): The concentration of the salts used in the preparation of the aqueous buffer employed in the mobile phase can be adjusted to within ±10% if the permitted pH variation (see above) is met.

Ratio of Components in Mobile Phase (HPLC): The following adjustment limits apply to minor components of the mobile phase (specified at 50% or less). The amounts of these components can be adjusted by ±30% relative. However, the change in any component cannot exceed ±10% absolute (i.e., in relation to the total mobile phase). Adjustment can be made to one minor component in a ternary mixture. Examples of adjustments for binary and ternary mixtures are given below.

Binary Mixtures

SPECIFIED RATIO OF 50:50: 30% of 50 is 15% absolute, but this exceeds the maximum permitted change of ±10% absolute in either component. Therefore, the mobile phase ratio may be adjusted only within the range of 40:60 to 60:40.

SPECIFIED RATIO OF 2:98: 30% of 2 is 0.6% absolute. Therefore the maximum allowed adjustment is within the range of 1.4:98.6 to 2.6:97.4.

Ternary Mixtures

SPECIFIED RATIO OF 60:35:5: For the second component, 30% of 35 is 10.5% absolute, which exceeds the maximum permitted change of ±10% absolute in any component. Therefore the second component may be adjusted only within the range of 25% to 45% absolute. For the third component, 30% of 5 is 1.5% absolute. In all cases, a sufficient quantity of the first component is used to give a total of 100%. Therefore, mixture ranges of 50:45:5 to 70:25:5 or 58.5:35:6.5 to 61.5:35:3.5 would meet the requirement.

Wavelength of UV-Visible Detector (HPLC): Deviations from the wavelengths specified in the procedure are not permitted. The procedure specified by the detector manufacturer, or another validated procedure, is used to verify that error in the detector wavelength is, at most, ±3 nm.

Stationary Phase

COLUMN LENGTH (GC, HPLC): Can be adjusted by as much as ±70%.

COLUMN INNER DIAMETER (HPLC): Can be adjusted if the linear velocity is kept constant. See *Flow Rate (HPLC)* below.

COLUMN INNER DIAMETER (GC)—Can be adjusted by as much as ±50% for GC.

FILM THICKNESS (CAPILLARY CG)—Can be adjusted by as much as –50% to 100%.

Particle Size (HPLC): The particle size can be reduced by as much as 50%, but cannot be increased.

Particle Size (GC): Changing from a larger to a smaller or from a smaller to a larger particle size GC mesh support is acceptable if the chromatography meets the requirements of system suitability and the same particle size range ratio is maintained. The particle size range ratio is defined as the diameter of the largest particle divided by the diameter of the smallest particle.

Flow Rate (GC): The flow rate can be adjusted by as much as ±50%.

Flow Rate (HPLC): When column dimensions have been modified, the flow rate can be adjusted using:

$$F_2 = F_1 \frac{d_2^2}{d_1^2}$$

in which F_1 is the flow rate indicated in the monograph, in mL/min; F_2 is the adjusted flow rate, in mL/min; d_1 is the column inner diameter indicated in the monograph; and d_2 is the internal diameter of the column used. Additionally, the flow rate can be adjusted by ±50%.

Injection Volume (HPLC): The injection volume can be reduced as far as is consistent with accepted precision and detection limits; no increase is permitted.

Injection Volume and Split Volume (GC): The injection volume and split volume may be adjusted if detection and repeatability are satisfactory.

Column Temperature (HPLC): The column temperature can be adjusted by as much as ±10°. Column thermostating is recommended to improve control and reproducibility of retention time.

Oven Temperature (GC): The oven temperature can be adjusted by as much as ±10%.

Oven Temperature Program (GC): Adjustment of temperatures is permitted as stated above. When the specified temperature must be maintained or when the temperature must be changed from one value to another, an adjustment of up to ±20% is permitted.

Unless otherwise directed in the monograph, system suitability parameters are determined from the analyte peak.

Measured values of R_r or R_F or t_R for the sample substance do not deviate from the values obtained for the reference compound and mixture by more than the statistically determined reliability estimates from replicate assays of the reference compound. Relative retention times may be provided in monographs for informational purposes only to aid in peak identification. There are no acceptance criteria applied to relative retention times.

Suitability testing is used to ascertain the effectiveness of the final operating system, which should be subjected to this testing. Make injections of the appropriate preparation(s) as required in order to demonstrate adequate system suitability (as described in the *Chromatographic system* section of the method in a monograph) throughout the run.

The preparation can be a standard preparation or a solution containing a known amount of analyte and any additional materials (e.g., excipients or impurities) useful in controlling the analytical system. Whenever there is a significant change in the chromatographic system (equipment, mobile phase component, or other components) or in a critical reagent, system suitability is to be reestablished. No sample analysis is acceptable unless the suitability of the system has been demonstrated.

QUANTITATION

During quantitation, disregard peaks caused by solvents and reagents or arising from the mobile phase or the sample matrix.

In the linear range, peak areas and peak heights are usually proportional to the quantity of compound eluting. The peak areas and peak heights are commonly measured by electronic integrators but may be determined by more classical approaches. Peak areas are generally used but may be less accurate if peak interference occurs. The components measured are separated from any interfering components. Peak tailing and fronting is minimized, and the measurement of peaks on tails of other peaks are avoided when possible.

Although comparison of impurity peaks with those in the chromatogram of a standard at a similar concentration is preferred, impurity tests may be based on the measurement of the peak response due to impurities and expressed as a percentage of the area of the drug peak. The standard may be the drug itself at a level corresponding to, for example, 0.5% impurity, assuming similar peak responses. When impurities must be determined with greater certainty, use a standard of the impurity itself or apply a correction factor based on the response of the impurity relative to that of the main component.

External Standard Method: The concentration of the component(s) quantified is determined by comparing the response(s) obtained with the sample solution to the response(s) obtained with a standard solution.

Internal Standard Method: Equal amounts of the internal standard are introduced into the sample solution and a standard solution. The internal standard is chosen so that it does not react with the test material, is stable, is resolved from the component(s) quantified (analytes), and does not contain impurities with the same retention time as that of the analytes. The concentrations of the analytes are determined by comparing the ratios of their peak areas or peak heights and the internal standard in the sample solution with the ratios of their peak areas or peak heights and the internal standard in the standard solution.

Normalization Procedure: The percentage content of a component of the test material is calculated by determining the area of the corresponding peak as a percentage of the total area of all the peaks, excluding those due to solvents or reagents or arising from the mobile phase or the sample matrix and those at or below the limit at which they can be disregarded.

Calibration Procedure: The relationship between the measured or evaluated signal y and the quantity (e.g., concentration, mass) of substance x is determined, and the calibration function is calculated. The analytical results are calculated from the measured signal or evaluated signal of the analyte and its position on the calibration curve.

In tests for impurities for both the *External Standard Method,* when a dilution of the sample solution is used for comparison, and the *Normalization Procedure,* any correction factors indicated in the monograph are applied (e.g., when the response factor is outside the range 0.8–1.2).

When the impurity test prescribes the total of impurities or there is a quantitative determination of an impurity, choice of an appropriate threshold setting and appropriate conditions for the integration of the peak areas is important. In such tests the limit at or below which a peak is disregarded is generally 0.05%. Thus, the threshold setting of the data collection system corresponds to at least half of this limit. Integrate the peak area of any impurity that is not completely separated from the principal peak, preferably by valley-to-valley extrapolation (tangential skim).

Acetone

Product Code: 1.1030.

Ultra pure for Gas chromatography Grade

C_3H_6O
M= 58.08 g/mole
1lit= 0.79 g/cm^3

Specification:

Assay	≥	**99.5**	**%**
Description		**Conforms**	
Solubility		**Conforms**	
Identification		**Conforms**	
Specific gravity		**0.789 – 0.791**	**g/cm^3**
Evaporation residue	≤	**0.004**	**%**
Water	≤	**0.3**	**%**

Glass Bottles		
1	Liter	☐
2.5	Liter	☐

Plastic container		
1	Liter	☐
2.5	Liter	☐

Plastic Gallon		
5	Liter	☐
10	Liter	☐
20	Liter	☐

Technical Information

Formula:	**C3H6O**
Chemical formula:	**CH3COCH3**
Density:	**0.79 g/cm3 (20 ˚C)**
Molar mass:	**58.08 g/mol**
CAS number:	**67-64-1**
EC index number:	**606-001-00-8**
HS code:	**29141100**
EC number:	**200-662-2**
Storage (temperature):	**Store at +15 ˚C to +25 ˚C**
MSDS	**available**
RTECS:	**AL3150000**
R phrase:	**R 11-36-66-67**
S phrase:	**S 9-16-26**
Odour:	**fruity**
Form:	**liquid**
Color:	**colourless**
Explosion limit:	**2.6 -12.8 Vol %**
Ignition temperature:	**465 ˚C (DIN 51794)**
PH value:	**5 - 6 (395 g/l 20 ˚C)**
Solubility in water:	**(20˚C) soluble**
Solubility in ethanol:	**soluble**
Solubility in chloroform:	**soluble**
Flash point:	**< -20 ˚C (c.c.)**
Boiling point:	**56.2 ˚C (1013 hPa)**
Melting point:	**-95 ˚C**
Vapour pressure:	**233 hPa (20 ˚C)**
Viscosity dynamical :	**0.32 mPa*s (20 ˚C)**
Saturation concentration (air):	**533 g/m3 (20 ˚C)**

Acetone

Product Code: 1.1050.

Ultra Pure for Liquid chromatography Grade

C_3H_6O
M= 58.08 g/mole
1lit= 0.79 g/cm^3

Specification:

Assay	≥	**99.8**	**%**
Description		**Conforms**	
Solubility		**Conforms**	
Identification		**Conforms**	
Acidity	≤	**0.0002**	**%**
Alkalinity	≤	**0.0002**	**%**
Specific gravity		**0.789 – 0.791**	**g/cm^3**
Residue on evaporation	≤	**0.002**	**%**
Readily carbonizable substance		**Conforms**	
Transmission at 335nm	≥	**50.0**	**%**
Transmission at 340nm	≥	**80.0**	**%**
Transmission from 350nm Filtered by 0.2µm suitable filter	≥	**98.0**	**%**
Water	≤	**0.05**	**%**

Glass Bottles		
1	Liter	☒
2.5	Liter	☒

Plastic container		
1	Liter	☐
2.5	Liter	☐

Plastic Gallon		
5	Liter	☐
10	Liter	☐
20	Liter	☐

Technical Information

Formula:	**C3H6O**
Chemical formula:	**CH3COCH3**
Density:	**0.79 g/cm3 (20 ˚C)**
Molar mass:	**58.08 g/mol**
CAS number:	**67-64-1**
EC index number:	**606-001-00-8**
HS code:	**29141100**
EC number:	**200-662-2**
Storage (temperature):	**Store at +15 ˚C to +25 ˚C**
MSDS	**available**
RTECS:	**AL3150000**
R phrase:	**R 11-36-66-67**
S phrase:	**S 9-16-26**
Odour:	**fruity**
Form:	**liquid**
Color:	**colourless**
Explosion limit:	**2.6 -12.8 Vol %**
Ignition temperature:	**465 ˚C (DIN 51794)**
PH value:	**5 - 6 (395 g/l 20 ˚C)**
Solubility in water:	**(20˚C) soluble**
Solubility in ethanol:	**soluble**
Solubility in chloroform:	**soluble**
Flash point:	**< -20 ˚C (c.c.)**
Boiling point:	**56.2 ˚C (1013 hPa)**
Melting point:	**-95 ˚C**
Vapour pressure:	**233 hPa (20 ˚C)**
Viscosity dynamical :	**0.32 mPa*s (20 ˚C)**
Saturation concentration (air):	**533 g/m3 (20 ˚C)**

Methanol

Product Code: 1.1230.

Ultra pure for Gas chromatography Grade

CH_3OH

M= 32.04 g/mol

1lit= 0.79 g/cm^3

Specification:

Assay	≥	99.8	%
Solubility		Conforms	
Color & Description		Conforms	
Identification (GC)		Conforms	
Alkalinity	≤	3.0	ppm
Acidity	≤	0.45	ml
Readily carbonizable substances		Conforms	
Acetone & aldehyde		Conforms	
Nonvolatile residue		Conforms	
Evaporation residue	≤	0.001	%
Carbonyl compounds (as acetone)	≤	0.003	%
Substances reducing		Conforms	
Boiling Point		64.0 – 65.0	°C
Water	≤	0.1	%

Glass Bottles		
1	Liter	☒
2.5	Liter	☒

Plastic container		
1	Liter	☐
2.5	Liter	☐

Plastic Gallon		
5	Liter	☐
10	Liter	☐
20	Liter	☐

Technical Information

Formula:	CH4O
Chemical formula:	CH3OH
Density:	0.79 g/cm3 (20 ˚C)
Molar mass:	32.04 g/mol
CAS number:	67-56-1
EC index number:	603-001-00-X
HS code:	29051100
EC number:	200-659-6
Storage (temperature):	Without limitation
SDS	available
RTECS:	PC1400000
R phrase:	R 11-23/24/25-39/23/24/25
S phrase:	S 7-16-36/37-45
Odour:	characteristic
Form:	liquid
Color:	colourless
Explosion limit:	5.5 -36.5 Vol %
Ignition temperature:	455 ˚C (DIN 51794)
Solubility in water:	(20˚C) soluble
Flash point:	11 ˚C (c.c.)
Boiling point:	64.5 ˚C (1013 hPa)
Melting point:	-98 ˚C
Vapour pressure:	128 hPa (20 ˚C)
Viscosity dynamical :	0.597 mPa*s (20 ˚C)
Saturation concentration (air):	166 g/m3 (20 ˚C)

Methanol

Product Code: 1.1240.

Isocratic Liquid chromatography Grade

CH_3OH

M= 32.04 g/mol

1lit= 0.79 g/cm^3

Specification:

Assay	≥	99.8	%
Solubility		Conforms	
Color & Description		Conforms	
Identification		Conforms	
Alkalinity	≤	3.0	ppm
Acidity	≤	0.45	ml
Acetone & aldehyde		Conforms	
Residue on evaporation	≤	3.0	mg/l
Transmission at 225nm	≥	50	%
Transmission at 240nm	≥	80	%
Transmission from 265nm	≥	98	%
Absorbance at 235nm	≤	2.0	mAU
Absorbance at 254nm	≤	1.0	mAU
Boiling Point		64.0 – 65.0	
Filtered by 0.2 µm suitable filter			
Water	≤	0.03	%

Glass Bottles		
1	Liter	☒
2.5	Liter	☒

Plastic container		
1	Liter	☐
2.5	Liter	☐

Plastic Gallon		
5	Liter	☐
10	Liter	☐
20	Liter	☐

Technical Information

Formula:	CH4O
Chemical formula:	CH3OH
Density:	0.79 g/cm3 (20 ˚C)
Molar mass:	32.04 g/mol
CAS number:	67-56-1
EC index number:	603-001-00-X
HS code:	29051100
EC number:	200-659-6
Storage (temperature):	Without limitation
SDS	available
RTECS:	PC1400000
R phrase:	R 11-23/24/25-39/23/24/25
S phrase:	S 7-16-36/37-45
Odour:	characteristic
Form:	liquid
Color:	colourless
Explosion limit:	5.5 -36.5 Vol %
Ignition temperature:	455 ˚C (DIN 51794)
Solubility in water:	(20˚C) soluble
Flash point:	11 ˚C (c.c.)
Boiling point:	64.5 ˚C (1013 hPa)
Melting point:	-98 ˚C
Vapour pressure:	128 hPa (20 ˚C)
Viscosity dynamical :	0.597 mPa*s (20 ˚C)
Saturation concentration (air):	166 g/m3 (20 ˚C)

2-Propanol

Product Code: 1.1410.

Ultra Pure for Gas Chromatograhy Grade

C_3H_8O
M= 60. 10 g/mole
1lit= 0.78 g/cm^3

Specification:

Assay	≥	**99.5**	**%**
Solubility		**Conforms**	
Description		**Conforms**	
Identification		**Conforms**	
Evaporation residue	≤	**0.002**	**%**
Acidity	≤	**0.7**	**ml**
Specification gravity		**0.784 – 0.785**	**g/cm^3**
Water			**%**

Glass Bottles
1 Liter ☒
2.5 Liter ☒

Plastic container
1 Liter ☐
2.5 Liter ☐

Plastic Gallon
5 Liter ☐
10 Liter ☐
20 Liter ☐

Technical Information

Formula:	**C3H8O**
Chemical formula:	**CH3CH(OH)CH3**
Density:	**0.786 g/cm3 (20 ˚C)**
Molar mass:	**60.10 g/mol**
CAS number:	**67-63-0**
EC index number:	**603-117-00-0**
HS code:	**29051200**
EC number:	**200-661-7**
Storage (temperature):	**Store at +5 ˚C to +30 ˚C**
SDS	**available**
RTECS:	**NT8050000**
R phrase:	**R 11-36-67**
S phrase:	**S 7-16-24/25-26**
Odour:	**alcohol-like**
Form:	**liquid**
Color:	**colourless**
Explosion limit:	**2 - 12.7 Vol %**
Ignition temperature:	**425 ˚C (DIN 51794)**
Solubility in water:	**(20 ˚C) soluble**
Solubility in ethanol:	**soluble**
Solubility in chloroform:	**soluble**
Flash point:	**12 ˚C (c.c.)**
Boiling point:	**82.4 ˚C (1013 hPa)**
Melting point:	**-89.5 ˚C**
Vapour pressure:	**43 hPa (20 ˚C)**
Viscosity dynamical:	**2.2 mPa*s (20 ˚C)**
Saturation concentration (air):	**105 g/m3 (20 ˚C)**

Xylene

Product Code: 1.1580.

Ultra Pure For Gas Chromatography Grade

C_8H_{10}
M= 106.2 g/mole
1lit= 0.86 g/cm^3

Specification:

Assay (C8H10)	≥	**99.0**	**%**
Solubility		**Conforms**	
Appearance & Color		**Conforms**	
Identification (GC)		**Conforms**	
Specific gravity	≤	**0.862 – 0.864**	**g/cm^3**
Acidity or alkalinity	≤	**0.45**	**ml**
Boiling range		**137 - 143**	**°C**
Benzene (GC)	≤	**0.01**	**%**
Toluene (GC)	≤	**0.01**	**%**
Ethylbenzene (GC)	≤	**3.0**	**%**
Evaporation residue	≤	**0.005**	**%**
Readily carbonizable substances		**Conforms**	
Water	≤	**0.05**	**%**

Glass Bottles
1 Liter ☒
2.5 Liter ☒

Plastic container
1 Liter ☐
2.5 Liter ☐

Plastic Gallon
5 Liter ☐
10 Liter ☐
20 Liter ☐

Technical Information

Formula:	**C8H10**
Chemical formula:	**C6H4(CH3)2**
Density:	**0.86 g/cm3 (20˚C)**
Molar mass:	**106.17 g/mol**
CAS number:	**1330-20-7**
EC index number:	**601-022-00-9**
HS code:	**29024400**
EC number:	**215-535-7**
Storage (temperature):	**Without limitations.**
SDS	**available**
RTECS:	**ZE2100000**
R phrase:	**R 10-20/21-38**
S phrase:	**S 25**
Odour:	**aromatic**
Form:	**liquid**
Color:	**colourless**
Explosion limit:	**1.0 -7.0 Vol %**
Ignition temperature:	**~ 465 ˚C (DIN 51794)**
Solubility in water:	**0.2 g/l (20 ˚C)**
Solubility in ethanol:	**(20 ˚C) solube**
Flash point:	**25 ˚C (c.c.)**
Boiling point:	**137 - 143 ˚C**
Melting point:	**> -34 ˚C**
Vapour pressure:	**10 hPa (20 ˚C)**
Viscosity dynamical:	**~ 0. 6 mPa*s (20 ˚C)**
Saturation concentration (air):	**30 - 38 g/m3 (20 ˚C)**

Water

Product Code: 1.1720.

Ultra pure for Liquid chromatography Grade

H_2O
M= 18.02 g/mol
1 Lit= 1.0 g/cm^3

Specification:

Description		Conforms	
Appearance		Conforms	
Abs@200nm	≤	20.0	mAU
Abs@210nm	≤	5.0	mAU
Abs@254nm	≤	0.5	mAU
Abs@300nm	≤	0.005	mAU
Ammonia		Conforms	
Chloride		Conforms	
Calcium		Conforms	
Sulfate		Conforms	
Oxidizable substances		Conforms	
Magnesium		Conforms	
Nitrate		Conforms	
Evaporation residue	≤	5.0	mg/l
Gradient @ 210nm	≤	5.0	mAU
Gradient @ 254nm	≤	0.5	mAU
Spec Conductance @25 °C	≤	1.0	µS/cm
pH@25 °C		5.0 – 7.0	

Glass Bottles

1	Liter	☒
2.5	Liter	☒

Plastic container

1	Liter	☐
2.5	Liter	☐

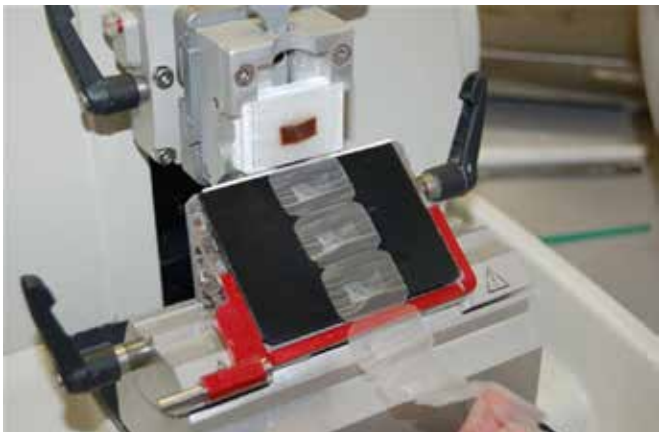
Plastic Gallon

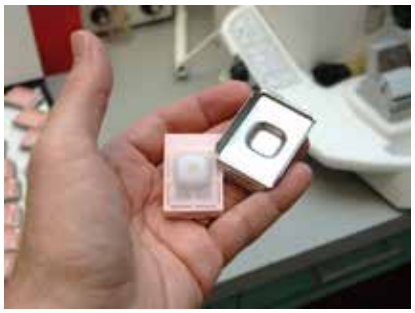
5	Liter	☐
10	Liter	☐
20	Liter	☐

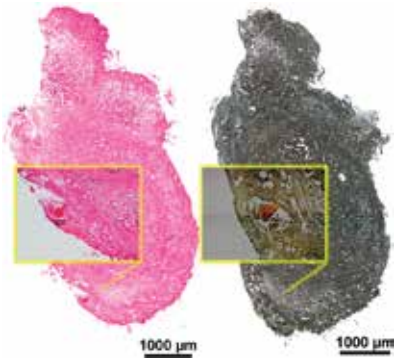
Technical Information

Formula (Hill):	**H_2O**
Density:	**1.00g/cm3 (20 ˚C)**
Molar mass:	**18.02 g/mol**
CAS number:	**7732-18-5**
HS code:	**28510010**
EC number:	**231-791-2**
Storage (temperature):	**Store at +5 to +30 ˚C**
SDS	**Available**
RTECS:	**ZC0110000**
Odour:	**Odourless**
Form:	**Liquid**
Color:	**Colourless**
Boiling point:	**100 ˚C**
Melting point:	**0 ˚C**
Vapour pressure:	**23hpa (20 ˚C)**
Viscosity dynamical:	**0.952 mPa*s (20 ˚C)**

Laboratory Histology Reagent Grade







Bees wax yellow

Product Code: 1.1060.

Laboratory Histology Reagent Grade

Specification:

Description		Conforms	
Solubility		Conforms	
Specific gravity	~	0.960	g/cm³
Drop point		61.0 – 66.0	°C
Acid value		17.0 – 22.0	
Ester value		70.0 – 80.0	
Saponification value		87.0 – 102.0	
Ceresin, paraffin & certain other waxes		Conforms	
Glycerol & other polyols	≤	0.5	%

Glass Bottles		
1 5	Lit gr	☐
2.5 10	Lit gr	☐
25	gr	☐
Plastic container		
1 100	Lit gr	☐
2.5 500	Lit gr	☒
800	gr	☒
Plastic Gallon		
5 1	Lit kg	☒
10 5	Lit kg	☒
20 10	Lit kg	☒

Technical Information

Density:	~ 0.95 g/cm3 (20 ˚C)
CAS number:	8012-89-3
HS code:	15219099
EC number:	232-383-7
Storage (temperature):	Store at +15 ˚C to +25 ˚C
SDS	available
Odour:	characteristic
Form:	solid
Color:	yellowish
Solubility in water:	insoluble
Flash point:	~ 265 ˚C
Melting point:	~ 64 ˚C
Thermal decomposition:	> 200 ˚C
Viscosity dynamical:	~ 17 mPa*s (80 ˚C)

Paraffin granulated

Product Code: 1.1340.

Laboratory Histology Reagent 56.0 – 58.0 °C Grade

Specification:

Description		Conforms	
Solubility		Conforms	
Identification		Conforms	
Solidification point		56.0 – 58.0	°C
Congealing range		56.0 – 58.0	°C
Acidity	≤	1.0	ml
Alkalinity	≤	0.5	ml

Glass Bottles		
5	gr	☐
10	gr	☐
25	gr	☐
Plastic container		
100	gr	☐
500	gr	☒
800	gr	☒
Plastic Gallon		
1	kg	☒
5	kg	☒
10	kg	☒

Technical Information

Density:	~ 0.90 g/cm3 (20 ˚C)
Bulk density:	~ 400 - 500 kg/m3
CAS number:	8002-74-2
HS code:	27122090
EC number:	232-315-6
Storage (temperature):	Store at +5 ˚C to +30 ˚C
SDS	available
Odour:	almost odourless
Form:	solid
Color:	colourless to white
Ignition temperature:	> 300 ˚C
Solubility in water:	(20 ˚C) insoluble
Flash point:	~ 240 ˚C
Boiling point:	> 350 ˚C
Melting point:	56 - 58 ˚C

Xylene

Product Code: **1.1570.**

Laboratory Histology Reagent Grade

C_8H_{10}
M= 106.2 g/mole
1lit= 0.86 g/cm^3

Specification:

Assay (as C_8H_{10})	**≥**	**98.0**	**%**
Solubility		**Conforms**	
Appearance & Color		**Conforms**	
Identification		**Conforms**	
Specific gravity		**0.862 – 0.864**	**g/cm^3**
Acidity or alkalinity	**≤**	**0.45**	**ml**
Benzene	**≤**	**0.01**	**%**
Toluene	**≤**	**0.01**	**%**
Evaporation residue	**≤**	**0.002**	**%**
Water	**≤**	**0.05**	**%**

Glass Bottles		
1	Liter	☒
2.5	Liter	☒

Plastic container		
1	Liter	☐
2.5	Liter	☐

Plastic Gallon		
5	Liter	☒
10	Liter	☒
20	Liter	☒

Technical Information

Formula:	**C8H10**
Chemical formula:	**C6H4(CH3)2**
Density:	**0.86 g/cm3 (20˚C)**
Molar mass:	**106.17 g/mol**
CAS number:	**1330-20-7**
EC index number:	**601-022-00-9**
HS code:	**29024400**
EC number:	**215-535-7**
Storage (temperature):	**Without limitations.**
SDS	**available**
RTECS:	**ZE2100000**
R phrase:	**R 10-20/21-38**
S phrase:	**S 25**
Odour:	**aromatic**
Form:	**liquid**
Color:	**colourless**
Explosion limit:	**1.0 -7.0 Vol %**
Ignition temperature:	**~ 465 ˚C (DIN 51794)**
Solubility in water:	**0.2 g/l (20 ˚C)**
Solubility in ethanol:	**(20 ˚C) solube**
Flash point:	**25 ˚C (c.c.)**
Boiling point:	**137 - 143 ˚C**
Melting point:	**> -34 ˚C**
Vapour pressure:	**10 hPa (20 ˚C)**
Viscosity dynamical:	**~ 0. 6 mPa*s (20 ˚C)**
Saturation concentration (air):	**30 - 38 g/m3 (20 ˚C)**

Laboratory Grade

n - Hexane

Product Code: 1.1290.

Laboratory Extraction Reagent Grade

C_6H_{14}
1lit= 0.66 g/cm^3

Specification:

Assay (as C_6H_{14})	≥	85.0	%
Color & Description		Conforms	
Identification		Conforms	
Specific gravity		0.659 – 0.662	g/cm^3
Acidity	≤	0.002	%
Readily carbonizable substances		Conforms	
Water	≤	0.02	%

Glass Bottles	
1	Litr ☒
2.5	Litr ☒
2.5	Litr ☐

Plastic container	
1	Litr ☐
2.5	Litr ☐
2.5	Litr ☐

Plastic Gallon	
5	Litr ☒
15	Litr ☐
20	Litr ☒
20	Litr ☐

Technical Information

Formula (Hill):	C_6H_{14}
Chemical formula:	CH3(CH2)4CH3
Density:	0.66 g/cm3 (20 ˚C)
Molar mass:	86.18 g/mol
CAS number:	110-54-3
EC index number:	601-037-00-0
HS code:	29011000
EC number:	203-777-6
Storage (temperature):	without limitation
SDS	available
RTECS:	MN9275000
R phrase:	R 11-38-48/20-51/53
S phrase:	S 9-16-29-33-36/37
Odour:	benzene-like
Form:	liquid
Color:	colourless
Explosion limit:	1.0-8.1Vol%
Ignition temperature:	240 ˚C(DIN 51794)
Solubility in water:	0.0095 g/l (20
Solubility in ethanol:	(20 ˚C) soluble
Solubility in chloroform:	(20 ˚C) soluble
Flash point:	-22 Oc (c.c)
Boiling point:	69 Oc (1013 hpa)
Melting point:	-94.3 Oc
Vapour pressure:	160 hpa(20 ˚C)
Viscosity dynamical:	0.326 mpa*s (20 ˚C)
Viscosity kinematic:	0.50 mm2/s (20 ˚C)
Saturation concentration (air):	563 g/m3(20 ˚C)

Nitric acid 60%

Product Code: 1.1310.

For Laboratory, cleaning & metal polishing Grade

HNO_3
M= 63.01 g/mol
1lit= 1.34 g/cm^3

Specification:

Assay	≥	60.0	%
Description		Conforms	
Identification		Conforms	
Chloride	≤	0.0005	%
Sulfate	≤	0.001	%
Heavy metals	≤	0.0002	%
Iron	≤	0.0002	%
Residue on ignition	≤	0.005	%

Glass Bottles	
1	Liter ☒
2.5	Liter ☒

Plastic container	
1	Liter ☐
2.5	Liter ☒

Plastic Gallon	
5	Liter ☒
10	Liter ☒
20	Liter ☒

Technical Information

Density:	~ 1.34 g/m^3 (20 ˚C)
HS code:	28080000
Storage (temperature):	store at +2Oc to +25˚C
SDS:	available
R phrase:	R35
S phrase:	S 23.2-26-36/37/39-45
Odour:	pungent
Form:	liquid
Color:	colourless
Solubility in water:	(20 ˚C) soluble
Boiling point:	121 ˚C
Melting point:	~ -32˚C
Vapour pressure:	~ 9.4 hpa(20 ˚C)

5-Sulfosalicylic acid dihydrate

Product Code: 1.1550.

For Laboratory Grade

$C_7H_6O_6S * 2H_2O$
M= 254.22 g/mole

Specification:

Assay	≥	**99.0**	%
Description		**Conforms**	
Solubility		**Conforms**	
Identification		**Conforms**	
Salicylic acid		**Conforms**	
Water	≤	**15.0**	%
Heavy metals	≤	**0.001**	%
Melting Point		**105 - 109**	°C

Glass Bottles		
5	gr	☐
10	gr	☐
25	gr	☐
Plastic container		
100	gr	☐
500	gr	☒
800	gr	☐
Plastic Gallon		
1	kg	☒
5	kg	☐
10	kg	☐

Technical Information

Formula (Hill)	$C_7H_6O_6S * 2H_2O$
Density:	**0.8g/cm3 (20 Oc)**
Molar mass:	**254.22g/mol**
Bulk density:	**~310 kg/m3**
CAS Number	**6965-83-3**
HS Code	**29182910**
EC Number:	**202-555-6**
Storage (temperature):	**Store at+15 ˚C to+25 ˚C**
SDS:	**available**
R phrase:	**R 36/38**
S phrase	**S 26**
Odour:	**Slightly pungent**
Form:	**Crystals**
Color:	**White to grey**
pH value:	**<0.5 (200 g/l 20 ˚C)**
Solubility in water:	**(20 ˚C) freely soluble**
Solubility in ethanol:	**(20 ˚C) freely soluble**
Flash point:	**~ 150 ˚C**
Melting point:	**105-109 ˚C (for the dihydrate)**
Thermal decomposition:	**~200 ˚C**

Sulfuric acid 98%

Product Code: 1.1590.

Laboratory for nitrogen determination Grade

H_2SO_4
M= 98.08 g/mol
1lit= 1.84 g/cm^3

Specification:

Assay	≥	**98.0**	%
Description		**Conforms**	
Solubility		**Conforms**	
Identification		**Conforms**	
Specific gravity	~	**1.84**	g/cm^3
Chloride	≤	**0.005**	%
Heavy metals	≤	**5.0**	ppm
Residue on ignition	≤	**0.005**	%
Limit of nitrate		**Conforms**	
Reducing Substances		**Conforms**	

Glass Bottles		
1	Liter	☒
2.5	Liter	☒
Plastic container		
1	Liter	☐
2.5	Liter	☒
Plastic Gallon		
5	Liter	☒
10	Liter	☒
20	Liter	☒

Technical Information

Formula:	**H2O4S**
Chemical formula:	**H2SO4**
Density:	**1.84 g/cm3 (20 ˚C)**
Molar mass:	**98.08 g/mol**
CAS number:	**7664-93-9**
EC index number:	**016-020-00-8**
HS code:	**28070010**
EC number:	**231-639-5**
Storage (temperature):	**Without limitations.**
SDS	**available**
RTECS:	**WS5600000**
R phrase:	**R 35**
S phrase:	**S 26-30-45**
Odour:	**odourless**
Form:	**liquid**
Color:	**colourless**
PH value:	**0.3 (49 g/l 25 ˚C)**
Solubility in water:	**(20˚C) soluble,**
Solubility in ethanol:	**soluble,**
Boiling point:	**~ 335 ˚C**
Melting point:	**~ 3 ˚C**
Vapour pressure:	**~ 0.0001 hpa (20 ˚C)**
Thermal decomposition:	**~ 338 ˚C**
Viscosity dynamical:	**~ 24 mPa*s (20 ˚C)**

Laboratory, Cleaning & Disinfection Solution Grade



Hydrogen peroxide (Stabilized)

Product Code: **1.1210.**

Laboratory, Cleaning & Disinfection Solution Grade

H_2O_2
M= 34.01 g/mole
1lit= 1.13 g/cm^3

Specification:

Assay		**30.0 – 35.0**	**%**
Description		**Conforms**	
Identification		**Conforms**	
Acidity	≤	**2.5**	**ml**
Chloride (Cl)	≤	**0.005**	**%**
Limit of nonvolatile residue	≤	**30.0**	**mg**
Heavy metals	≤	**5.0**	**%**

Glass Bottles		
1	Liter	☒
2.5	Liter	☒

Plastic container		
1	Liter	☐
2.5	Liter	☒

Plastic Gallon		
5	Liter	☒
10	Liter	☒
20	Liter	☒

Technical Information

Density:	**1.13 g/cm3 (20 ˚C)**
HS code:	**28470000**
Storage (temperature):	**Store at +2 ˚C to +25 ˚C**
SDS	**available**
R phrase:	**R 22-37/38-41**
S phrase:	**S 26-39**
Odour:	**slightly pungent**
Form:	**liquid**
Color:	**colourless**
Solubility in water:	**(20 ˚C) soluble**
Boiling point:	**~ 110 ˚C**
Melting point:	**~ -24 ˚C**
Vapour pressure:	**~ 20 hPa (20 ˚C)**
Thermal decomposition:	**> 100 ˚C**

Formaldehyde 10%

Product Code: 1.1150.

Laboratory, Cleaning & Disinfection Solution Grade

CH_2O
M= 30.03 g/mole

Glass Bottles		
1	Liter	☒
2.5	Liter	☒

Plastic container		
1	Liter	☐
2.5	Liter	☒

Plastic Gallon		
5	Liter	☒
10	Liter	☒
20	Liter	☒

Specification:

Assay	~	**10.0**	**%**
Description		**Conforms**	
Solubility		**Conforms**	
Identification		**Conforms**	
Acidity	≤	**10.0**	**ml**

Technical Information

HS code:	**29121100**
Storage (temperature):	**store at +15 ˚C to+25 ˚C**
SDS	**available**
R phrase	**R 23/24/25-34-39/23/24**
S phrase	**S 26-36/37/39-45-51**
Odour:	**pungent**
Form:	**liquid**
Color:	**colourless**
Explosion limit	**7-73 Vol%(formaldehyde)**
Ignition temperature	**~300 ˚C(formaldehyde)**
Solubility in water	**(20 ˚C) soluble**
Solubility in ethanol:	**(20 ˚C) soluble**
Flash point:	**>62 ˚C**
Boiling time:	**93-96 ˚C**
Melting point	**<-15 ˚C**

Formaldehyde 37%

Product Code: 1.1160.

Laboratory, Cleaning & Disinfection Solution Grade

CH_2O
M= 30.03 g/mole
1lit= 1.08 g/cm^3

Glass Bottles		
1	Liter	☒
2.5	Liter	☒

Plastic container		
1	Liter	☐
2.5	Liter	☒

Plastic Gallon		
5	Liter	☒
10	Liter	☒
20	Liter	☒

Specification:

Assay	≥	**35.0**	**%**
Description		**Conforms**	
Solubility		**Conforms**	
Identification		**Conforms**	
Density	~	**1.08**	**g/cm^3**
Acidity	≤	**10.0**	**ml**
Methanol	~	**9.0**	**%**

Technical Information

Density	**1.08 g/cm^3 (20˚C)**
HS code:	**29121100**
Storage (temperature):	**store at +15 ˚C to+25 ˚C**
SDS	**available**
R phrase	**R 23/24/25-34-39/23/24**
S phrase	**S 26-36/37/39-45-51**
Odour:	**pungent**
Form:	**liquid**
Color:	**colourless**
Explosion limit	**7-73 Vol%(formaldehyde)**
Ignition temperature	**~300 ˚C(formaldehyde)**
Solubility in water	**(20 ˚C) soluble**
Solubility in ethanol:	**(20 ˚C) soluble**
Flash point:	**>62 ˚C**
Boiling time:	**93-96 ˚C**
Melting point	**<-15 ˚C**

Sodium hypochlorite

Product Code: 1.1530.

Laboratory, Cleaning & Disinfection Solution Grade

NaClO (6-14% active chlorine)
M= 122.12 g/mol
1lit= 1.22 g/cm^3

Specification:

Assay	**6.0 – 14.0**	**%**
Description	**Conforms**	
Solubility	**Conforms**	
Identification	**Conforms**	

Glass Bottles
1 Liter ☒
2.5 Liter ☒

Plastic container
1 Liter ☐
2.5 Liter ☒

Plastic Gallon
5 Liter ☒
10 Litr ☒
20 Liter ☒

Technical Information

Density	**1.21 - 1.23 g/cm3 (20 ˚C)**
HS code:	**28289000**
Storage (temperature):	**Store below +15 ˚C**
SDS	**available**
R phrase	**R 31 - 34**
S phrase	**S 26- 28.1 - 36/ 37/39 - 45**
Odour:	**characteristic**
Form:	**liquid**
Color:	**yellow**
pH value:	**12 (160 g/l 20 ˚C)**
Solubility in water	**(20 ˚C) soluble**
Boiling time:	**96-99 ˚C**
Melting point	**~16 OC**
Vapour pressure:	**~25 hPa (20 ˚C)**
Viscosity dynamical:	**2.6 mPa*s (20 ˚C)**

ISO, ASTM Salt Spray, Electrochlorination Grade

Sodium chloride

Product Code: 1.1480.

ISO, ASTM Salt Spray, Electrochlorination Grade

NaCl
M= 58.44 g/mol

Specification:

Assay	**≥**	**99.5**	**%**
Description		**Conforms**	
Solubility		**Conforms**	
Identification		**Conforms**	
Appearance of solution		**Conforms**	
Sulfate	**≤**	**0.002**	**%**
Chloride		**Conforms**	
Barium		**Conforms**	
Iodides	**≤**	**0.1**	**%**
Ferro cyanides		**Conforms**	
Magnesium & alkaline earth metals	**≤**	**0.01**	**%**
Iron	**≤**	**2.0**	**µg/g**
Acidity or Alkalinity	**≤**	**0.5**	**ml**
Ni	**≤**	**0.001**	**%**
Cu	**≤**	**0.001**	**%**
Limit of Phosphates	**≤**	**0.0025**	**%**
Loss on drying	**≤**	**0.5**	**%**

Glass Bottles
5 gr ☐
10 gr ☐
25 gr ☐

Plastic container
100 gr ☐
500 gr ☒
800 gr ☐

Plastic Gallon
1 kg ☒
5 kg ☒
10 kg ☒

Technical Information

Formula:	**ClNa**
Chemical formula:	**NaCl**
Density:	**2.17 g/cm3 (20 ˚C)**
Molar mass:	**58.44 g/mol**
Bulk density:	**~ 1140 kg/m3**
CAS number:	**7647-14-5**
HS code:	**25010091**
EC number:	**231-598-3**
Storage (temperature):	**Without limitations.**
SDS	**available**
RTECS:	**VZ4725000**
Odour:	**odourless**
Form:	**solid**
Color:	**colourless**
PH value:	**4.5 – 7.0 (100 g/l 20 ˚C)**
Solubility in water:	**358 g/l (20˚C)**
Solubility in ethanol:	**0.51 g/l (25˚C)**
Boiling point:	**1461 ˚C (1013 hPa)**
Melting point:	**801 ˚C**
Vapour pressure:	**1.3 hPa (865 ˚C)**

ASTM INTERNATIONAL