



METU

ENVIRONMENTAL ENGINEERING DEPARTMENT

LABORATORY SAFETY and WORKING RULES



 **MIDDLE EAST TECHNICAL UNIVERSITY**
ENVIRONMENTAL ENGINEERING
DEPARTMENT

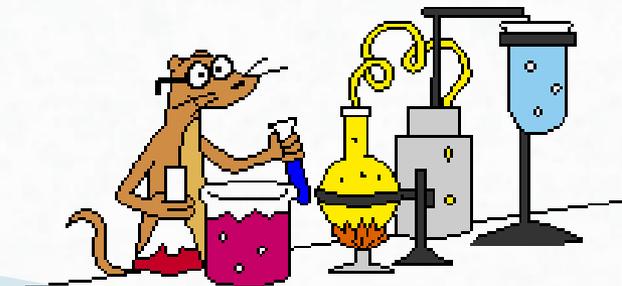


The aim of this presentation;

- General working rules of METU Environmental Engineering Laboratories
- Personal protections that should be taken while working in the laboratory
- The rules to be considered when working with chemicals, glasswares and devices
- The procedure of chemical waste deposition



The procedures to be followed for the METU ENVE Laboratories



Before Starting to Work in ENVE Laboratories

Reading and signing of Laboratory Safety and Working Rules form by students



MIDDLE EAST TECHNICAL UNIVERSITY
Environmental Engineering

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Laboratuvar Güvenliği

- Çevre Mühendisliği Bölümü laboratuvar güvenliği ve çalışma kuralları formu
- Çevre Mühendisliği Bölümü laboratuvar güvenliği ve çalışma kuralları sunumu

Orta Doğu Teknik Üniversitesi, Üniversiteler Mahallesi, Dursunpınar Bulvarı No:1 06800 Çankaya/ANKARA/TÜRKİYE



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Environmental Engineering

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Analiz Laboratuvarı

- Laboratuvar Güvenliği
- Çalışma Saati ve Önemli Hususlar
- Kuruluş
- Tarafsızlık Beyanı
- Analizler ve Analiz Bedelleri
- Başvuru Aşamaları ve Formlar
- İletişim

Orta Doğu Teknik Üniversitesi, Üniversiteler Mahallesi, Dursunpınar Bulvarı No:1 06800 Çankaya/ANKARA/TÜRKİYE



Environmental Engineering | E: x
← → C https://enve.metu.edu.tr

METU ENVE
Environmental Engineering Department provides the high quality environmental engineering education as required by the industry and the public, to advance the understanding and application of the principles of environmental science and engineering, to enhance and maintain sustainable economic development efforts and to improve the well-being of the society in general through teaching, research and community outreach programs. The undergraduate program of Environmental Engineering was accredited by the Engineering Accreditation Commission of ABET.

Announcements all announcements >>

- New Faculty Position**
New Faculty Position. Click here for more information
- Environmental Engineering Departmental Seminar**
This week's seminar by Melek ÖZDEMİR. Click here for more information.
- Seçil Ömeroğlu has been granted "German Water Partnership (GWP) Award Turkey 2015" award**
One of our teaching assistants and PhD students Seçil Ömeroğlu, has been granted "German Water Partnership (GWP) Award..."
- Seçil Ömeroğlu has been granted "Every Drop Matters" award**
One of our teaching assistants and PhD students Seçil Ömeroğlu, has been granted "Every Drop Matters" award organized...

Links

- Weekly Seminars
- Academic Activities
- For Prospective Students/Bölüm Tanıtımı
- Dual PhD Degree Program with Carnegie Mellon University
- İş verenler ve mezunlar için anket
- Photo Gallery
- Mailbox List
- Analiz Laboratuvarı**
- Metu EnV'e Linkedin

Giving the form
to the technical
staff

IMPORTANT PHONE NUMBERS

Laboratory Technical Staff: (Office: Z-35)

Melek Özdemir, Mehmet Hamgöl, Esra Gül **Internal telephone: 0312 210 2640**

Head of Department phone number: 0312 210 2641

Duty Officer Tel No: 0312 210 2113 and/or 0312 210 2114

AMBULANCA CALLING: 210 4142 (for METU internal ambulance calling).

FIRST AID CONSULTING: 210 4960 (This phone number is used for counseling and information about first aid.)

Fire Brigade: 110

Ambulance: 112

I have read the document named "Laboratory Safety and Working Rules" which is prepared for our safety and I have understood the rules. I agree to abide by all the rules. I declare that if I fail to comply with the rules, I take the responsibility and I accept that I can be removed from the laboratory.

...../...../20.....

Name – Surname:

Phone number:

e-mail address:

Signature:

Mobile phone number:

Laboratories in which to work:

- Chemistry Lab. Unit Lab. Microbiology Lab. (Z-16) Microbiology Lab. (Z-18)
 Anaerobic Lab. Air Lab. and Clean Room Pollution Hydrology Lab. Hot Room

Name of the Advisor:

"Laboratory Permission Form" obtained from the Department Administration should be given back to Administration after the necessary signatures are collected.

ODTÜ ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ LABORATUVAR KULLANIM İZİN FORMU

1) Bu kısım anahtar almak isteyen öğrenci/personel tarafından doldurulacaktır.

- Bölümümüz; Atomik Absorpsiyon Laboratuvarı - 1 Mikrobiyoloji Laboratuvarı - 1
 Atomik Absorpsiyon Laboratuvarı - 2 Mikrobiyoloji Laboratuvarı - 2
 FTIR-AOX Laboratuvarı Sıcak Oda
 Hava Laboratuvarı Temel İşlemler Laboratuvarı
 Kimya Laboratuvarı Temiz Oda
 Kirillik Hidrolojisi Laboratuvarı TÜRKAK Laboratuvarı

Laboratuvar/laboratuvarlarında mesai saatleri haricinde çalışmam gerekmektedir. Bana verilen laboratuvarlarda çalışma kurallarını, güvenlik ve yangın talimatlarını okudum; yangın söndürme cihazlarının ve doğal gaz vanalarının yerini öğrendim. Aşağıda belirttiğim saatlerde ve bildirdiğim cihazları kullanarak çalışacağımı, bu koşullarda bir değişiklik olması durumunda laboratuvar teknik personelini haberdar edeceğimi; cihazların yanlış ve/veya durumluklu kullanımından kaçınacağımı; laboratuvarlarda çalışma kurallarına uyacağımı beyan ederim.

- Çalışma Saatleri: Hafta içi 17:30'dan sonra
 Cumartesi
 Pazar

Tahmini Çalışma Başlangıç Tarihi:
Bitiş Tarihi:

Kullanacağı Cihazlar:

Adı ve Soyadı: Tarih: Öğrenci Danışmanı
Cep Telefonu: İmza: (Ad/Soyad/İmza)

2) Bu kısım Bölüm Başkanı ve Laboratuvar Yöneticisi tarafından doldurulacaktır.

Öğrencinin/personelin laboratuvarlarda çalışma talebi uygundur.

Laboratuvar Yöneticisi	İmza
<input type="checkbox"/> Atomik Absorpsiyon Laboratuvarı	
<input type="checkbox"/> FTIR-AOX Laboratuvarı	
<input type="checkbox"/> Hava Laboratuvarı	
<input type="checkbox"/> Kimya Laboratuvarı	
<input type="checkbox"/> Kirillik Hidrolojisi Laboratuvarı	
<input type="checkbox"/> Mikrobiyoloji Laboratuvarı	
<input type="checkbox"/> Sıcak Oda	
<input type="checkbox"/> Temel İşlemler Laboratuvarı	
<input type="checkbox"/> Temiz Oda	
<input type="checkbox"/> TÜRKAK Laboratuvarı	
Bölüm Başkanı	İmza

3) Bu kısım Laboratuvar Teknik Personeli tarafından doldurulacaktır.

Öğrenci/personel "Laboratuvar Güvenliği ve Çalışma Kuralları"nı okumuş; ilgili teknik bilgi, uyarı ve talimatları almıştır.

- Atomik Absorpsiyon Laboratuvarı
 FTIR-AOX Laboratuvarı
 Hava Laboratuvarı
 Kimya Laboratuvarı
 Kirillik Hidrolojisi Laboratuvarı
 Mikrobiyoloji Laboratuvarı
 Sıcak Oda
 Temel İşlemler Laboratuvarı
 Temiz Oda
 TÜRKAK Laboratuvarı

Laboratuvar Teknik Personeli	İmza

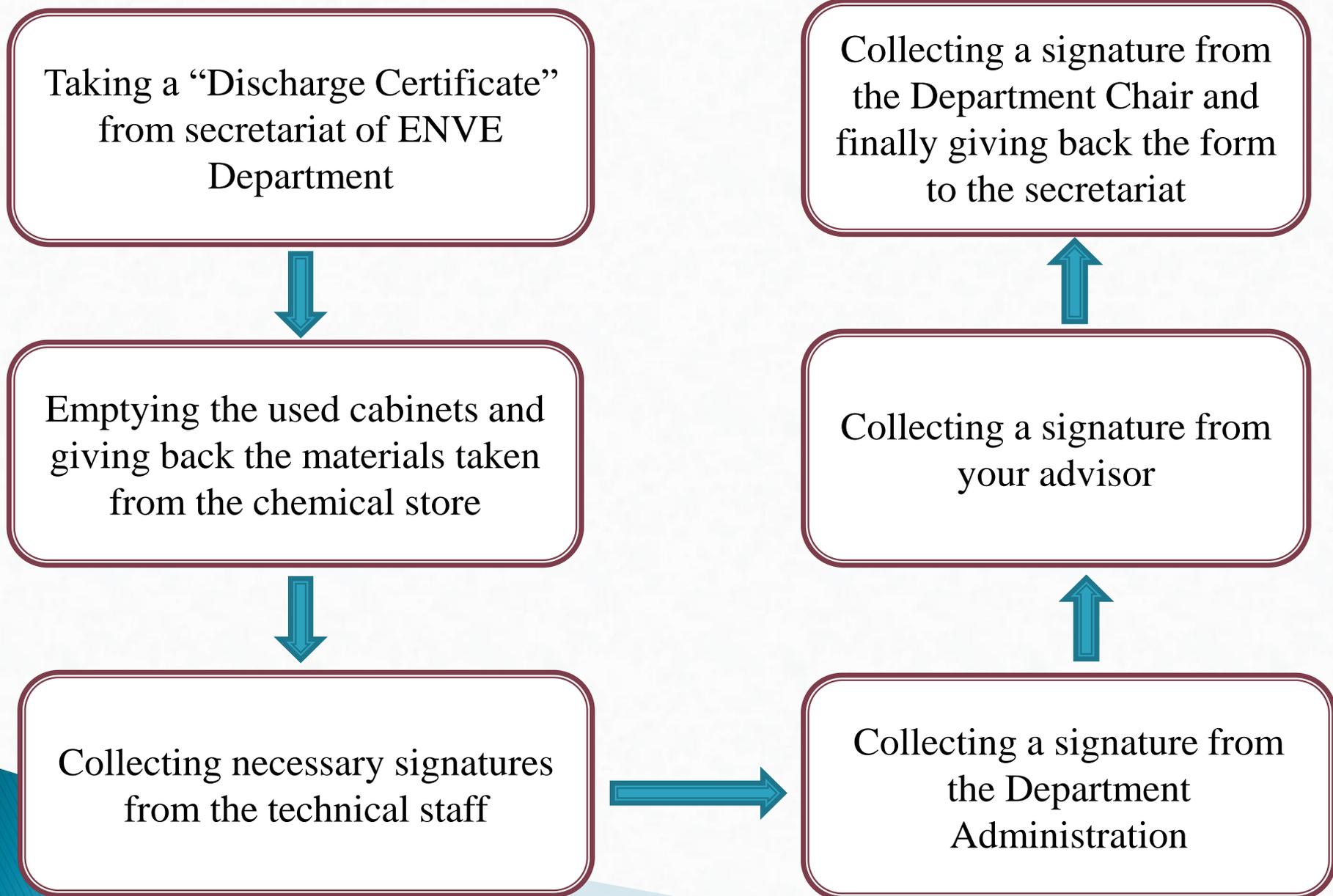
4) Bu kısım öğrenci/personel ve Bölüm İdare Amiri tarafından doldurulacaktır.

Bölüm laboratuvar/laboratuvarlarında mesai saatleri haricinde çalışma yapmak üzere anahtar/anahtarlar teslim edilmiştir.

- Atomik Absorpsiyon Laboratuvarı
 FTIR-AOX Laboratuvarı
 Hava Laboratuvarı
 Kimya Laboratuvarı
 Kirillik Hidrolojisi Laboratuvarı
 Mikrobiyoloji Laboratuvarı
 Sıcak Oda
 Temel İşlemler Laboratuvarı
 Temiz Oda
 TÜRKAK Laboratuvarı

Teslim Eden	İmza
Teslim Alan	İmza

The procedure to be followed when the students finish their researches



ODTÜ ÇEVRE MÜHENDİSLİĞİ BÖLÜM BAŞKANLIĞI'NA

- Yüksek Lisans/Doktora tez çalışmalarım süresince kullanmış olduğum ve bölüme ait her türlü malzeme, cihaz, dolap, bilgisayar ve anahtarları eksiksiz bir şekilde teslim ettiğimi, çalışmalarım sonucu ortaya çıkan atıkları bertaraf ettiğimi ve mesai saatleri dışında bölüme giriş çıkışlarda kullandığım kapı giriş izinlerini iptal ettirdiğimi bilgilerinize arz ederim.
- Yüksek Lisans tez çalışmalarımı tamamlanmış olmakla birlikte Doktora tez çalışmalarına bölümde devam edeceğimi bilgilerinize arz ederim.
- Yüksek Lisans/Doktora tez çalışmalarım tamamlanmış olmakla birlikte, bölümdeki çalışmalarım (gün/ay) daha devam edecek olup, çalışmalarım tamamlandığında kullanmış olduğum ve bölüme ait her türlü malzeme, cihaz, dolap, bilgisayar ve anahtarları eksiksiz bir şekilde teslim edeceğimi, çalışmalarım sonucu ortaya çıkan atıkları bertaraf edeceğimi ve mesai saatleri dışında bölüme giriş çıkışlarda kullandığım kapı giriş izinlerini iptal ettireceğimi bilgilerinize arz ederim.

Adı ve Soyadı:

Tarih:

Cep Telefonu:

İmza:

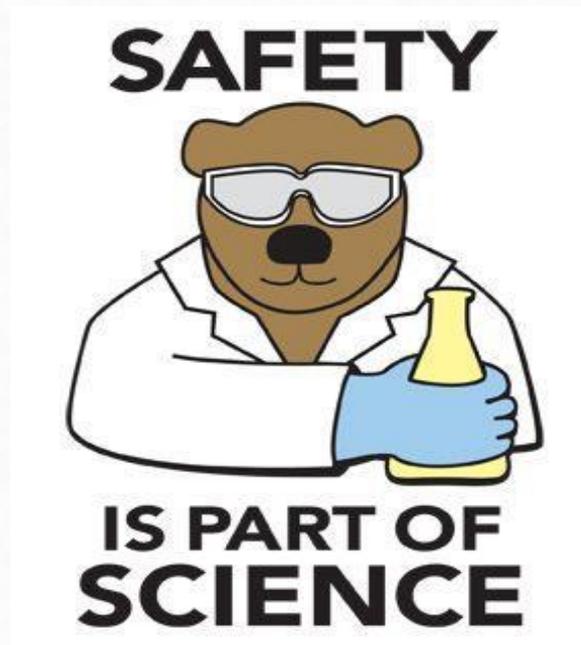
İLİŞİĞİ BULUNMADIĞINI BİLDİREN SORUMLULAR

	Lab Sorumlusu Teknisyen	Açıklamalar	İmza
<input type="checkbox"/> Malzemeler			
<input type="checkbox"/> Cihazlar			
<input type="checkbox"/> Dolaplar			
<input type="checkbox"/> Atıklar			
	Bölüm Bilgisayar Sorumlusu	Açıklamalar	İmza
<input type="checkbox"/> Bilgisayar			
	Bölüm Giriş İzin ve Anahtar Sorumlusu	Açıklamalar	İmza
<input type="checkbox"/> Kapı Giriş İzni			
<input type="checkbox"/> Anahtarlar			

Öğrenci Danışmanı
(Ad/Soyad/İmza)

Bölüm Başkanı
(Ad/Soyad/İmza)

Personal protections in laboratories





It is important to know the potential hazards we may encounter and take appropriate safety protections before start to work in laboratories.



- What are the potential hazards?
- What are the personal protections and actions to be taken to minimize risks?





➤ **ALWAYS** lab coats should be worn when working in the labs



➤ Avoid wearing shorts, skirts etc.

- Eye and skin protective equipment such as glasses, face mask, gloves should be used according to the characteristics of the study.





**You only have
one pair of eyes!
Protect them**



CAUTION



Wear gloves

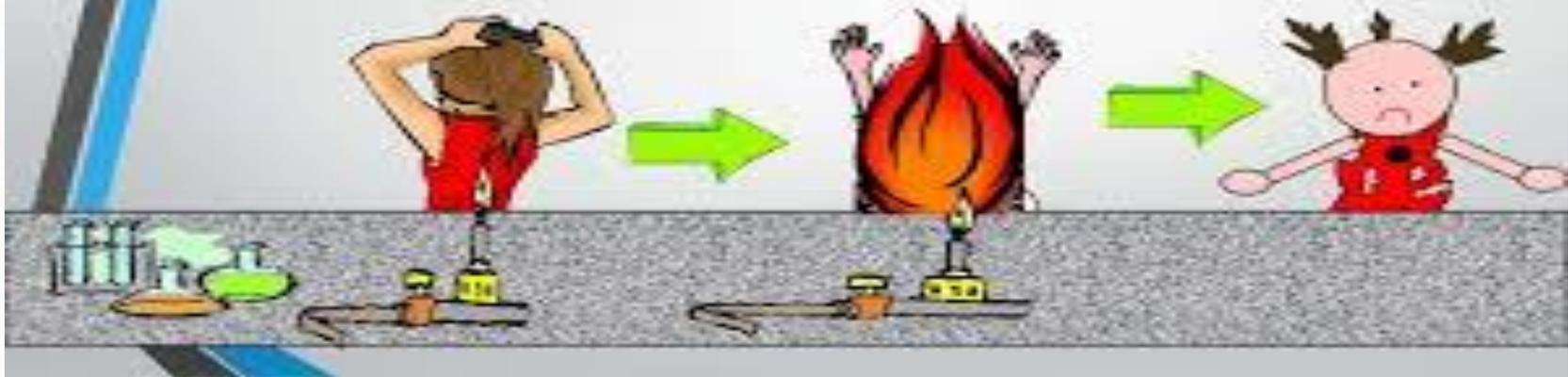
Gloves



Examine the SDS
forms of chemicals

TIE BACK LONG HAIR

Tie back long hair and loose clothing when working near an open flame : Roll up long sleeves

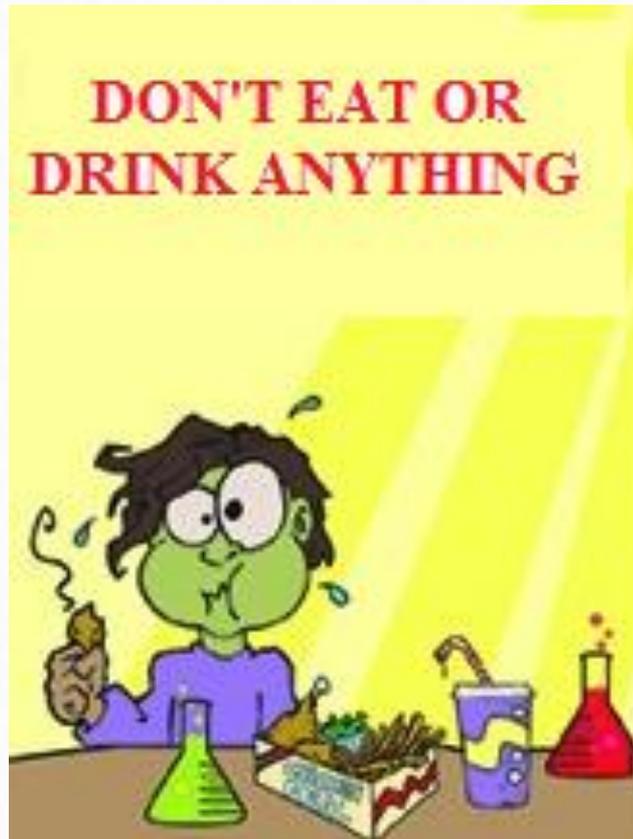


- Shoes that cover the **entire** foot (top of foot, toes and heel included) must be worn in the lab.
- Don't wear sandals or open shoes





- ▶ Avoid eating, drinking or gum chewing in a laboratory



- Do not use mobile phone



- Do not use headphones

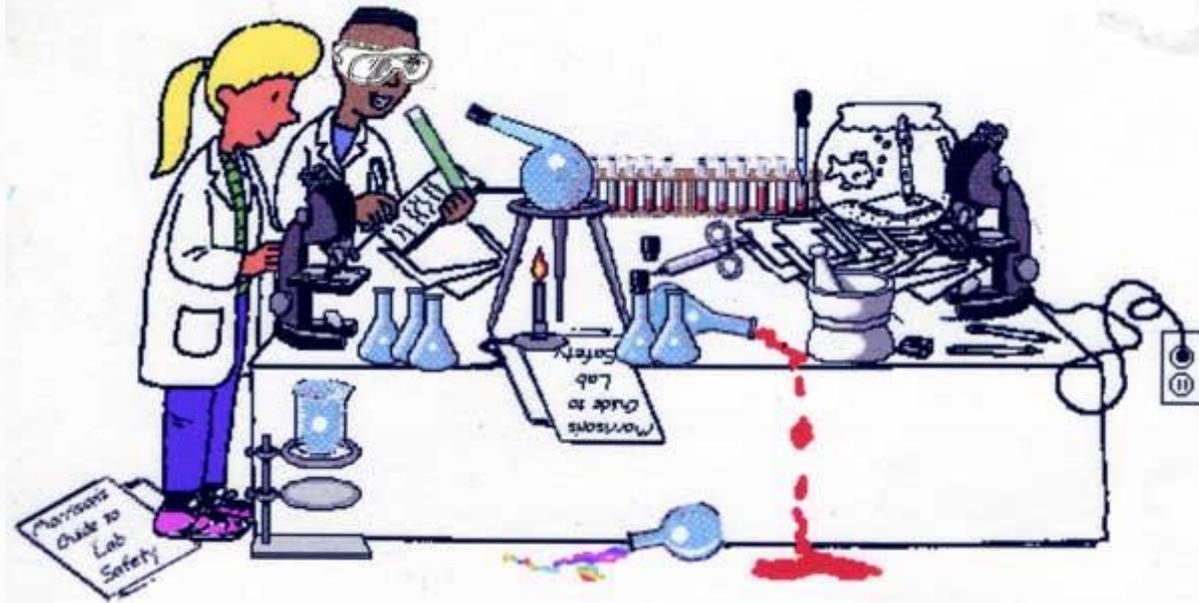


- Do not disturb others while working in laboratory



- No dangerous jokes should be made

- The workplace should be kept tidy and clean.



➤ Gas valves, lights, ventilation and air conditioning must be turned off.

Fire

**WASH YOUR
HANDS**



➤ Wash your hands thoroughly with soap and water before leaving the lab.

CHEMICALS





Chemical Safety

- All chemicals must be considered as **‘DANGEROUS’**.
- Be careful when moving chemicals!
- Keep chemicals tightly closed when storing them.

- Do not touch the chemicals with bare hands.
- Do not taste or smell any chemicals



- Work in a fume hood whenever using acids, volatile organic chemicals and smelly substances such as wastewater, sludge, etc.



- Always use a pipette filler. NEVER pipette by mouth.



Safety data sheets (SDS) of chemicals should be examined carefully.



OSHA[®] QUICKCARD[™]

Hazard Communication Safety Data Sheets

The Hazard Communication Standard (HCS) requires chemical manufacturers, distributors, or importers to provide Safety Data Sheets (SDSs) (formerly known as Material Safety Data Sheets or MSDSs) to communicate the hazards of hazardous chemical products. As of June 1, 2015, the HCS will require new SDSs to be in a uniform format, and include the section numbers, the headings, and associated information under the headings below:

Section 1, Identification includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.

Section 2, Hazard(s) identification includes all hazards regarding the chemical; required label elements.

Section 3, Composition/information on ingredients includes information on chemical ingredients; trade secret claims.

Section 4, First-aid measures includes important symptoms/effects, acute, delayed; required treatment.

Section 5, Fire-fighting measures lists suitable extinguishing techniques, equipment; chemical hazards from fire.

Section 6, Accidental release measures lists emergency procedures; protective equipment; proper methods of containment and cleanup.

Section 7, Handling and storage lists precautions for safe handling and storage, including incompatibilities.

Section 8, Exposure controls/personal protection lists OSHA's Permissible Exposure Limits (PELs); ACGIH Threshold Limit Values (TLVs); and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the SDS where available as well as appropriate engineering controls; personal protective equipment (PPE).

Section 9, Physical and chemical properties lists the chemical's characteristics.

Section 10, Stability and reactivity lists chemical stability and possibility of hazardous reactions.

Section 11, Toxicological information includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity.

Section 12, Ecological information*

Section 13, Disposal considerations*

Section 14, Transport information*

Section 15, Regulatory information*

Section 16, Other information, includes the date of preparation or last revision.

*Note: Since other Agencies regulate this information, OSHA will not be enforcing Sections 12 through 15 (29 CFR 1910.1200(g)(2)).

Employers must ensure that SDSs are readily accessible to employees.

See Appendix D of 1910.1200 for a detailed description of SDS contents.

For more information:



U.S. Department of Labor



www.osha.gov (800) 321-OSHA (6742)

SDS Search and Product Safety Center



- Technical Service
- Customer Support
- Understanding the Label
- Globally Harmonized System
- Email Product Safety
- Submit notification of unreported health effect
- Reach Regulations

SDS Search and Product Safety Center

Excellence in Compliance

Our worldwide Product Safety staff is comprised of scientists with extensive backgrounds in global compliance regulations. We continually provide comprehensive safety and regulatory data on our Safety Data Sheets promoting safe usage and handling of our products. The SDS documents on Sigma-Aldrich.com are the latest versions available in over 50 languages.

SDS Search: **SEARCH** ?

Product Safety Services

- Chemical Safety & Regulatory Data
- SDS Subscriptions
- Education

Regulatory Information

- OSHA 29 CFR 1910 1200
- California Prop 65
- WHO Biosafety Manual
- Workplace Hazardous Materials Information System (WHMIS)
- ECHA

Contact Product Safety

- Submit Unreported Health Effect
- Contact Product Safety

Safety Related Equipment

We offer a wide range of safety equipment for your laboratory including personal protective equipment from leading brands such as Microflex, 3M, Bollé, and more.

- Eye Protection
- Safety Shields
- Safety Clothing
- Safety Containers
- Respirators
- More...
- Gloves
- Spill Control

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2008
Version 6.2 Revision Date 06.02.2017
Print Date 21.02.2019

GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Methanol

Product Number : 34860
Brand : SIGALD
Index-No. : 603-001-00-X
REACH No. : 01-2119433307-44-XXXX
CAS-No. : 67-56-1

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Chemie GmbH
Eschenstrasse 5
D-82024 TAUFKIRCHEN

Telephone : +49 (0)89 6513-1130
Fax : +49 (0)89 6513-1161

1.4 Emergency telephone number

Emergency Phone # : 0800 181 7059 (CHEMTREC Deutschland)
+49 (0)696 43508409 (CHEMTREC weltweit)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 2), H225
Acute toxicity, Oral (Category 3), H301
Acute toxicity, Inhalation (Category 3), H331
Acute toxicity, Dermal (Category 3), H311
Specific target organ toxicity - single exposure (Category 1), H370

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Pictogram



Signal word : Danger

Hazard statement(s)

H225 : Highly flammable liquid and vapour.
H301 + H311 + H331 : Toxic if swallowed, in contact with skin or if inhaled.
H370 : Causes damage to organs.

Precautionary statement(s)

P210 : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 : Wear protective gloves/ protective clothing.
P302 + P352 + P312 : IF ON SKIN: Wash with plenty of water. Call a POISON CENTER/doctor if you feel unwell.
P304 + P340 + P311 : IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor.
P370 + P378 : In case of fire: Use dry powder or dry sand to extinguish.
P403 + P235 : Store in a well-ventilated place. Keep cool.

Supplemental Hazard Statements : none

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms : Methyl alcohol

Formula : CH<SB>4</>O
Molecular weight : 32.04 g/mol
CAS-No. : 67-56-1
EC-No. : 200-659-6
Index-No. : 603-001-00-X
Registration number : 01-2119433307-44-XXXX

Hazardous ingredients according to Regulation (EC) No 1272/2008

Component	Classification	Concentration
Methanol		
CAS-No. 67-56-1	Flam. Liq. 2; Acute Tox. 3;	<= 100 %
EC-No. 200-659-6	STOT SE 1; H225, H301,	
Index-No. 603-001-00-X	H331, H311, H370	
Registration number 01-2119433307-44-XXXX	Concentration limits:	
	>= 10 %: STOT SE 1, H370; 3 - < 10 %: STOT SE 2, H371;	

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Notes to physician

Dizziness Drowsiness metabolic acidosis Blurred vision Seizures. Coma Blindness death

- 4.2 **Most important symptoms and effects, both acute and delayed**
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11
- 4.3 **Indication of any immediate medical attention and special treatment needed**
No data available

SECTION 5: Firefighting measures

- 5.1 **Extinguishing media**
Suitable extinguishing media
Dry powder Dry sand
Unsuitable extinguishing media
Do NOT use water jet.
- 5.2 **Special hazards arising from the substance or mixture**
Carbon oxides
- 5.3 **Advice for firefighters**
Wear self-contained breathing apparatus for firefighting if necessary.
- 5.4 **Further information**
Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

- 6.1 **Personal precautions, protective equipment and emergency procedures**
Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
For personal protection see section 8.
- 6.2 **Environmental precautions**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
- 6.3 **Methods and materials for containment and cleaning up**
Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
- 6.4 **Reference to other sections**
For disposal see section 13.

SECTION 7: Handling and storage

- 7.1 **Precautions for safe handling**
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
For precautions see section 2.2.
- 7.2 **Conditions for safe storage, including any incompatibilities**
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in a cool, well-ventilated place.
Storage class (TRGS 510): Flammable liquids
- 7.3 **Specific end use(s)**
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Derived No Effect Level (DNEL)

Application Area	Exposure routes	Health effect	Value
Workers	Skin contact	Long-term systemic effects	40mg/kg BW/d
Consumers	Skin contact	Long-term systemic effects	8mg/kg BW/d
Consumers	Ingestion	Long-term systemic effects	8mg/kg BW/d
Workers	Skin contact	Acute systemic effects	40mg/kg BW/d
Consumers	Skin contact	Acute systemic effects	8mg/kg BW/d
Consumers	Ingestion	Acute systemic effects	8mg/kg BW/d
Workers	Inhalation	Acute systemic effects	260 mg/m ³
Workers	Inhalation	Acute local effects	260 mg/m ³
Workers	Inhalation	Long-term systemic effects	260 mg/m ³
Workers	Inhalation	Long-term local effects	260 mg/m ³
Consumers	Inhalation	Acute systemic effects	50 mg/m ³
Consumers	Inhalation	Acute local effects	50 mg/m ³
Consumers	Inhalation	Long-term systemic effects	50 mg/m ³
Consumers	Inhalation	Long-term local effects	50 mg/m ³

Predicted No Effect Concentration (PNEC)

Compartment	Value
Soil	23.5 mg/kg
Marine water	15.4 mg/l
Fresh water	154 mg/l
Fresh water sediment	570.4 mg/kg
Onsite sewage treatment plant	100 mg/kg

8.2 Exposure controls

Appropriate engineering controls

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Full contact

Material: butyl-rubber
Minimum layer thickness: 0.3 mm
Break through time: 480 min
Material tested: Butoject® (KCL 897 / Aldrich Z677647, Size M)

Splash contact

Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 31 min

Material tested: Camatril® (KCL 730 / Aldrich Z677442, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industria situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engine protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance	Form: liquid Colour: colourless
b) Odour	pungent
c) Odour Threshold	No data available
d) pH	No data available
e) Melting point/freezing point	Melting point/range: -98 °C
f) Initial boiling point and boiling range	64.7 °C
g) Flash point	9.7 °C - closed cup
h) Evaporation rate	No data available
i) Flammability (solid, gas)	No data available
j) Upper/lower flammability or explosive limits	Upper explosion limit: 36 %(V) Lower explosion limit: 6 %(V)
k) Vapour pressure	97.7 mmHg at 20.0 °C 410.0 mmHg at 50.0 °C 169.27 hPa at 25.0 °C
l) Vapour density	1.11
m) Relative density	0.791 g/mL at 25 °C
n) Water solubility	completely miscible
o) Partition coefficient: n-octanol/water	log Pow: -0.77
p) Auto-ignition temperature	455.0 °C at 1,013 hPa
q) Decomposition temperature	No data available
r) Viscosity	No data available

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- s) Explosive properties Not explosive
t) Oxidizing properties The substance or mixture is not classified as oxidizing.

9.2 Other safety information

Minimum ignition energy	0.14 mJ
Conductivity	< 1 µS/cm
Relative vapour density	1.11

SECTION 10: Stability and reactivity

- 10.1 Reactivity
No data available
- 10.2 Chemical stability
Stable under recommended storage conditions.
- 10.3 Possibility of hazardous reactions
No data available
- 10.4 Conditions to avoid
Heat, flames and sparks.
- 10.5 Incompatible materials
Acid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, Acids
- 10.6 Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - No data available
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LDLO Oral - Human - 143 mg/kg(Methanol)
Remarks: Lungs, Thorax, or Respiration:Dyspnea. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.
LD50 Oral - Rat - 1,187 - 2,769 mg/kg(Methanol)
LC50 Inhalation - Rat - 4 h - 128.2 mg/l(Methanol)
LC50 Inhalation - Rat - 6 h - 87.6 mg/l(Methanol)
LD50 Dermal - Rabbit - 17,100 mg/kg(Methanol)

Skin corrosion/irritation
Skin - Rabbit(Methanol)
Result: No skin irritation

Serious eye damage/eye irritation
Eyes - Rabbit(Methanol)
Result: No eye irritation

Respiratory or skin sensitisation
Maximisation Test - Guinea pig(Methanol)
Does not cause skin sensitisation.
(OECD Test Guideline 406)

Germ cell mutagenicity

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Ames test(Methanol)
S. typhimurium
Result: negative
in vitro assay(Methanol)
fibroblast
Result: negative
Mutation in mammalian somatic cells.
Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)(Methanol)
Mouse - male and female
Result: negative

Carcinogenicity
Carcinogenicity- Rat- Inhalation(Methanol)

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity
Damage to fetus not classifiable(Methanol)

Fertility classification not possible from current data.(Methanol)

Specific target organ toxicity - single exposure
Causes damage to organs.(Methanol)

Specific target organ toxicity - repeated exposure
The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard
No aspiration toxicity classification(Methanol)

Additional Information
RTECS: PC1400000

Effects due to ingestion may include: Headache, Dizziness, Drowsiness, metabolic acidosis, Coma, Seizures., Methyl alcohol may be fatal or cause blindness if swallowed.(Methanol)
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.(Methanol)

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	mortality LC50 - Lepomis macrochirus (Bluegill) - 15,400.0 mg/l - 96 h(Methanol) NOEC - Oryzias latipes - 7,900 mg/l - 200 h(Methanol)
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - > 10,000.00 mg/l - 48 h(Methanol)
Toxicity to algae	Growth inhibition EC50 - Scenedesmus capricornutum (fresh water algae) - 22,000.0 mg/l - 96 h(Methanol)

12.2 Persistence and degradability

Biodegradability
aerobic - Exposure time 5 d(Methanol)
Result: 72 % - rapidly biodegradable

Biochemical Oxygen Demand (BOD) 600 - 1,120 mg/g(Methanol)

Chemical Oxygen Demand (COD) 1,420 mg/g(Methanol)

Theoretical oxygen demand 1,500 mg/g(Methanol)

12.3 Bioaccumulative potential

Bioaccumulation Cyprinus carpio (Carp) - 72 d at 20 °C - 5 mg/l(Methanol)

Bioconcentration factor (BCF): 1.0

12.4 Mobility in soil

Will not adsorb on soil.(Methanol)

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

Additional ecological information Avoid release to the environment.

Stability in water at 19 °C 83 - 91 % - 72 h(Methanol)
Remarks: Hydrolyses on contact with water.Hydrolyses readily.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste material must be disposed of in accordance with the Directive on waste 2008/98/EC as well as other national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. Offer surplus and non-recyclable solutions to a licensed disposal company. Burn in a chemical incinerator equipped with an afterburner and scrubber b highly flammable.

Contaminated packaging

Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number

ADR/RID: 1230 IMDG: 1230 IATA: 1230

14.2 UN proper shipping name

ADR/RID: METHANOL
IMDG: METHANOL
IATA: Methanol

14.3 Transport hazard class(es)

ADR/RID: 3 (6.1) IMDG: 3 (6.1) IATA: 3 (6.1)

14.4 Packaging group

ADR/RID: II IMDG: II IATA: II

14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for user

No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information**Full text of H-Statements referred to under sections 2 and 3.**

H225	Highly flammable liquid and vapour.
H301	Toxic if swallowed.
H301 + H311 +	Toxic if swallowed, in contact with skin or if inhaled.
H331	
H311	Toxic in contact with skin.
H331	Toxic if inhaled.
H370	Causes damage to organs.
H371	May cause damage to organs.

Further information

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

1.04862.1000



Sehr giftig
Very toxic



Umweltgefährlich
Dangerous for the environment

Kaliumdichromat
krist. reinst
Potassium dichromate
cryst. extra pure

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Reizend
Irritant
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Irritante
Irritante
Irritierend

Calciumchlorid
wasserfrei gepulvert
Calcium chloride
anhydrous powder
Calcium chlorure
anhydre en poudre
Calcio cloruro
anidro polvere
Calcio cloruro
anidro polvo
Cálcio cloreto
anidro em pó
Calciumchloride
watervrij gepoederd

What do the COSHH symbols mean?



Dangerous to the environment



Toxic



Gas under pressure



Corrosive



Explosive



Flammable



Caution – used for less serious health hazards like skin irritation

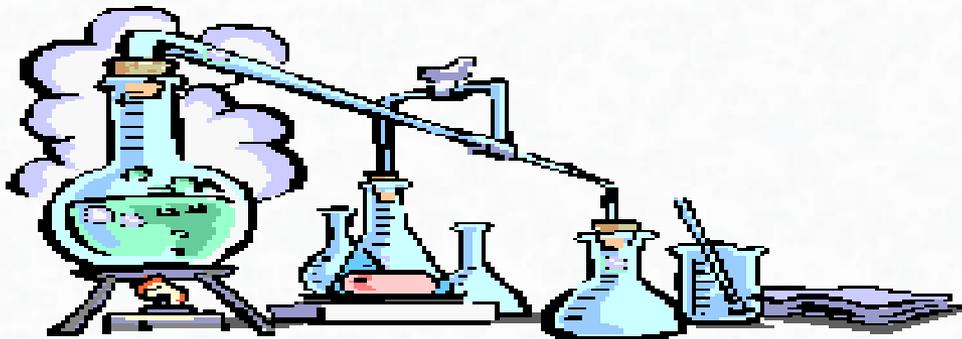


Oxidising

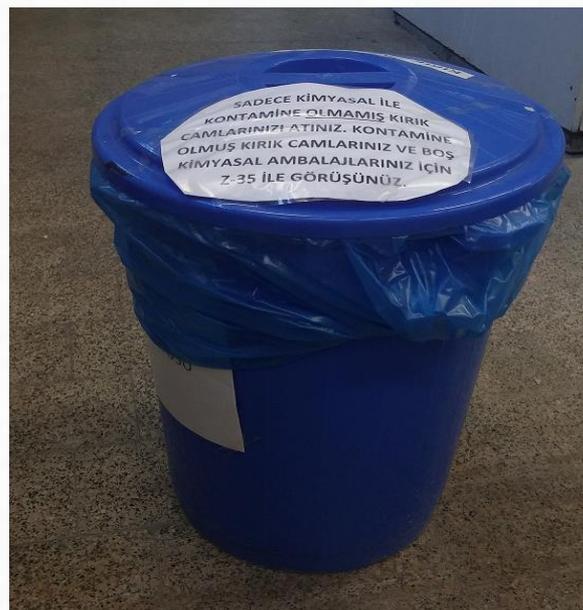


Longer term health hazards such as carcinogenicity

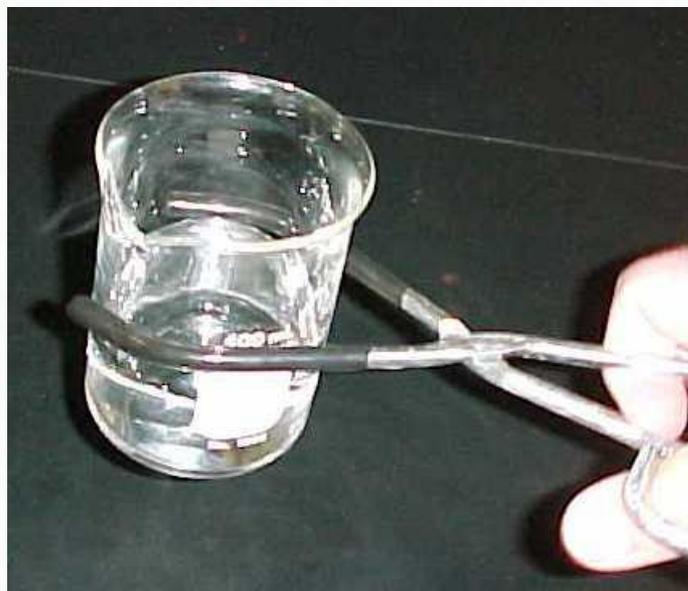
Glassware



- Do not use chipped, cracked or broken glassware.
- Do not pick up broken glass with bare or unprotected hands. Use a brush and dustpan to clean up broken glass.
- Broken glass should be thrown into the “broken glass box”, not into the waste bin.



Use heat resistant gloves or metal tongs to move hot glassware.



LABORATORY DEVICES



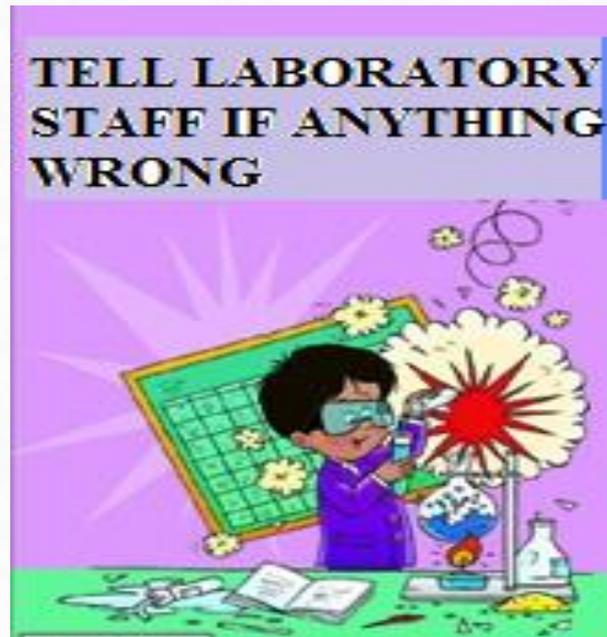
GENERAL RULES

- The location of experimental apparatus and equipments should not be replaced.
- It is forbidden to remove the devices from the laboratory.
- Necessary permissions must be taken before using the devices in the laboratory.
- The operating instructions for the devices must be carefully examined and used in accordance with the instructions.



GENERAL RULES

- The necessary information about the usage of the devices should be obtained from laboratory technical personnel.
- Any unusual situations occurring when working with the devices, should be reported to laboratory technical personnel as soon as possible.



In the lab, each device has a '**logbook**' near them. The analyst should fill these log books for their each usage.

- **Number of samples:**
- **Working conditions:**
- **Date:**
- **Working Time zone:**
- **Name surname:**
- **Signature:**

The devices should be cleaned and closed according to their user guides.



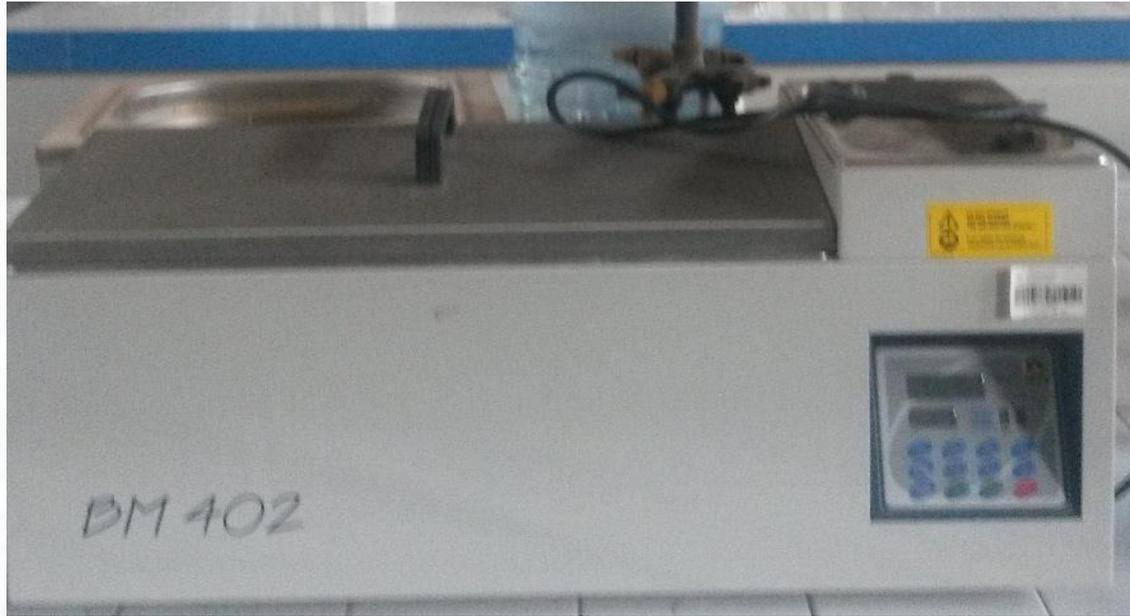
DEVICES IN COMMON USAGE

REFRIGERATORS



- All samples in the refrigerators should be labeled.
- On the label;
 - Name of the chemical (solution):
 - Date of preparation:
 - Prepared by
 - Name and surname :
- Do not forget to take your samples when you finish your experiments.

WATER-BATH



- Use pure water for water tank and make sure that the device has been unplugged after use. Otherwise, overheating of water in the water tank may cause fire.

SPECTROPHOMETER

TURBIDITYMETER



- The users should be careful not to spill the sample into the device.
- The samples should not be forgotten in the devices and the device should be switched off after usage.

FUME HOODS



- The device can be operated from the on / off button located on the front of the device.
- At the end of the usage, clean any spilled chemicals into the fume hood.
- It should not be used for chemical storage.



ANALYTICAL BALANCES



- Before using the balance check that the air bubble is in the center of the level indicator.
- The device should be left clean.

INCUBATOR



ASH FURNACE



- A notepaper which contain name and contact information of the user should be attached to the device.
- When placing the new sample to the device, the location of the other samples in the oven should not be changed without the knowledge of the owners.
- The device should be adjusted correctly at the desired temperature.
- When finished, samples should be removed and the device closed.

pH METER



MAGNETIC STIRRER



- Calibration of the device should be carried out by using standard pH solutions.
- After the usage, the probe should be cleaned by using pure water and placed in the protective container.

- The device must be unplugged after use.

CENTRIFUGE



- The opposing chambers of the device should be filled with samples which have equal weights.
- The user should wait near the device until centrifugation is complete.

PURE and ULTRA PURE WATER

- Except for very specific studies, many studies may not require the use of ultra-pure water. In these cases, the ultrapure water part of the device should not be used.
- The user should wait near the device until fill their bottle.
- If the device gives any warning, the technical personnel should be informed.



TOTAL NITROGEN and COD DEVICES

- Technical personnel must be informed before starting the experiments.
 - The user should wait in the laboratory until finish their experiments.
 - Laboratory ventilation must be activated during the experiment.
 - If the device gives any warning, the technical personnel should be informed.
- 

CHEMICAL WASTES



Classification of wastes using waste codes

16 05 05*: Laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals.



Toxic



Flammable



Ecotoxic



Oxidizing



Corrosive

15 02 02* : Absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by hazardous substances

15 01 10*: Packaging containing residues of or contaminated by hazardous substances

The way to be followed for chemical waste deposition process

Examination of the Material Safety Forms (SDS) of the chemicals by the waste manufacturer



The waste manufacturer should receive the "Waste Deposition Form" from the Laboratory Technical Staff

ATIK TOPLAMA BİLGİ FORMU

Atık üreticisi tarafından doldurulacak kısım

Adı Soyadı	
Telefon numarası	
E-mail adresi	
Atıkların toplanacağı laboratuvar	
Atıkların laboratuvardaki yeri	
Atık türü (sıvı / katı)	
Atık miktarı (L / kg)	

Atık Üreticisi
(İmza)

Laboratuvar Sorumlusu Öğretim Üyesi
(İmza)

Laboratuvar teknik personeli tarafından doldurulacak kısım

Kapların atık üreticisine verilme tarihi	
Atık üreticisine verilen toplama kabı sayısı (adet)	
Atık üreticisine verilen toplama kabı hacmi (L)	
Atık üreticisi tarafından verilen atığın türü (sıvı / katı)	
Atık üreticisi tarafından verilen atığın miktarı (L / kg)	
Atık kodu (16 05 06*, 15 02 02*, 15 01 10*)	
Atık içeriği	
Atığın verilme tarihi	

16 05 06*: Laboratuvar kimyasalların karışımını dahil tehlikeli maddelerden oluşan ya da tehlikeli maddeler içeren laboratuvar kimyasallar
15 02 02*:Tehlikeli maddelerle kirlenmiş emiciler, filtre malzemeleri, temizleme bezleri, koruyucu giysiler
15 01 10*:Tehlikeli maddelerin kalıntılarını içeren ya da tehlikeli maddelerle kontamine olmuş ambalajlar

Laboratuvar Sorumlusu Teknik Personel
Ad- soyad (imza)

160505*: Laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals.

The labeled containers are given to waste manufacturer by technical staff



TEHLİKELİ ATIK

ATIK KODU

ATIK İÇERİĞİ
Formül ya da kısaltma yapmadan kimyasalın tam ismi yazılacaktır

1)	%
2)	%
3)	%
4)	%

TEHLİKE

YANICI OKSİTLEYİCİ DİĞER

TOKSİK KOROZİF _____

DEPOLAMA TARİHİ/...../.....

GROUP NO.	GROUP NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41							
1	Acids, Mineral, Non-oxidising																																																
2	Acids, Mineral, Oxidising																																																
3	Acids, Organic																																																
4	Alcohols and Glycols	H																																															
5	Aldehydes	H	H																																														
6	Amides	H	H																																														
7	Amines, Aliphatic and Aromatic	H	H	H																																													
8	Azo and Diazo Compounds and Hydrazines	H	H	H	H																																												
9	Carbamates	H	H	H																																													
10	Caustics (Alkalis)	H	H	H																																													
11	Cyanides	GT	GT	GT																																													
12	Dithiocarbamates	H	H	H																																													
13	Esters	H	H	H																																													
14	Ethers	H	H	H																																													
15	Fluorides, Inorganic	GT	GT	GT																																													
16	Hydrocarbons, Aromatic	H																																															
17	Halogenated Organics	H	H																																														
18	Isoocyanates	H	H	H																																													
19	Ketones	H	H	H																																													
20	Mercaptans and Other Organic Sulphides	GT	GT	GT																																													
21	Metals, Alkali and Alkaline Earth, Elemental	GF	GF	GF																																													
22	Metals, Other Elemental and Alloys as Powders, Vapours or Sponges	GF	GF	GF																																													
23	Metals, Other Elemental and Alloys as sheets, Rods, Mouldings etc	GF	GF	GF																																													
24	Metals and Metal Compounds, Toxic	S	S	S																																													
25	Nitrides	GF	GF	GF																																													
26	Nitriles	H	H	H																																													
27	Nitro Compounds, Organic	GT	GT	GT																																													
28	Hydrocarbons, Aliphatic, Unsaturated	H	H	H																																													
29	Hydrocarbons, Aliphatic, Saturated	H	H	H																																													
30	Peroxides and Hydroperoxides, Organic	H	H	H																																													
31	Phenols and Cresols	H	H	H																																													
32	Organophosphates, Phosphothioates	H	H	H																																													
33	Sulphides, Inorganic	GT	GT	GT																																													
34	Epoxides	H	H	H																																													
35	Combustible and Flammable Materials, Misc	H	H	H																																													
36	Explosives	H	H	H																																													
37	Polymerisable Compounds	P	P	P																																													
38	Oxidising Agents, Strong	H	H	H																																													
39	Reducing Agents, Strong	H	H	H																																													
40	Water and Mixtures Containing Water	H	H	H																																													
41	Water Reactive Substances																																																

Hazardous Waste Compatibility Chart Source - USA EPA

Reactivity Code

- H ----- Heat generation
- F ----- Fire
- G ----- Innocuous and non-Flammable gas generation
- GT ----- Toxic gas generation
- GF ----- Flammable gas generation
- E ----- Explosion
- P ----- Violent polymerisation
- S ----- Solubilisation of toxic substance
- U ----- May be hazardous but unknown

Example

- H
 - F
 - GT
- Heat generation, fire and toxic gas generation

150110*: Packaging containing residues of or contaminated by hazardous substances.

It is necessary to consult technical personnel for packages contaminated with dangerous substances.



After collecting their waste appropriately, the waste manufacturer should contact the Technical Staff and transfer their wastes to the temporary collection containers.



THANK YOU

QUESTIONS?