Labexpert UK

SLS WEBINAR

05 MARCH 2025



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HEALTH AND SAFETY

WORKING AS A SCIENCE TECHNICIAN

What You'll Learn:

✅ Your responsibilities as a science technician, plus those of your employer and colleagues

✅ The difference between risks and hazards for a safer lab environment

✅ When and how to conduct a thorough risk assessment

✅ Implementing SYC (Secure Your Chemicals in Education) for proper chemical management and security

✅ Q&A—ask questions and gain expert insights

WHO IS RESPONSIBLE FOR HEALTH AND SAFETY?

THE HEALTH AND SAFETY AT WORK ACT PLACES

OVERALL RESPONSIBILITY FOR HEALTH AND SAFETY

WITH THE EMPLOYER

THE EMPLOYERS DUTY

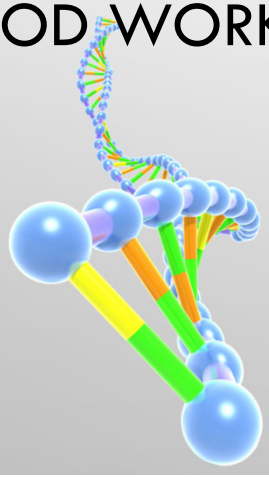
Employers must provide:

- Healthy and safe working conditions for employees and others
- Information and training concerning health and safety
- A health and safety policy (for the whole school)

THE TECHNICIANS DUTY

- Follow training you have received when using any work items your employer has given you
- Take reasonable care of your own and other people's health and safety
- Co-operate with your employer on health and safety
- Tell someone (your employer, supervisor, or health and safety representative) if you think the work or inadequate precautions are putting anyone's health and safety at serious risk.

SCIENCE LABORATORIES AND PREP ROOMS CAN BE HAZARDOUS AREAS, BUT THEY ARE RELATIVELY SAFE PLACES TO WORK PROVIDED DUE CARE IS TAKEN AND GOOD WORKING PRACTICES ARE FOLLOWED.



HAZARD

What is a hazard?

A Hazard is anything with the potential to cause harm; e.g., some chemicals or electricity at high voltage.

Risk

What is a risk?

The risk is the likelihood of harm being caused.

Control Measure

What is a control measure?

A control measure is an action that can be carried out to reduce the risk.

CONTROL MEASURE

- In most cases appropriate training in safe working practices will considerably reduce the risk even though the hazard will still exist, e.g., when diluting concentrated acids always add acid to water very slowly, not water to acid.

- Often the appropriate training is being shown how to do something by an experienced person.

Other control measure include:

- wearing safety goggles when appropriate
- using the correct equipment or tools to do a job
- ensuring adequate ventilation when necessary (e.g., fume cupboard or open window)
- displaying appropriate warning signs and labels and giving verbal/written warnings with instructions

Assessing the risk

There are two factors to be considered when assessing the size of the risk.

The first is the chance of something going wrong and the second is the seriousness of the potential harm if something does go wrong.

Working this out is called a **risk assessment.**

The following table gives some guidance on how to do this given that:

risk = probability x seriousness

Probability of problem arising	Seriousness of problem if it arises			Action
	Low	Medium	High	
Low	problems not likely and result not serious, e.g., dissolving salt in cold water	problems not likely but result may cause harm, e.g. washing dirty glassware in sink	problems not likely but result serious, e.g., conc sulphuric acid on a store shelf	appropriate control measures already in place – proceed with care
Medium	problems possible but result not serious, e.g., using EHT power supply	problems possible and result may cause harm, e.g., keeping 1M alkali solutions on bench tops in labs	problems possible and result serious, e.g., using a cork borer without appropriate training	ensure appropriate control measure are in place before proceeding
High	problems very likely but result not serious, e.g., picking up a hot tripod	problems very likely and result may cause harm, e.g., made-up solutions not correctly labelled	problems very likely and result serious, e.g., diluting conc. hydrochloric acid without appropriate training	revise control measures to reduce risk – do not proceed unless this can be done

Level of risk	Action and timescale
High	You should not start work until the risk has been reduced. You may have to set aside considerable resources to reduce the risk. If the risk involves work in progress, you should take urgent action. If it is not possible to reduce the risk even with unlimited resources, you must stop all work.
Medium	You must try to reduce the risk, but should carefully measure the cost of prevention. You should use measures to reduce the risk within a defined time period. If the medium risk is associated with extremely harmful consequences, you may need to carry out another assessment to identify more precisely the likelihood of harm. This will help you decide whether you need to use improved control measures.
Low	Monitoring is necessary to make ensure that the current controls remain effective.

		Severity				
Probability		Nil 1	Minor 2	Medium 3	Major 4	Fatal 5
	Very likely 5	5	10	15	20	25
	Probably 4	4	8	12	16	20
	Possible 3	3	6	9	12	15
	Remote 2	2	4	6	8	10
	Improbable 1	1	2	3	4	5

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Risk Assessments

- BEFORE UNDERTAKING AN ACTIVITY AS PART OF WORK, AN EMPLOYEE MUST CONSULT RELEVANT MODEL RISK ASSESSMENT(S).

- THE EMPLOYEE SHOULD ADJUST OR ADAPT THE OUTCOMES OF THE MODEL RISK ASSESSMENT TO MEET THE NEEDS OF THEIR INDIVIDUAL CIRCUMSTANCES.

- **RISK ASSESSMENT DESCRIBES A PROCESS AND AN OUTCOME.**

"(Cleapss PS90 PTB 06/17)"

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Risk Assessments

- **A thinking process**
- You must consider the risk assessment and its implications. In science this may include trialling a procedure.

- **The written record that comes from that process**
- The written record is both for communicating the thinking to others and for an individual end-user to record the, and significant, outcomes of own adaptations to a model risk assessment.
- This last point allows others to recognise that the thinking has taken place at a sufficiently specific level of detail.

"(Cleapss PS90 PTB 06/17)"

Risk Assessments, the process

- **Identify the hazards**

From warning signs and symbols, general knowledge, model risk assessment, knowing the person(s) involved, the environment (including time pressures), and those posed by unusual circumstances.

- **Assess the risks**

How likely is it that the procedure could go wrong, how serious would it be if it did go wrong, how many people would be affected?

- **Reduce the risk by adopting control measures**

It is a requirement to reduce all risks to those as low as possible which still allow the desired end to be achieved.

E.g., avoid the process altogether and cover it in theory only, substitute a safer substance, segregate users from the event, use person protective equipment, or other measures identified on the model risk assessment.

"(Cleapss PS90 PTB 06/17)"

Risk Assessments, what to record

CLEAPSS believes that the significant findings of any risk assessment procedure are best recorded on documents in daily use, such as a scheme of work, lesson plans, worksheets and technician's notes.

- **Record on your scheme of work, etc, significant points from the model RA.**
  - Don't just record "see Hazcards", but, for example, 0.5M H2SO4, IRRITANT, see Hazcard 98A. Wear eye protection.



or

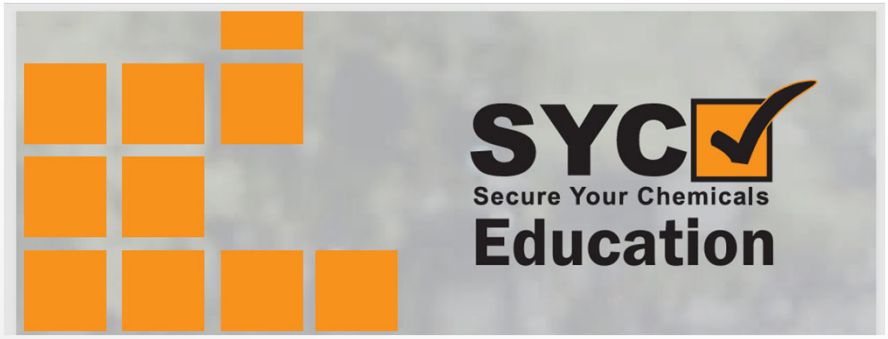
- Warn pupil about cuts from scalpels and count the scalpels out & back in.

or

To demo the radioactives, refer to the Standard Operating Procedures for the use of radioactive sources, and keep sources secure at all times.

"(Cleapss PS90 PTB 06/17)"

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Home Office

This guidance has been written in collaboration with the **Health and Safety Executive (HSE), CLEAPSS and SSERC.** The aim is to improve the security of hazardous chemicals that are used in secondary and tertiary education. This is to prevent them from being used to make illegal substances such as explosives or narcotics.

MANAGEMENT RESPONSIBILITIES

It is the responsibility of the management at any site that holds hazardous chemicals, for whatever reason, to ensure that they are purchased, stored, used and disposed of in a safe and secure manner. The SYC code is designed to simplify this procedure and provide guidance that covers the following aspects:

- **PURCHASE**
- **STORAGE**
- **USE**
- **DISPOSAL**

ACCOUNTABILITY FOR CHEMICALS

The key question which must be answered is: 'Can you tell if anything has gone missing?'

If you cannot, you need to use the guidance in this document to assess your procedures and take the proportionate action to ensure that you can answer 'Yes'.

Identify risks

The security of the chemicals you hold or use on site may not be exclusively a function of your own security. External factors can also have a significant effect.

For example, there maybe building work going on within school grounds, with unknown people having easy access to school buildings. Recent news stories or story lines within a TV drama documentary could put ideas into student's minds regarding the unlawful use of chemicals.

Questions you should therefore consider are:

- Can you store your chemicals in secure storage and restrict access?
- How good are your physical security measures?
- Have you had any incidents which resulted from a failure in the security of chemicals?
- Do you maintain an audit of chemicals listed at the end of this document?

Where is it?

Storage

Hazardous chemicals held in storage must be carefully monitored. Questions that you should consider are:

- **Is there a full stock list available of what you have and where it is held?**
- **Can you isolate the main stock and lock it away until it is needed?**

Use

When chemicals are removed from storage for use, it becomes more important to know how much has been removed and that the amount removed has been used and/or returned. Questions you should consider are:

- Do you use a lesson requisition sheet?
- Do you use this to maintain a full stock list with accountability for how much is used and when? For example, does the technician monitor the return of chemicals after lessons?
- Are laboratories checked for any substances that may be left behind?
- Who uses the hazardous chemicals and are they properly trained?

Identify hazardous substances

What may appear to be harmless to some users could be seen as a significant hazard to others, especially if it becomes more dangerous when mixed with other substances.

This includes precursor chemicals that could be used to make drugs or explosives, as well as other substances that, when mixed, could produce toxic gases. If your school or college holds such chemicals, they need to be identified by a designated and suitably qualified member of staff and kept in appropriate conditions. If you are unsure, look at CLEAPSS / SSERC guidance.

Quantity on site

It is important to know how much of each chemical you have on your site. Refer to CLEAPSS/SSERC guidance. Questions you should consider are:

- How much of any one chemical do you have on site at any one time?
- How often do you conduct a stock check? Such checks include formal checks and informal ones done on a daily basis as chemicals are supplied for, and used in, lessons.
- Could you reduce the quantities held or use less hazardous alternatives?
- Are they kept in accordance with regulations and guidance?

Disposal

Many hazardous chemicals can still be a danger, even when they have been used in a process and all that is left is a residue. Questions you should consider are:

- How do you dispose of unwanted hazardous chemicals?
- How are hazardous chemicals stored before disposal?
- Do you use a suitably authorised disposal service?

There are some ‘companies’ operating illegally in the UK, offering to dispose of hazardous waste at discount prices. If in doubt, check with CLEAPSS or SSERC to ensure you are dealing with a qualified and registered hazardous waste company. If your hazardous waste is illegally dumped, you could be liable for it and any consequences.

Action

From the moment a hazardous chemical arrives at your school or college, you must be able to demonstrate full CONTROL of the chemical, and be able to ACCOUNT for it at all times, until its use or final disposal.

Having assessed what you have, how much you have and where it is, you now need to take action to place controls in the three key areas. The main focus for these controls should be procedural with effective, regular record keeping.

This is most easily and effectively achieved by restricting the number of people who have access to hazardous chemicals. Control measures can be imposed by:

- Physical measures
- People
- Admin

People

Regardless of how good your physical security measures are, bad practice by staff members can result in doors not being locked or hazardous materials being left in vulnerable places. The fewer people who have access to hazardous substances, the fewer people you will have to advise or train. Consider the following:

- Minimise the number of people who have access to hazardous chemicals.
- Ensure these people are correctly trained.
- Ensure they have the knowledge and means to maintain audits of chemicals.
- Provide them with a manager who they can confide in if they have problems, without fear of criticism or punishment.

Admin

Record keeping is essential for schools and colleges to be fully accountable, so that they can clearly demonstrate what they are holding and in what quantities. An audit trail must include:

- What is delivered, when it is delivered, where it is stored, when it is used (or disposed of) and at what quantities.
- Totals held in stock.

After a full stock check, you should now be in a position to answer the question: 'Can you tell if anything is missing? If the answer is 'Yes', you have completed this task successfully. If the answer is 'No', more work is required during the Assessment and Action stages.

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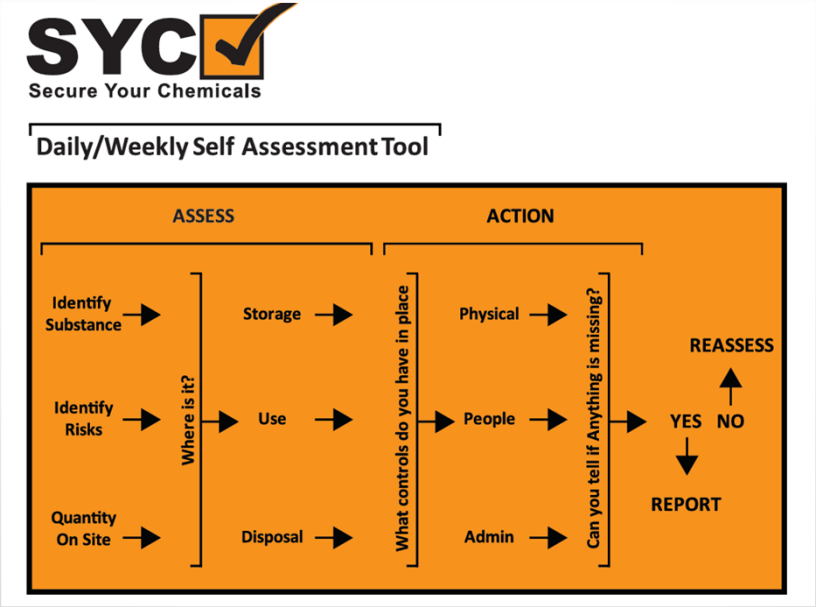
WHERE TO FIND THE SYC EDUCATION GUIDE

SYC
Secure Your Chemicals
Education

HTTPS://SCIENCE.CLEAPSS.ORG.UK/RESOURCE/SYC-SECURE-YOUR-CHEMICALS.PDF

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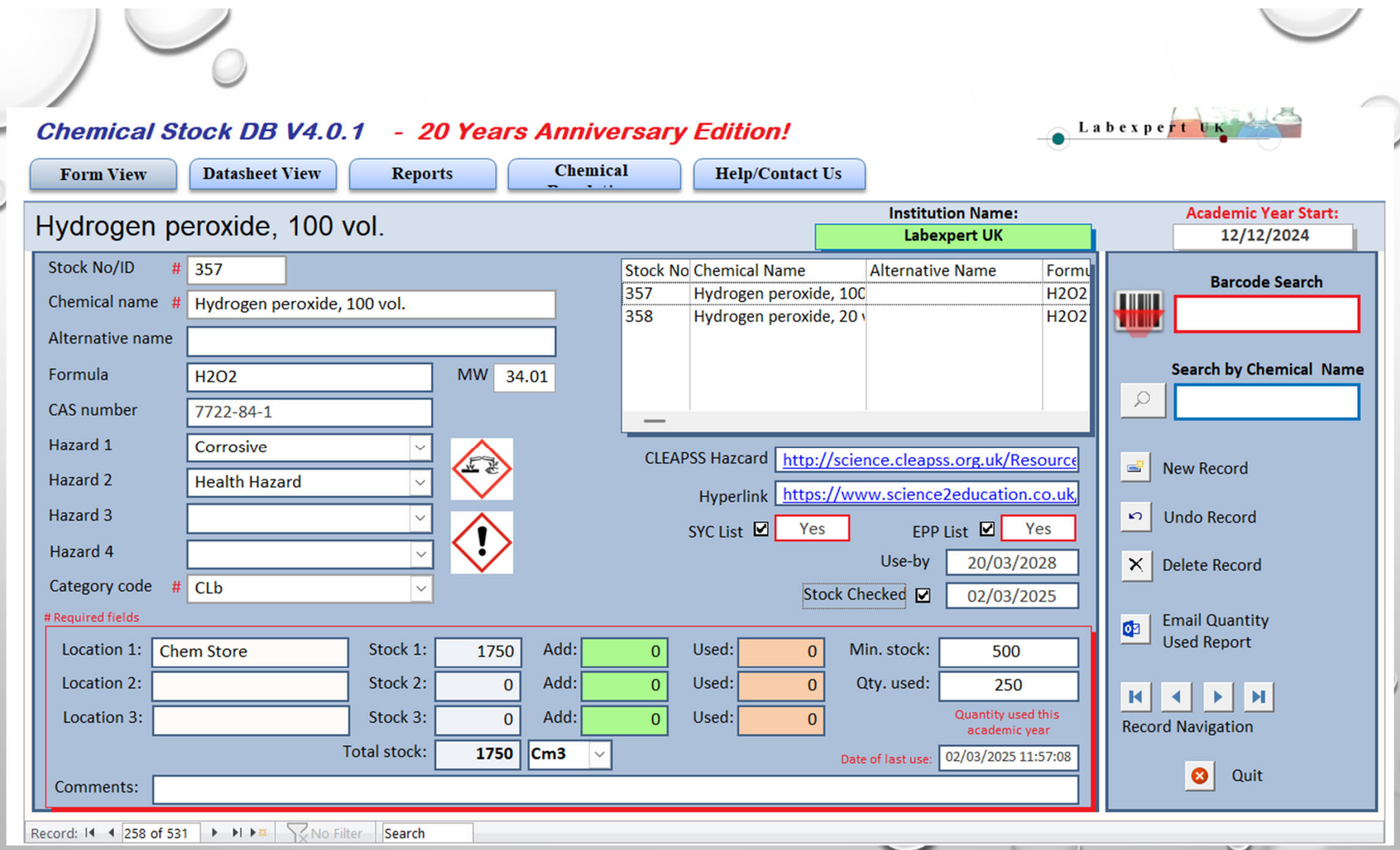
WHERE TO FIND THE ASSESSMENT TOOL



HTTPS://SCIENCE.CLEAPSS.ORG.UK/RESOURCE/SYC-SECURE-YOUR-CHEMICALS-TOOL.PDF

Where to get support

- CLEAPSS
- HSE (Health and Safety Executive)
- ASE (The Association of Science Education)
- IST (Institute of Science and Technology)
- IoP (Institute of Physics
- RSC (Royal Society of Chemistry)
- Anywhere else?


Chemical Stock DB V4.0.1 - 20 Years Anniversary Edition!
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Form View
Datasheet View
Reports
Chemical
Help/Contact Us
Hydrogen peroxide, 100 vol.
Institution Name:
Labexpert UK
Academic Year Start:
12/12/2024
Stock No/ID # 357
Chemical name # Hydrogen peroxide, 100 vol.
Alternative name
Formula H2O2
MW 34.01
CAS number 7722-84-1
Hazard 1 Corrosive
Hazard 2 Health Hazard
Hazard 3
Hazard 4
Category code # CLb
Required fields
Stock No Chemical Name Alternative Name Formu
357 Hydrogen peroxide, 100 H2O2
358 Hydrogen peroxide, 20 H2O2
CLEAPSS Hazcard http://science.cleapss.org.uk/Resource
Hyperlink https://www.science2education.co.uk/
SYC List Yes
EPP List Yes
Use-by 20/03/2028
Stock Checked 02/03/2025
Location 1: Chem Store
Location 2:
Location 3:
Stock 1: 1750
Stock 2: 0
Stock 3: 0
Add: 0
Add: 0
Add: 0
Used: 0
Used: 0
Used: 0
Min. stock: 500
Qty. used: 250
Quantity used this academic year
Total stock: 1750
Cm3
Date of last use: 02/03/2025 11:57:08
Comments:
Barcode Search
Search by Chemical Name
New Record
Undo Record
Delete Record
Email Quantity Used Report
Record Navigation
Quit
Record: 258 of 531
No Filter
Search

Equipment Stock DB V4.0

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Form View | Datasheet View | Reports | Stock Take | Help/Contact Us

Power supply

Institution Name: Labexpert UK

Stock No/ID # 0001 Quantity 1

Item Name # Power supply

Make Irwin

Model Powerbase 32

Serial No 204633

Area of Use Attlee

Main Location 202

Sub Location C12

Custodian S. Smith

Acquired 12/06/2009

Order No CP090609/T

Value £178.00

Report if faulty ☑ This item is faulty Since: 02/03/2025

On loan to Chemistry

Hyperlink https://www.ipcirwin.com/power-supplies/irwin-po

Comments Tower hamlets

Required

StockNo	Qty	ItemName	Make	Mo
0002	1	Allen keys	Screwfix	Mo
0007	1	Microscope	Biolam	12
0003	1	Power Supply	Lascells	16
0001	1	Power supply	Irwin	Po
0005	1	Ripple tank		01
0004	1	Ripple tank		01



Item Image: Add/Update Remove

Mains Electrical ☑

Date Tested 03/11/2021

Next Test 02/11/2022

Barcode Search

Search by Item Name

Rapid Stock Take

Annual stock check ☑ 20/12/2024

Add New Record

Undo Changes

Duplicate Record

Delete Record

Record: 4 of 6 No Filter Search

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@
CCC STEM TECHNICIANS CONFERENCE

11 JULY 2025

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