Air Liquide
creative oxygen

TOGETHER WE GROW
SOUTH WEST EUROPE CLUSTER

Welcome to an Educational break

April 2020

April 2020
Air Liquide Group

To start

Mute the microphone if you don't speak ... and remember to switch it on when you speak in Q&A!

Turn off the camera to save bandwidth

Consider using your headphones!

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South West Europe
Research & Analysis
Offer Deployer Manager

Experience @AL: 12 years in Air Liquide: mainly in Specialty Gases Sales & Marketing (Project, Product and Market Manager) for Portugal and Spain. Technical Career Leader Senior Expert. Business Lab Pioneer and Business Developer for Isotopes & Natural Air WW.

Background: MSc. in Mechanical Engineer, BMus in music, Technical vehicle inspector, Research in High-Speed Machining and Hydrolift Maintenance, 4 patents register.

Contents

Presentation

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Gas cylinder Handling

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1
Air Liquide in Brief

2019 Key Figures

~67,000
EMPLOYEES

PRESENT IN
80 COUNTRIES

MORE THAN
3.7 MILLION
CUSTOMERS & PATIENTS

REVENUE
€22bn

NET PROFIT (GROUP SHARE)
€2.24bn

INVESTMENT DECISIONS
€3.7bn

An Innovative Group

Innovation is at the heart of the Group's customer-centric transformation strategy

330 new patents filed in 2019

4,300 employees(1) contribute to innovation

€317m innovation expenses(1)

(1) 2019 Figures OECD Definition.

2
Gas cylinder Handling

Cylinder main elements...

C

CAP

Used to move the cylinder and Protect the Valve.

V

Valve

The most fragile part in the cylinder.
Always close after using.

B

Body

Cylinder that contain high pressure gas.

Gas color code and pictogram

light Blue
Oxidizing

maroon
Acetilene

color mix
variety risk

white
Oxygen

deep green
Inert

blue
Protoxide

red
flammable

yellow
toxic corrosive

-Gas under **pressure**: danger of explosion if heated;
-They are inert;
-Asphyxiant at high concentrations.

-Oxidizing gases: Can cause or aggravate a **fire**;
-Keep valves and fittings **free of oil and grease**.

-Flammable gases: Can be easily ignited.
-**Keep away** from heat, hot surfaces, sparks, flames and all other **sources of ignition**.

Cylinder handling PPE

P The use of a **safety cap** or **helmet** will be recommended or required depending on the working environment and the specific risk assessment.

P The use of **gloves** and **long sleeves** is recommended and for the use of oxidizing or flammable gases the clothing should be **antistatic and fireproof**.

E The use of **safety shoes are mandatory**.

3
Safety

Disclaimer: It is a knowledge refreshment not replacing a formal training

Main Risks...

When handling a cylinder:

Cylinder Fall

High Pressure

Gas Composition

Technical Unknown

Due to low stability

Up to 7º of inclination without falling.

By Shocks

Not attached to anchorage point.

By dragging them...

Regulator

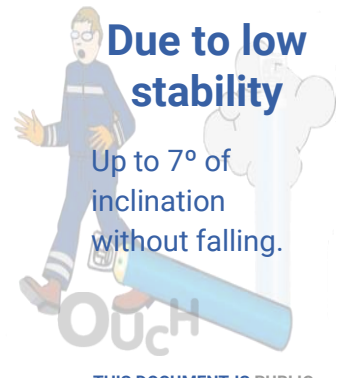
-Bad connection;
-Inappropriate regulator;
-Wrong purge.

Materials compatibility

-Improper use;
-Regulator material incompatibility;
-Handle high pressure.

Contempt or ignorance risk

-Operation by untrained persons;
-Improper Use.



Confined Spaces, something to take attention...

If you...

- hear a gas leak;
- have symptoms of general malaise;
- see a colleague is unconscious;
- see an oxygen detector with an alarm signal;
- work in areas with inert gases and/or gases that displace oxygen or if you work in areas where gases are used.

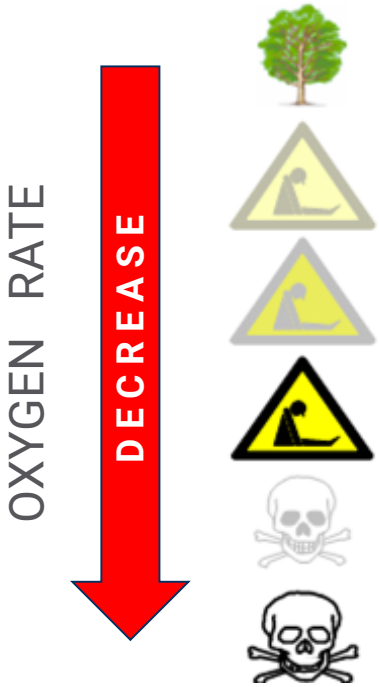
Applies Safety Procedure

Consider the risk of ASPHYXIA

Think before you act

Leave the Danger Area

Anoxia...



> 22% => Euphoria: modification of the sense of danger and vision.

20,9% => Normal concentration: No symptoms.

19% => tiredness and yawn...

14%=> Respiratory discomfort, heart palpitations, sweats…

➔Syncope/fainting if the person is not evacuated at the open air.

10%=> Nausea, mental failing, Loss of consciousness in few minutes.

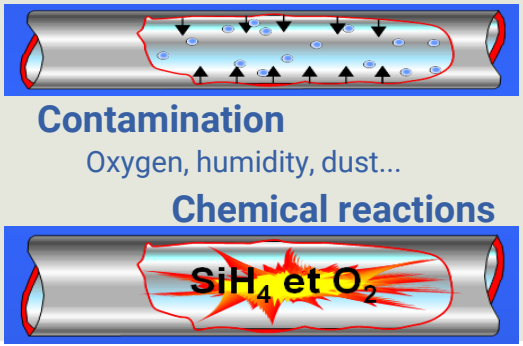
8%=> Coma in 40 seconds, convulsions, respiration ceases, death

From 3% to 5% => life expectancy: 3-5 breathes.

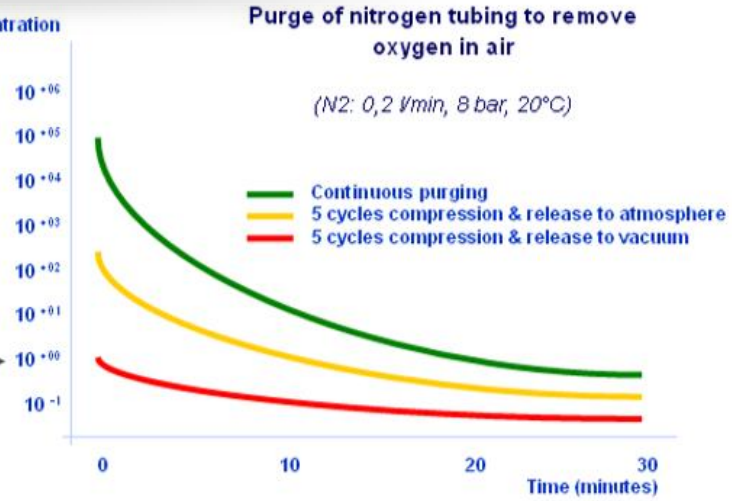
Purge...

Why is it necessary to purge the equipment?

Regulator | **Pipeline** | **Equipment**



1 ppm →



4
Building the Future

Our innovation approach

LABTOP™ is an advanced built-in regulator with on/off handwheel:

Work Safely

Protecting & Ergonomic CAP

Easy Operations

Gain Performance

SAVE: Gas, Time, Money

1

outlet raccord:
6 mm and 1/8"

2

3

4

5

Increase your lab efficiency

S

Working Safely

- Quick **shut-off** of the gas;
- User is **not exposed** to high-pressure;
- Risk of **leakage and intoxication** is **reduced** significantly.

Increase your lab efficiency

Gain Performance

- **N**on **R**esidual **V**alve: prevents contamination guaranteeing an qualitative calibration;

- The **double-stage regulator** ensures stability of the outlet pressure needed in calibration.

Increase your lab efficiency

Save: Gas, Time and Money

- **Prevent expensive losses** and leaks (On/Off);
- Better manage/**reduction your stock** (gauge);
- **Quickly start** your operation (connector);
- **Save you regulator and maintenance costs**.

Where can I use my LABTOP cylinder

Mixtures

Gaseous with non corrosive molecules

LABTOP user guide

Digital CoA

Calibration

Mixtures

Pressure
Adjustable from 0 to 10 bar

Flow rate
1 to 10 L/min

Double Stage regulator incorporated.

More **stable** cylinder

Air Liquide
creative oxygen

TOGETHER WE GROW
SOUTH WEST EUROPE CLUSTER

Thank you for being with us!

April 2020

Open session for

Questions & Answers…

More details can be found in your email box.