Instructions for uploading data to LXCat databases for electron swarm parameters

The LXCat team
Version February 2022

These instructions use as an example the LAPLACE database on LXCat.

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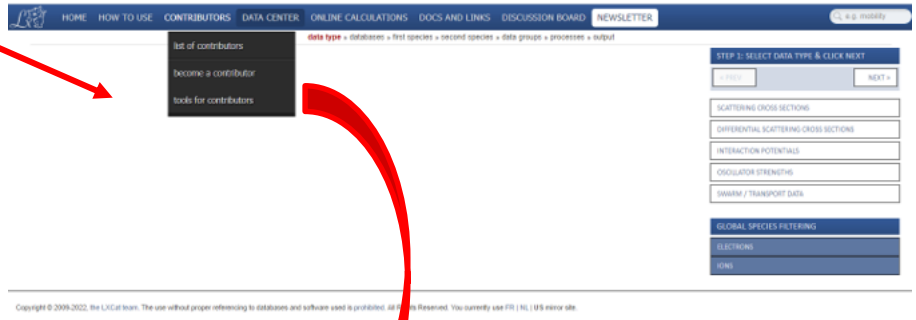
Accessing the login page (1)

1. Go to www.lxcat.net

Click on "tools for contributors".



2. Click on "database login for contributors".

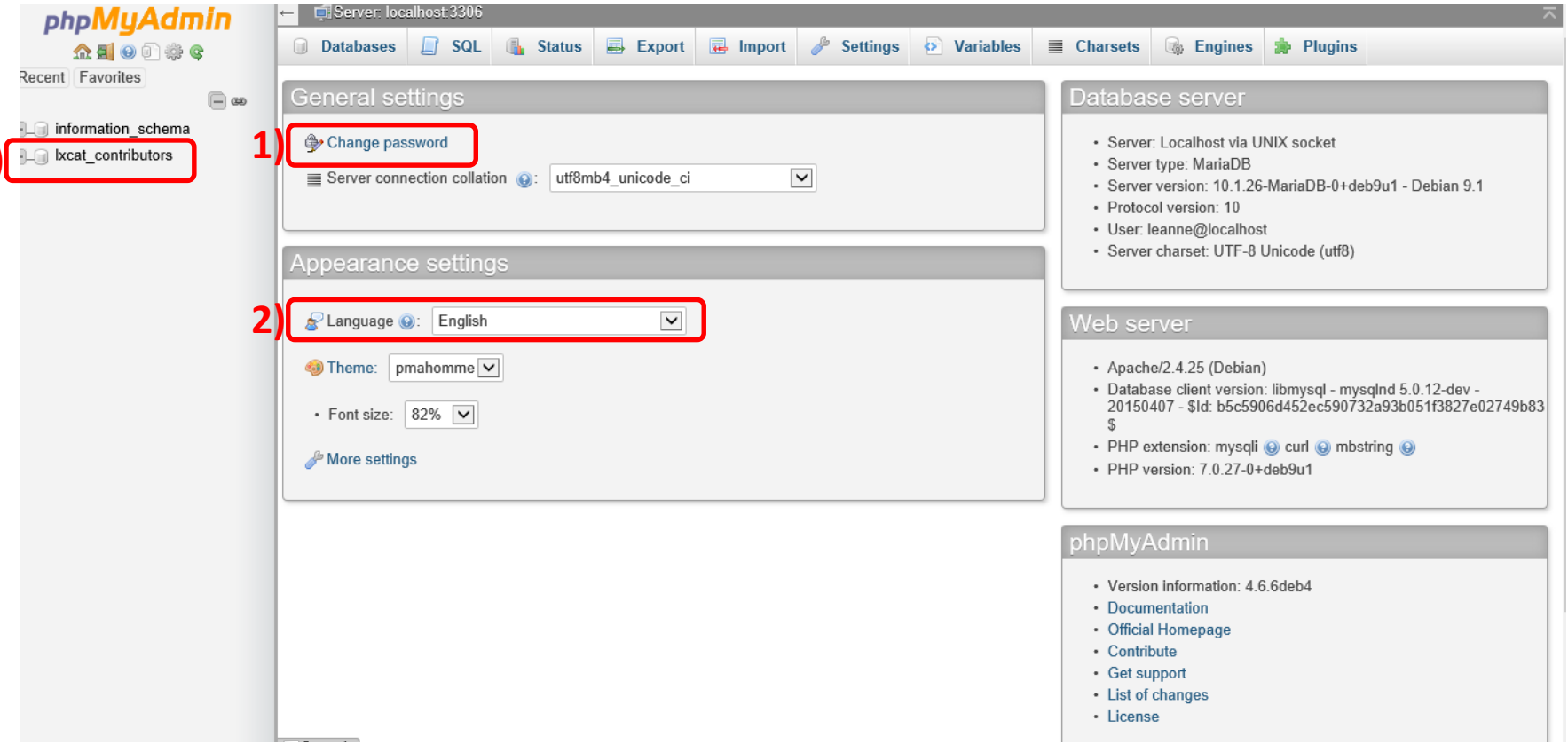
Accessing the login page (2)

3. Login using information sent by the LXCat team.

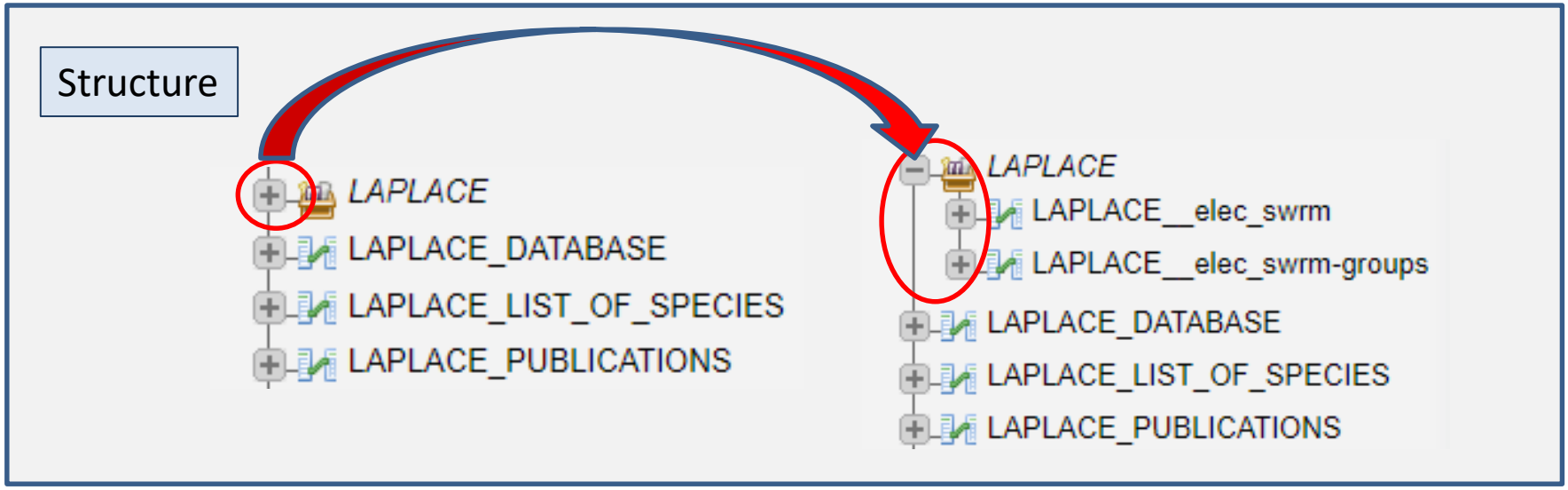
4. Click on « go ».

Account information page

1) Change password, if desired.
2) Change language, if desired (English is preferred).
3) Click on the symbol "+" next to lxcat_contributors to enter the database.



Database structure and contents using the LAPLACE database as an example



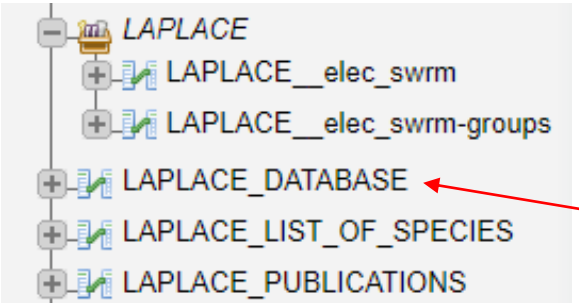
Element name	Contents
LAPLACE	
LAPLACE__elec_swrm	Electron swarm data tables and information describing each process.
LAPLACE__elec_swrm_groups	Group names, if any, with identifying information.
LAPLACE_DATABASE	Description of the database as a whole, with contact information for the contributors. This information appears under “List of Contributors”.
LAPLACE_LIST_OF_SPECIES	List of species/gas mixtures for which data are available in this database.
LAPLACE_PUBLICATIONS	Publication, notes, conference communications, etc.

How to input data to a swarm database

1. Provide a short description of the database in ‘’LAPLACE_DATABASE’’.
2. Provide a list of target species in ‘’LAPLACE_LIST_OF_SPECIES’’.
3. Provide (optionally) a list of group names in ‘’LAPLACE__elec_swrm_groups‘’.
4. Upload data in the file "LAPLACE__elec_swrm".

We will now walk through these steps……

Step 1: Short description of the database (1)



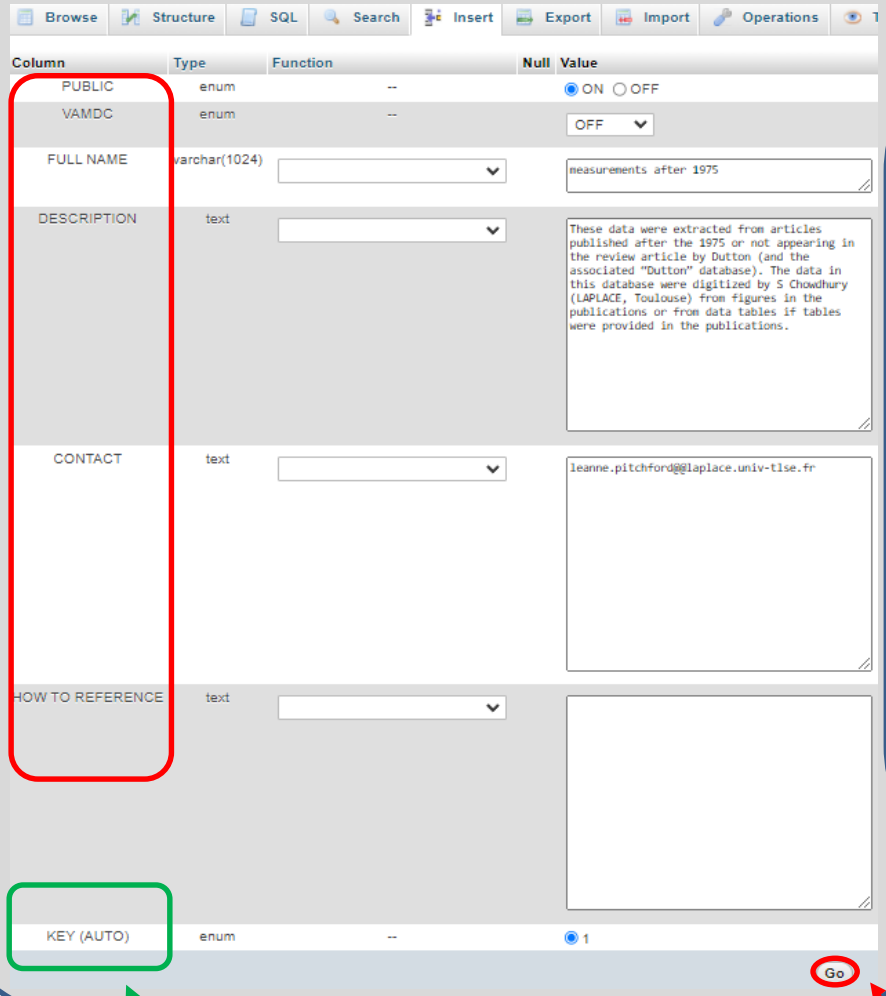
Click to open a summary page

	PUBLIC	VAMDC	FULL NAME	DESCRIPTION	CONTACT	HOW TO REFERENCE	KEY (AUTO)
Edit Copy Delete	ON	OFF	measurements after 1975	These data were extracted from articles published ...			1

Click here to open the input page

Step 1: Short description of the database (2)

Input page



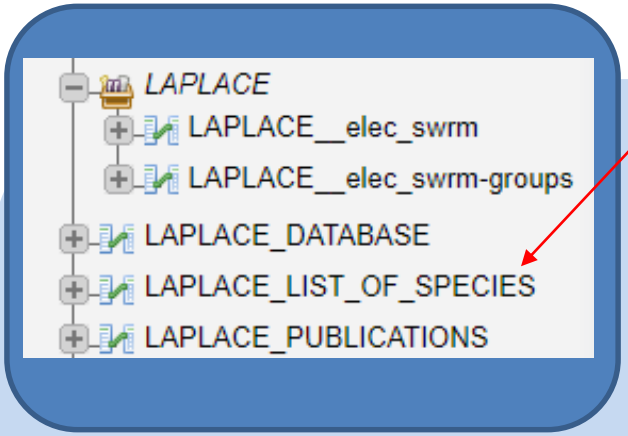
This is incremented automatically in LXCat. Don't modify.

Click "Go" save and exit.

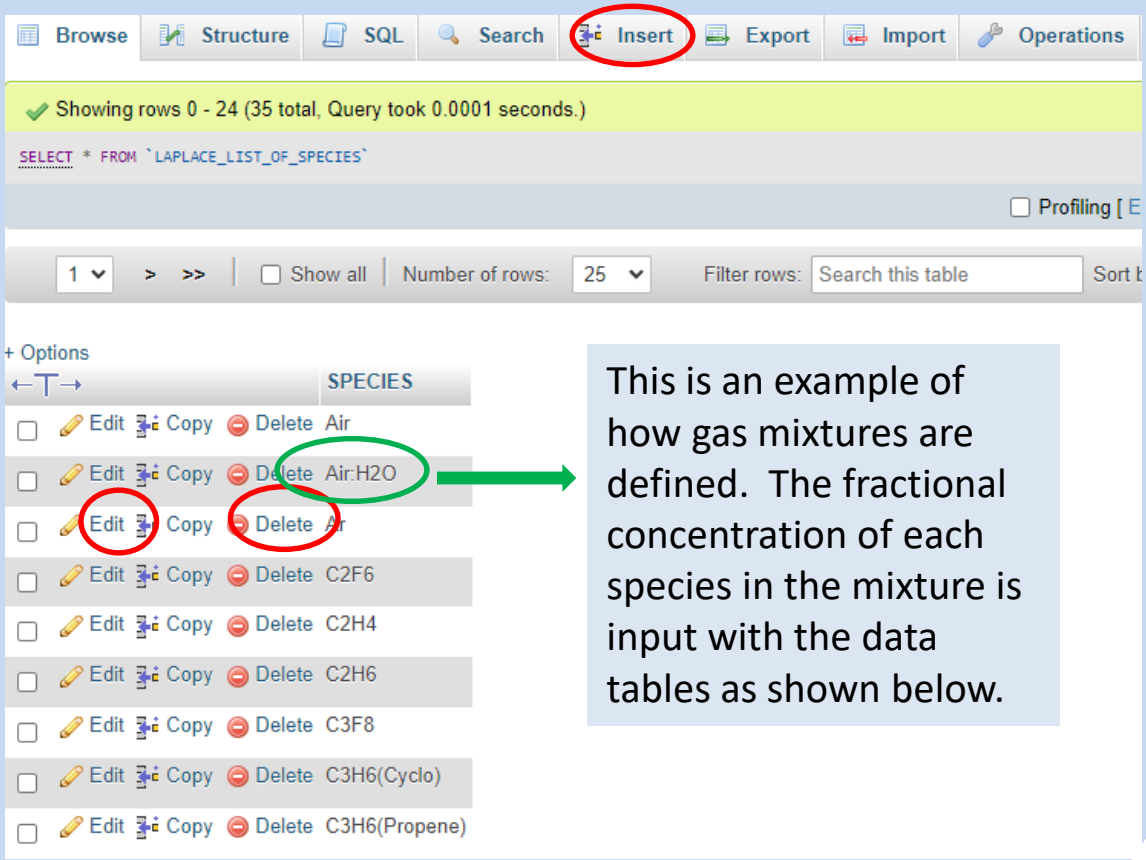
Definitions of the parameters

Parameter	Definition
PUBLIC	ON =>database is visible to everyone OFF => database is visible only to the owner (useful for debugging).
VAMDC	This parameter is no longer used.
FULL NAME	Optional
DESCRIPTION	This information is displayed on the LXCat website at www.lxcat.net/LAPLACE.
CONTACT	Names and contact information for the contributors of this database.
HOW TO REFERENCE	References to the database as a whole, if any.

Step 2: List of target species in the database



1. Click to open

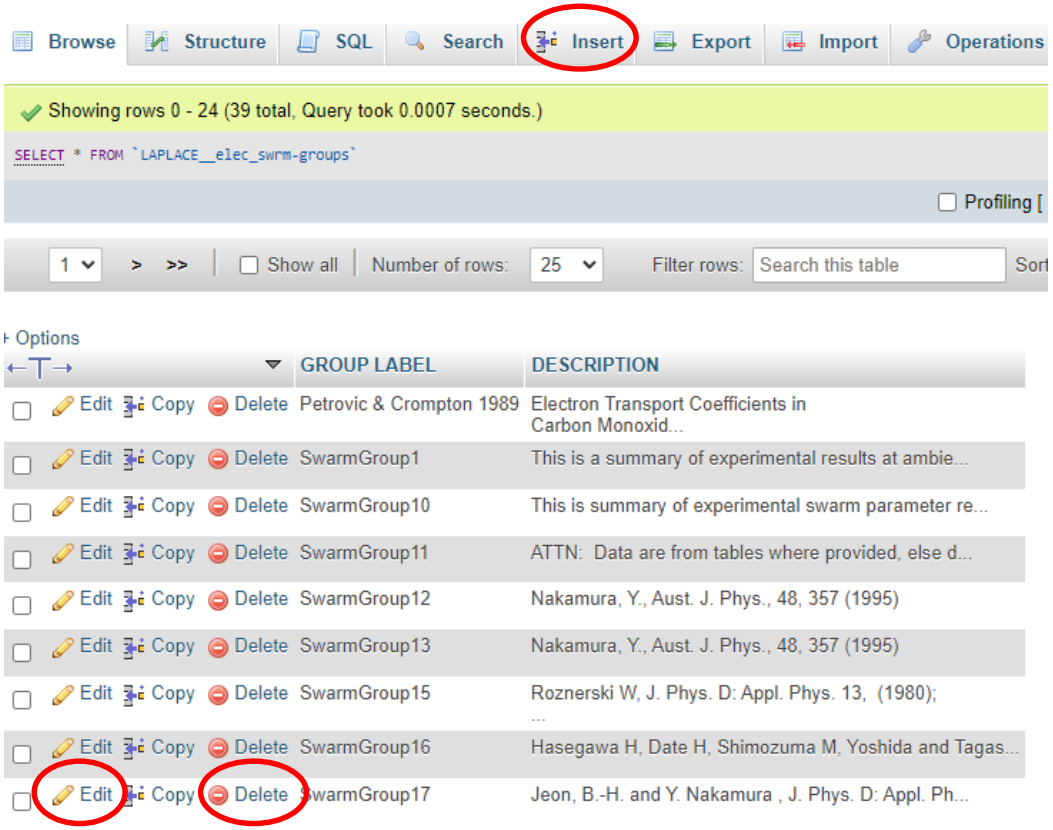


2. New species names can be inserted and existing data can be modified or deleted by clicking on the buttons outlined in red.

This is an example of how gas mixtures are defined. The fractional concentration of each species in the mixture is input with the data tables as shown below.

Step 3: List of group names (optional)

It is possible to organize the data into "groups" with common properties, but this is optional.



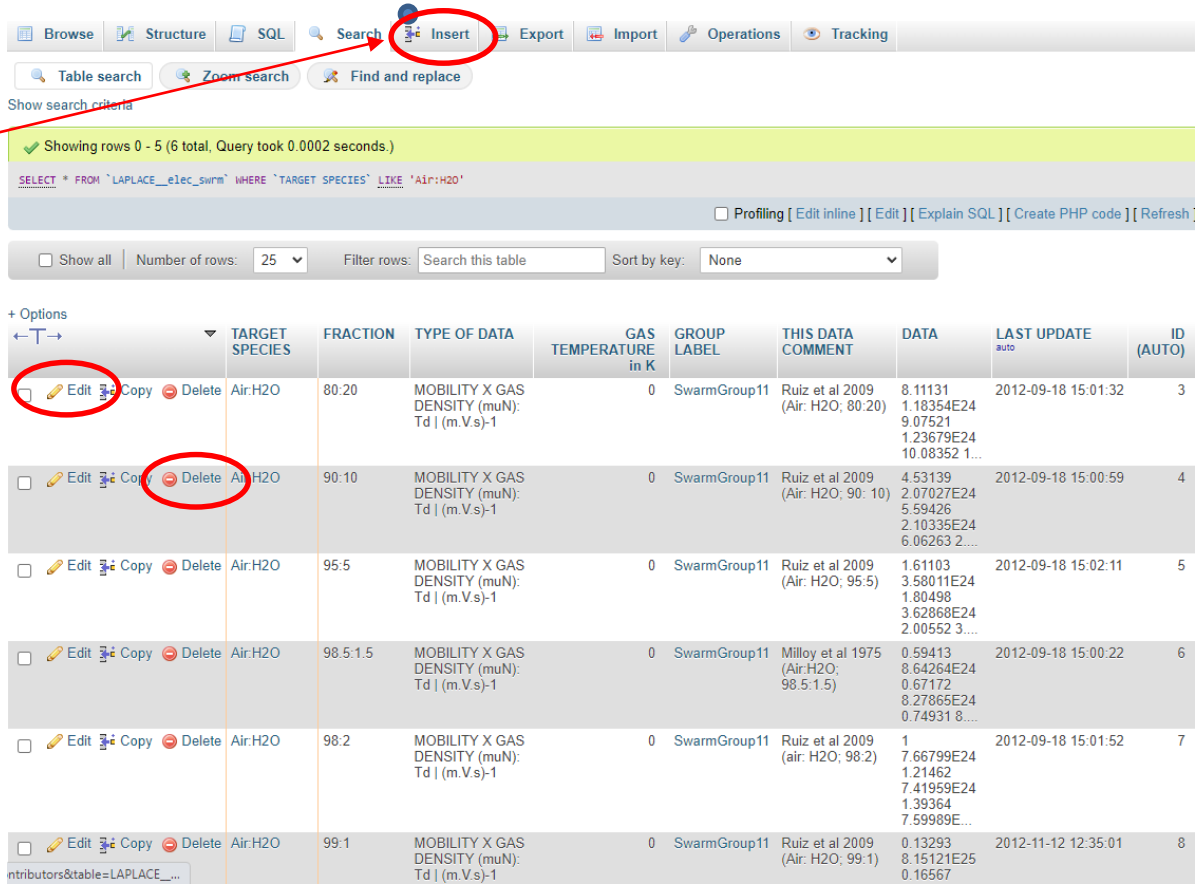
New data can be inserted and existing data can be modified by using the buttons in outlined in red.

In the above example, a group name is used to identify all data from a given reference. Groups could be defined differently. For example, all data measured at a given gas temperature could part of a group named "GasTemp=77K".

Step 4: Upload data (1)

Below is the summary page showing several rows of data in the LAPLACE database.

New data can be inserted and existing data can be modified or deleted by clicking on the buttons outlined in red.
Click on "search" to find specific lines of data.

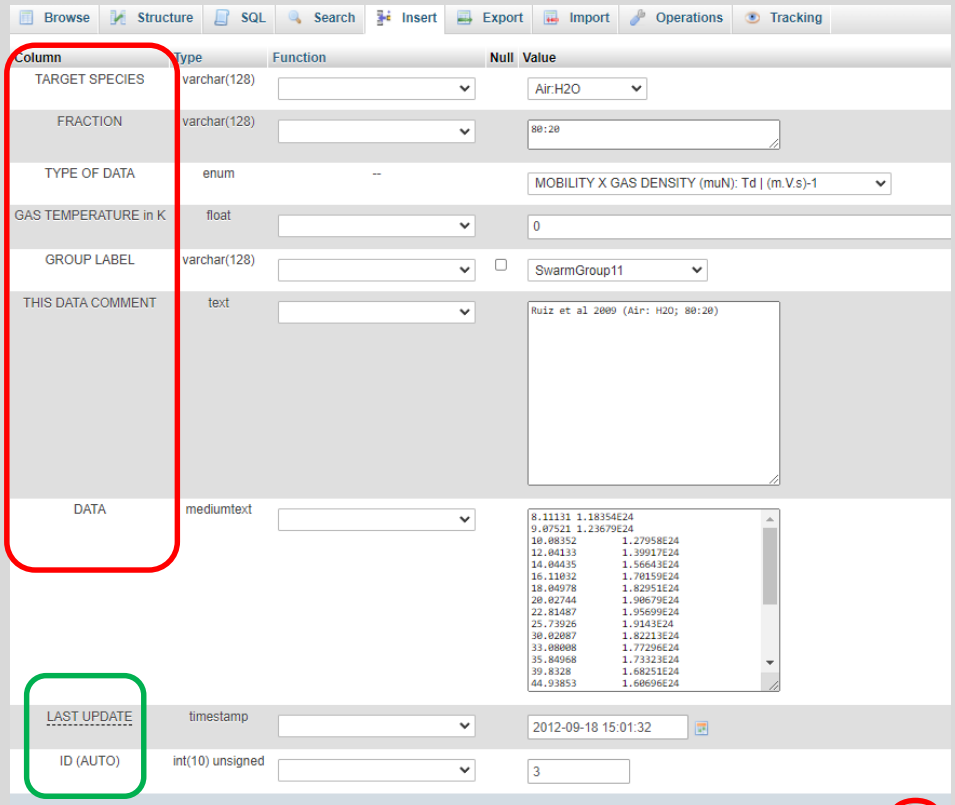


	TARGET SPECIES	FRACTION	TYPE OF DATA	GAS TEMPERATURE in K	GROUP LABEL	THIS DATA COMMENT	DATA	LAST UPDATE	ID (AUTO)
Edit Copy Delete	Air:H2O	80:20	MOBILITY X GAS DENSITY (muN): Td | (m.V.s)-1	0	SwarmGroup11	Ruiz et al 2009 (Air: H2O; 80:20)	8.11131 1.18354E24 9.07521 1.23679E24 10.08352 1...	2012-09-18 15:01:32	3
Edit Copy Delete	Air:H2O	90:10	MOBILITY X GAS DENSITY (muN): Td | (m.V.s)-1	0	SwarmGroup11	Ruiz et al 2009 (Air: H2O; 90: 10)	4.53139 2.07027E24 5.59426 2.10335E24 6.06263 2....	2012-09-18 15:00:59	4
Edit Copy Delete	Air:H2O	95:5	MOBILITY X GAS DENSITY (muN): Td | (m.V.s)-1	0	SwarmGroup11	Ruiz et al 2009 (Air: H2O; 95:5)	1.61103 3.58011E24 1.80498 3.62868E24 2.00552 3....	2012-09-18 15:02:11	5
Edit Copy Delete	Air:H2O	98.5:1.5	MOBILITY X GAS DENSITY (muN): Td | (m.V.s)-1	0	SwarmGroup11	Milloy et al 1975 (Air:H2O; 98.5:1.5)	0.59413 8.64264E24 0.67172 8.27865E24 0.74931 8....	2012-09-18 15:00:22	6
Edit Copy Delete	Air:H2O	98:2	MOBILITY X GAS DENSITY (muN): Td | (m.V.s)-1	0	SwarmGroup11	Ruiz et al 2009 (air: H2O; 98:2)	1 7.66799E24 1.21462 7.41959E24 1.39364 7.59989E...	2012-09-18 15:01:52	7
Edit Copy Delete	Air:H2O	99:1	MOBILITY X GAS DENSITY (muN): Td | (m.V.s)-1	0	SwarmGroup11	Ruiz et al 2009 (Air: H2O; 99:1)	0.13293 8.15121E25 0.16567	2012-11-12 12:35:01	8

The next slides define the columns and show how to upload the actual data.

Step 4: Upload data (2)

Input page



These parameters are incremented automatically in LXCat. Don't modify.

Click "Go" save and exit.

Parameter	Definition
TARGET SPECIES	To be selected from the previously defined list of species.
FRACTION	If the target species is a gas mixture, the relative concentrations are defined here. For a 72/25 mixture of N2/O2 , the species is N2:O2 and the fraction is 75:25.
TYPE OF DATA	To be selected from the list of allowed types: MOBILITY X GAS DENSITY (muN): Td | (m.V.s)-1; DIFFUSION x GAS DENSITY (DN): Td | (m.s)-1; REDUCED IONIZATION COEFFICIENT (alpha/N): Td | m2; REDUCED ATTACHMENT COEFFICIENT (eta/N): Td | m2; REDUCED NET COEFFICIENT (alpha/N-eta/N): Td | m2; CHARACTERISTIC ENERGY (D/mu): Td | eV; REACTION RATE (k): Td | m3/s; ENERGY DISTRIBUTION FUNCTION (f0): eV | eV-3/2
GAS TEMPERATURE	Tg = 0 if the corresponding gas temperature is unknown. Otherwise, this is Tg in K.
GROUP LABEL	To be selected from the previously defined list of data groups or NULL (=> blank).
THIS DATA COMMENT	Additional information if needed (reference, for example).
DATA	2-column data table (E/N, swarm parameter) SI units : E/N in Townsend* and swarm parameters in the units defined above.

*1 Townsend = 1 Td = 10^{-21} V m^2

Step 4: Upload data (3)

The data tables can be inserted manually on the input page
……..OR users can import data for multiple processes simultaneously by creating a file in SQL format.

INSERT data: Click on the button in upper horizontal bar. Data tables are inserted by hand (or cut and paste from another application). It is recommended that new users begin by inserting data in this way to become familiar with the options.

OR users can **IMPORT** data in SQL format (see below). Multiple processes can be uploaded in a single SQL file.

Note that contributors can delete or modify their data at any time. Data as they existed at any date in the past can be retrieved by using the TIME MACHINE option (click on « access to previous version ») from the « data center » on LXCat.

Step 4: Upload data (4)

OR users can **IMPORT** data: Click on "import" to upload a data file in the following format:

```
INSERT INTO `LAPLACE__elec_swrm` (`TARGET SPECIES`, `FRACTION`, `TYPE OF DATA`, `GAS TEMPERATURE in K`, `GROUP LABEL`, `THIS DATA COMMENT`, `DATA`) VALUES
('Air', '', 'MOBILITY X GAS DENSITY (muN): Td | (m.V.s)-1', 0, 'SwarmGroup11', 'Rees 1973  (Dry air)',
'0.40081        9.94975E24
0.48939         9.09199E24
0.60675         7.96324E24
0.81270         7.08113E),
('Air', '', 'MOBILITY X GAS DENSITY (muN): Td | (m.V.s)-1', 0, 'SwarmGroup11', 'Roznerski et al 1984',
'0.47055        9.54861E24
2.4742          3.96265E24
5.03947         2.67778E24
7.48836         2.25774E24);
```

Between the parenthesis in the first line of the file to be IMPORTED are the names of the columns. (There is no carriage return/line feed; this is one long line.)

Attention: Be careful with the symbol " ` " in the first line - this is not the same as the symbol " ' " which appears in the subsequent lines.
Note that there are two underline symbols in LAPLACE__elec_swrm.

In the IMPORT example on the previous page, the SQL file contains mobility data for two different gas mixtures. Data are each mixture are given for each of the columns named in the first line. A comma at the end of the list of data indicates that further data follow. A semicolon at the end of the list of data signals the end of the input data.

If you have any problems, contact the LXCat team at

info@lxcat.net.