Apertum

Airviro 4.0. Appendix 1D: Wedbed

1D.1 Introduction

1.D1.1 What is Wedbed?

Wedbed is a tool that integrates the Airviro emission database into MS Excel®. With ***Wedbed*** the following tasks can be easily performed:

- Wedbed allows you to use the whole power of MS Excel® with data from the fast and compact emission database of Airviro.
- With Wedbed it is easier to edit data. You just export the data to MS Excel®, make the changes there and import the data back to Airviro.
- Once you have the data in your MS Excel® workbook, you can either use the excellent reporting features of MS Excel® or easily cut and paste the data to other reporting tools.
- With Wedbed you can store an emission database in your PC as an MS Excel® workbook.
- With Wedbed you can make an extensive consistency check on the loaded emission database.

1.D1.2 How does it work?

Dialogs for Airviro emission database access are added to the MS Excel® interface. Just choose import or export, select an emission database in

Airviro and the transfer will take place instantly. The transfer of data between MS Excel and Airviro is done directly through internet or the local area network.

1.D.2.Overview and definitions

With Wedbed emission databases can be imported to MS Excel® from Airviro or exported to Airviro from MS Excel®. Each table or grid in the Airviro emission database is stored in separate sheet in MS Excel®. All the information from an emission database is stored in MS Excel® end can be easily changed. The emission database can reside in Excel until it is exported back to Airviro, i.e. the information can be manipulated “off line”. The emission database in MS Excel® can be thought of as a “pocket emission database.”

MS Excel®, a registered trademark by Microsoft Corporation, will be referred to as Excel in the rest of the document. EDB is an abbreviation for emission database.

1.D.3.Getting Started

The following steps are needed in order to use **Wedbed**:

- Download Wedbed from the SMHI Airviro web site: www.airviro.se. It is found under DOWNLOADS.
- Install **Wedbed** on your computer: Open the zip file and follow the instructions in the README file.

- Start Excel. Click on **Complements,** and select **Wedbed** from the list.
- Under the **Host** menu, you must enter the name or the IP adress to the Airviro server you want to import/export data from/to.
- To transfer data from Airviro to Excel click on the **Import EDB to Excel** in the **Wedbed** drop down menu. The **Login** dialog will appear the first time Wedbed is used in a

working session.

- The procedure to transfer data from Excel to Airviro is very similar. Just select **Export EDB from Excel** from the drop down menu.

1.D.4. The Wedbed menu in Excel

When **Wedbed** is installed the **Wedbed** menu is added in the Excel menu bar.

The following menu items are available:

1. Import EDB to Excel: Displays the import dialog.
2. Update sub tables: Updates the **Wedbed** tool bar**.** Each sub table has a list in the tool bar. The list contains the names of the sub table records. The list is used when the sub table is referred from e.g. a source. A warning and error list exist as well. The sub tables are described in the *"Working with Wedbed sheets in Excel"* section below.
3. Check: Checks the consistency of EDBs in Excel. Warnings and errors are reported in **Wedbed** tool bar.
4. About: Displays information about Wedbed.

1.D.6. Import EDB to Excel

In the **Import EDB to Excel** dialog the databases, users and EDB:s are shown in three separate lists. The type of sources to import can be selected. Grid layers to import can be chosen.

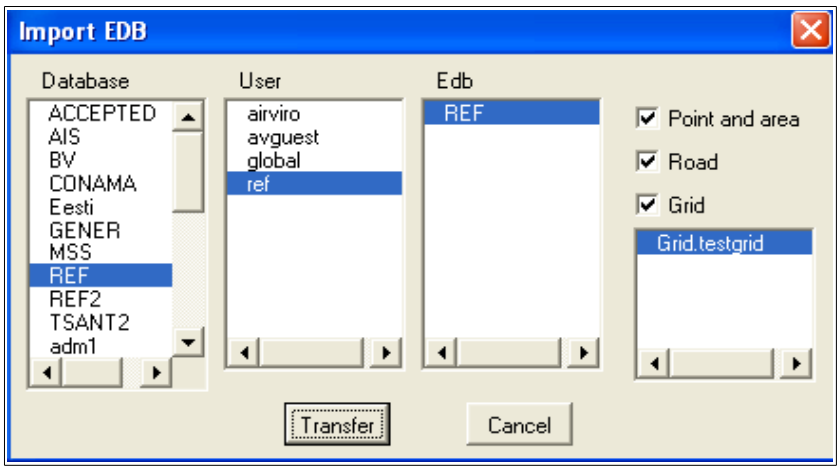


Figure D1. Import EDB

When a database is selected, the users available for this database are shown in the users list. When a user is selected, the EDBs belonging to, are shown in the EDB list. When an EDB is selected the *Point and Area*, *Road* and *Grid* check boxes are checked. The grid layers of the EDB are listed in the list box below the *Grid* check box. All grid layers are selected. The source types to import, can be limited by unchecking the check boxes. If the *Grid* check box is checked, a certain grid layer can be selected in the grid layer list. By pressing *Ctrl* on the keyboard and clicking on a grid layer it is possible to select more than one.

When the *Transfer* button is pushed the EDB is imported to Excel. Each table in the selected EDB is imported to a separate Excel sheet. Information about what happens is printed in the status bar of Excel.

Limitations: the sub tables will always be imported. No search criteria for the sources can be specified. Future version will allow possibility to select only sources that match search criteria.

1.D.7.Working with Wedbed sheets in Excel

1.D.7.1 Sub tables and sources

Emission sources in Airviro are point, area, road and grids. Point and area sources are stored in one sheet. Road sources are stored in another sheet. Each grid is stored in its own sheet. Each source is stored in one row. Sources are added by adding a new row.

The sub tables sheets are: Units, Speed-Temp-Scenario, Rsrc, Substance, Searchkey, Emission factor, Emission Function, Source timevar, Road timevar, Company, Facility, Source, Vehicle, Road Vehicle Def, RoadVehicle, Roadtype, Road. Each sub table entry is stored in one or more rows. Sub table entries are added by adding the proper number of rows.

1.D.7.2 General information about sheets

All sheets have a title row that defines the information stored in the sheet. Normally, cells that are not meant to be changed are write protected. The title row is write protected with the exception of sheets that refers to substances. In these sheets, substance/unit pairs can be added in the title row.

1.D.7.3 References to sub tables

References from sources or sub tables to other sub tables are made using names instead of indices. The Wedbed toolbar can be used when referring sub tables.

1.D.7.4 Wedbed Toolbar

Figure D2. Sheets.

The Wedbed toolbar contains a number of lists. Each list corresponds to a sub table and

contains the names of the entries in that sub table. By selecting an entry in the list, that name is copied to the active cell in the active sheet. This way, references to sub tables can be made in an easy way from sources or other sub tables. The lists are loaded when an EDB is imported or by selecting *"Update sub tables…"* in the Wedbed menu.

Besides the sub table lists, there are two special lists: Errors and Warnings. These contain errors and warnings from the consistency check in Wedbed. By selecting an error or warning in one of these lists, the cell that caused the error /warning becomes the active cell in the active sheet.

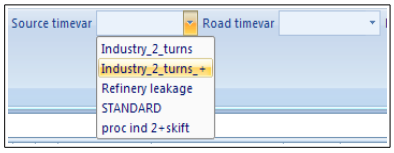


Figure D3. Toolbar: Source timevar Sheet.

1.D.8. Export EDB from Excel

In the **Export EDB from EXCEL** dialog the possible databases to export to are shown in a list box. There are two choices: Either to export the data to an *Existing Edb* or to create a *New Edb*. These alternatives are chosen with the radio buttons to the right of the database list.

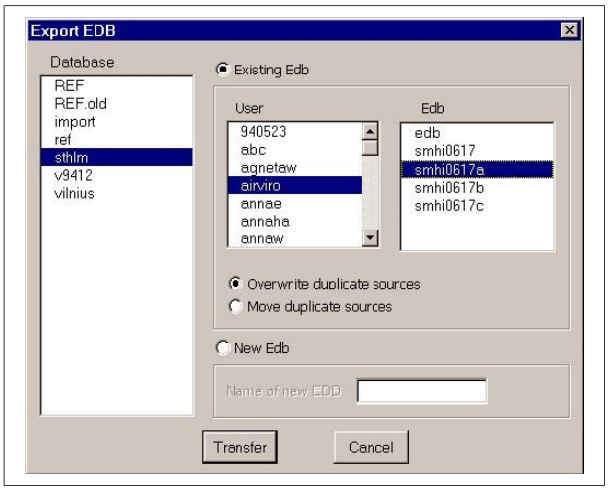


Figure D4 Export EDB Sheet.

When *Existing Edb* is chosen the User and the Edb can be selected from the lists. The sub tables and grid layers of the chosen Edb are always overwritten. Grid layers in the chosen Edb that do not exist in Excel are left as they are. For point, area and road sources two alternatives exists: Either to *Overwrite duplicate sources* or to *Move duplicate sources* until their coordinates become unique. These alternatives are chosen with the radio buttons below the User and Edb lists.

When *New Edb* is selected the name of the new Edb is input. The new Edb is created for the user used when logging on.

When *Transfer* is pushed the following happens:

- The sub tables are updated.
- The consistency of the EDB is checked.
- If *Existing Edb* is chosen a check is made between the sub tables of the Airviro Edb to export to and the sub tables in Excel. Sub table entries having the same index in Airviro and Excel must have the same name. If errors are encountered, the export is aborted.
- The EDB is exported to Airviro.

Information about what happens is printed in the status bar of Excel.

1.D.8.1. Consistency Check

When an EDB is exported, a consistency check is performed. The check consists of the following steps:

- The sub tables are updated. If errors are encountered, the consistency check and export is aborted. The error and warning lists contains more information about the errors and warnings.
- Verification of the EDB in Wedbed. This includes syntax check of sheets, references to

sub tables, length of strings, limits of values, required values, etc. If errors are encountered, the consistency check and export is aborted.

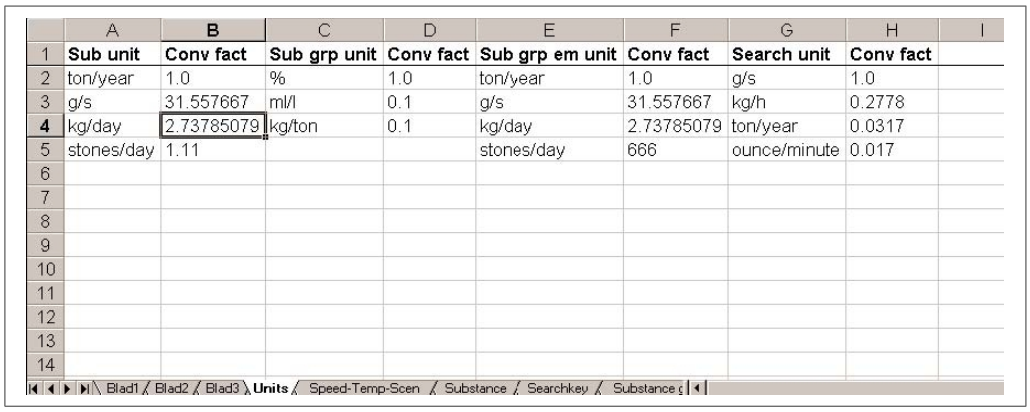
1.D.8.2. Setting up privileges for export from Excel

The same privileges are valid for Wedbed as for the Airviro EDB. The privileges for the Airviro EDB are set up in the *IADM* module in Airviro. For information about the resources effecting the Airviro EDB see the manual for the IADM module.

1.D.9.Layout of the Wedbed sheets in Excel

1.D.9.1. Units Sheet

This sheet corresponds to the unit part of the *edb.rsrc* file in Airviro. Units for different quantities in EDB are listed with their conversion factors. The first line below the title row states the default units of Airviro and may not be changed.



	A	B	C	D	E	F	G	H	I
1	**Sub unit**	**Conv fact**	**Sub grp unit**	**Conv fact**	**Sub grp em unit**	**Conv fact**	**Search unit**	**Conv fact**	
2	ton/year	1.0	%	1.0	ton/year	1.0	g/s	1.0	
3	g/s	31.557667	ml/l	0.1	g/s	31.557667	kg/h	0.2778	
4	kg/day	2.73785079	kg/ton	0.1	kg/day	2.73785079	ton/year	0.0317	
5	stones/day	1.11			stones/day	666	ounce/minute	0.017	
6									
7									
8									
9									
10									
11									
12									
13									
14									

Blad1 / Blad2 / Blad3 \ **Units** / Speed-Temp-Scen / Substance / Searchkey / Substance

Figure D5.Unit Sheet.

1.D.9.2. Speed-Temp-Scen Sheet

This sheet contains the rest of the *edb.rsrc* file in Airviro. Three columns stating the labels to use in Airviro for **Speed**, **Temperature** and **Scenario**.

	A	B	C	D	E	F	G	H	I
1	Index	Speed	Temperature	Scenario					
2	1	20	-30--28	1993					
3	2	30	-28--26	1994					
4	3	40	-26--24	1995					
5	4	50	-24--22	1996					
6	5	60	-22--20	1997					
7	6	70	-20--18	1998					
8	7	80	-18--16	1999					
9	8	90	-16--14	2000					
10	9	100	-14--12	2001					
11	10	110	-12--10	2002					
12	11	120	-10--8						
13	12		-8--6						
14	13		-6--4						

Blad1 / Blad2 / Blad3 / Units / Speed-Temp-Scen / Substance / Searchkey / Substance

Figure D6 Speed-Temp-Scen Sheet.

1.D.9.3. Rsrc Sheet

This sheet contains the contents of the edb.rsrc file. The format of the conents in edb.rsrc is label and value. Here are the activity and geographical codes stored as well as noise factors. Other variables can be stored here when the Airviro EDB is used for special applications such as the MODEM emission model.

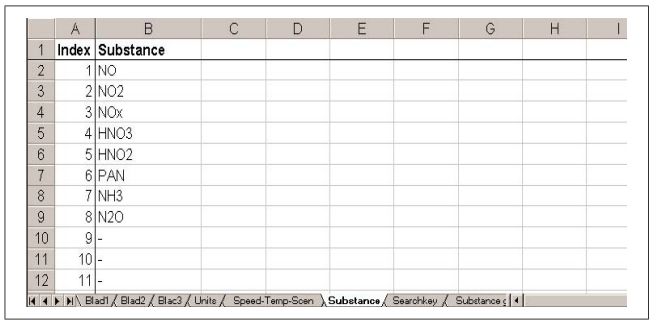
	A	B
1	Tag	Value
2	ac.1.kind	1
3	ac.1.entity	SNAP
4	ac.1.01.entity	COMBUSTION IN ENERGY AND TRANSFORMATION INDUS
5	ac.1.01.01.entity	Public power
6	ac.1.01.01.00.entity	Public power
7	ac.1.01.01.01.entity	Combustion plants >= 300 MW (boilers)
8	ac.1.01.01.02.entity	Combustion plants >= 50 and < 300 MW (boilers)
9	ac.1.01.01.03.entity	Combustion plants < 50 MW (boilers)
10	ac.1.01.01.04.entity	Gas turbines
11	ac.1.01.01.05.entity	Stationary engines
12	ac.1.01.02.entity	District heating plants
13	ac.1.01.02.00.entity	District heating plants
14	ac.1.01.02.01.entity	Combustion plants >= 300 MW (boilers)
15	ac.1.01.02.02.entity	Combustion plants >= 50 and < 300 MW (boilers)
16	ac.1.01.02.03.entity	Combustion plants < 50 MW (boilers)
17	ac.1.01.02.04.entity	Gas turbines
18	ac.1.01.02.05.entity	Stationary engines
19	ac.1.01.03.entity	Petroleum refining plants
20	ac.1.01.03.00.entity	Petroleum refining plants
21	ac.1.01.03.01.entity	Combustion plants >= 300 MW (boilers)
22	ac.1.01.03.02.entity	Combustion plants >= 50 and < 300 MW (boilers)
23	ac.1.01.03.03.entity	Combustion plants < 50 MW (boilers)
24	ac.1.01.03.04.entity	Gas turbines
25	ac.1.01.03.05.entity	Stationary engines
26	ac.1.01.03.06.entity	Process furnaces
27	ac.1.01.04.entity	Solid fuel transformation plants
28	ac.1.01.04.00.entity	Solid fuel transformation plants
29	ac.1.01.04.01.entity	Combustion plants >= 300 MW (boilers)
30	ac.1.01.04.02.entity	Combustion plants >= 50 and < 300 MW (boilers)
31	ac.1.01.04.03.entity	Combustion plants < 50 MW (boilers)
32	ac.1.01.04.04.entity	Gas turbines
33	ac.1.01.04.05.entity	Stationary engines
34	ac.1.01.04.06.entity	Coke oven furnaces
35	ac.1.01.04.07.entity	Other (coal gasification, liquefaction,...)
36	ac.1.01.05.entity	Coal mining, oil / gas extraction, pipeline c
37	ac.1.01.05.00.entity	Coal mining, oil / gas extraction, pipeline c
38	ac.1.01.05.01.entity	Combustion plants >= 300 MW (boilers)
39	ac.1.01.05.02.entity	Combustion plants >= 50 and < 300 MW (boilers)

Units / Speed-Temp-Scen / Rsrc / Substance / Searchkey / Substance group

Figure D7. Rsrc Sheet.

1.D.9.4. Substance Sheet

This sheet corresponds to the substance table of the Airviro EDB. No changes are allowed since this information only persists in the global EDB of Airviro.

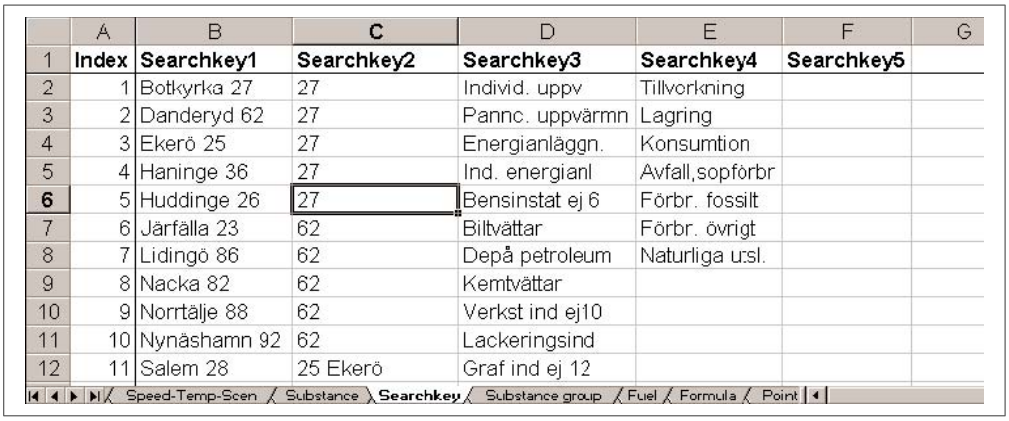


	A	B
1	Index	Substance
2	1	NO
3	2	NO2
4	3	NOx
5	4	HNO3
6	5	HNO2
7	6	PAN
8	7	NH3
9	8	N2O
10	9	-
11	10	-
12	11	-

Figure D8. Substance Sheet.

1.D.9.5. Sheet Searchkey

This sheet contains the searchkey table of the Airviro EDB. Searchkeys may be empty (not used) but duplicates should be avoided.



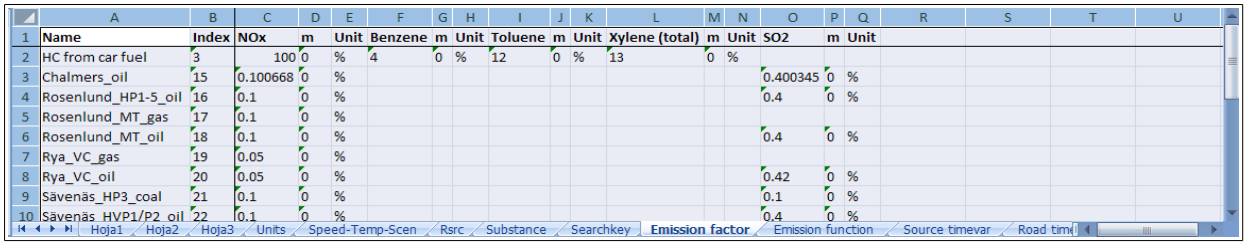
	A	B	C	D	E	F	G
1	Index	Searchkey1	Searchkey2	Searchkey3	Searchkey4	Searchkey5	
2	1	Botkyrka 27	27	Individ. uppv	Tillvorkning		
3	2	Danderyd 62	27	Pannc. uppvärmn	Lagring		
4	3	Ekerö 25	27	Energianläggn.	Konsumtion		
5	4	Haninge 36	27	Ind. energianl	Avfall,sopförbr		
6	5	Huddinge 26	27	Bensinstat ej 6	Förbr. fossilt		
7	6	Järfälla 23	62	Biltvättar	Förbr. övrigt		
8	7	Lidingö 86	62	Depå petroleum	Naturliga u:sl.		
9	8	Nacka 82	62	Kemtvättar			
10	9	Norrtälje 88	62	Verkst ind ej10			
11	10	Nynäshamn 92	62	Lackeringsind			
12	11	Salem 28	25 Ekerö	Graf ind ej 12			

Figure D9. Searchkey Sheet.

1.D.9.6. Emission Factor Sheet

This sheet corresponds to the emssion factor table of the Airviro EDB. There is one emission factor per row. Names and indices must be unique, including names and indices for the emission factors. After the **Name** and **Index** columns, pairs of *substance* and **Unit**

columns follow. Add a substance/unit pair by adding them after the last existing substance/unit pair. To delete a substance remove the substance/unit columns. The order of substances is not significant.



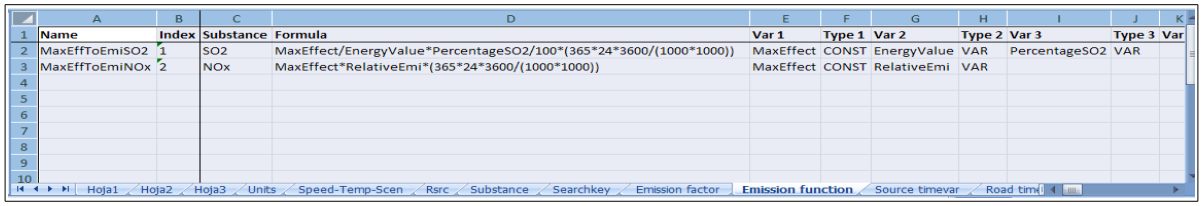
	Name	Index	NOx	m	Unit	Benzene	m	Unit	Toluene	m	Unit	Xylene (total)	m	Unit	SO2	m	Unit
2	HC from car fuel	3	100	0	%	4	0	%	12	0	%	13	0	%			
3	Chalmers_oil	15	0.100668	0	%										0.400345	0	%
4	Rosenlund_HP1-5_oil	16	0.1	0	%										0.4	0	%
5	Rosenlund_MT_gas	17	0.1	0	%												
6	Rosenlund_MT_oil	18	0.1	0	%										0.4	0	%
7	Rya_VC_gas	19	0.05	0	%												
8	Rya_VC_oil	20	0.05	0	%										0.42	0	%
9	Sävenäs_HP3_coal	21	0.1	0	%										0.1	0	%
10	Sävenäs_HVP1/P2_oil	22	0.1	0	%										0.4	0	%

Hoja1 | Hoja2 | Hoja3 | Units | Speed-Temp-Scen | Rsrc | Substance | Searchkey | **Emission factor** | Emission function | Source timevar | Road tim

Figure D10. Emission factor Sheet

1.D.9.7. Emission Function Sheet

This sheet corresponds to the Airviro emission function table. There is one emission function per row. Names and indices must be unique. For each emission function a number of variables are defined. These can either be CONST (Constant) or VAR (Variable).The variables are used in the Formula. The formula can contain a arithmetical and logical expressions and uses the same syntax as the Indico interpreter.



	Name	Index	Substance	Formula	Var 1	Type 1	Var 2	Type 2	Var 3	Type 3	Var
2	MaxEffToEmiSO2	1	SO2	MaxEffect/EnergyValue*PercentageSO2/100*(365*24*3600/(1000*1000))	MaxEffect	CONST	EnergyValue	VAR	PercentageSO2	VAR	
3	MaxEffToEmiNOx	2	NOx	MaxEffect*RelativeEmi*(365*24*3600/(1000*1000))	MaxEffect	CONST	RelativeEmi	VAR			

Hoja1 | Hoja2 | Hoja3 | Units | Speed-Temp-Scen | Rsrc | Substance | Searchkey | Emission factor | **Emission function** | Source timevar | Road tim

Figure D11. Emission Function Sheet.

1.D.9.8. Source TimeVar Sheet

This sheet corresponds to the Airviro Time Variation Point table in EDB. Each time variation spans over four rows. Names and indices must be unique. After the **Name** and **Index** columns, the following information follows:

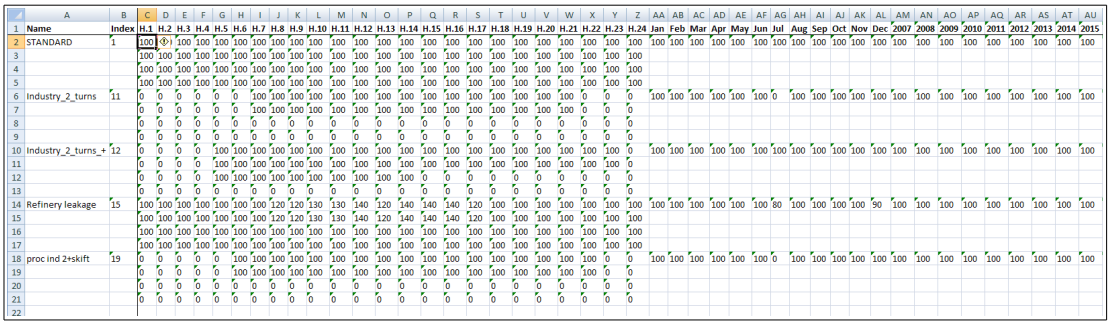
- **H.1** to **H.24** stating the hourly variations. The four rows correspond to type days Mon-Thu, Fri, Sat and Sun.

- **Jan** to **Dec** stating the monthly variations. Only first row of each formula.

- *Scenario1* to *Scenario10* stating the scenario variations. Only first row for each formula.

1• *Temperature1* to *Temperature30* stating the temperature dependency. Only first row for each formula.

2• **100-95** to **5-0** stating the gas flow dependency. Only first row for each formula.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU
1	Name	Index	H.1	H.2	H.3	H.4	H.5	H.6	H.7	H.8	H.9	H.10	H.11	H.12	H.13	H.14	H.15	H.16	H.17	H.18	H.19	H.20	H.21	H.22	H.23	H.24	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2007	2008	2009	2010	2011	2012	2013	2014	2015
2	STANDARD	1	100																																													
3			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100																					
4			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100																					
5			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100																					
6	Industry_2_turns	11	0	0	0	0	0	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	0	0	100	100	100	100	100	100	0	100	100	100	100	100	100	100	100	100	100	100	100	100
7			0	0	0	0	0	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	0	0																					
8			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
9			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
10	Industry_2_turns_+	12	0	0	0	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
11			0	0	0	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0																					
12			0	0	0	0	100	100	100	100	100	100	100	100	100	100	0	0	0	0	0	0	0	0	0	0																					
13			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
14	Refinery leakage	15	100	100	100	100	100	100	120	120	130	130	140	120	140	140	140	120	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100	90	100	100	100	100	100	100	100	100	100	100
15			100	100	100	100	100	100	120	120	130	130	140	120	140	140	140	120	100	100	100	100	100	100	100	100																					
16			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100																					
17			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100																					
18	proc ind 2+skift	19	0	0	0	0	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	0	100	100	100	100	100	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100
19			0	0	0	0	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	0																					
20			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
21			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
22																																														

Figure D12. Source TimeVar Sheet

1.D.9.9. Company Sheet

This sheet corresponds to the Airviro company table in EDB. After the **Name** and **ID** columns, the following information follows:

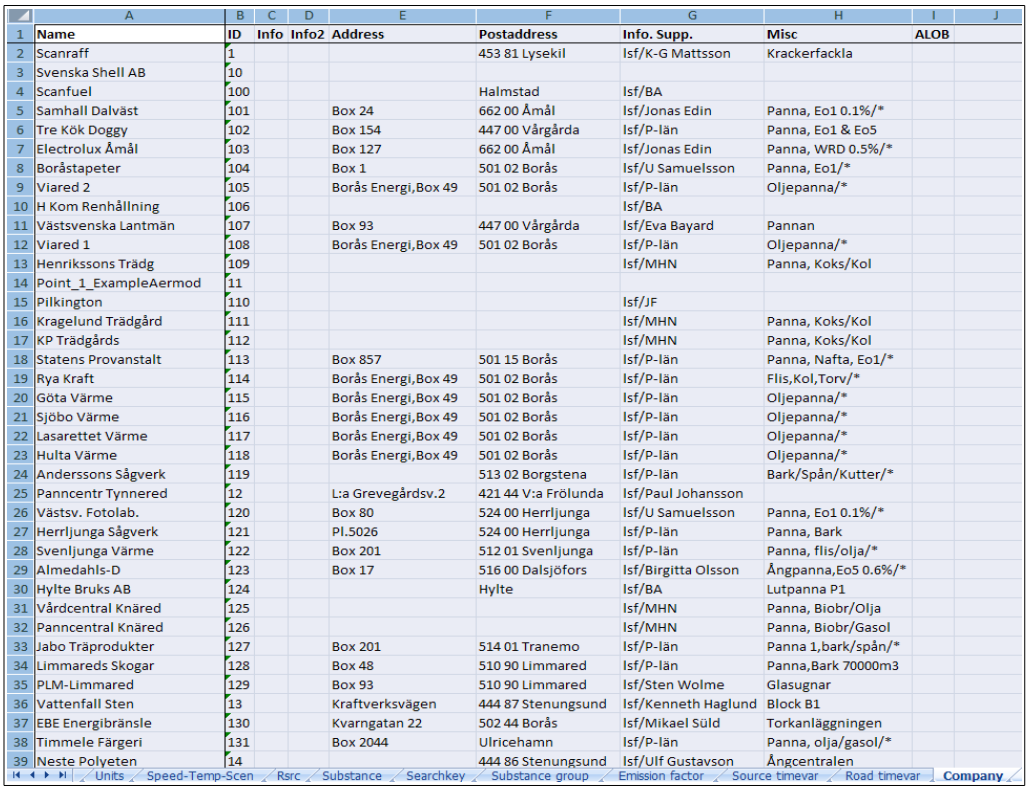
- Info, Info 2: string, additional information.

- Address and post address : string.

- Info. Supp.: the informant name.

- Misc: string

- Alob: string



	A	B	C	D	E	F	G	H	I	J
1	Name	ID	Info	Info2	Address	Postaddress	Info. Supp.	Misc	ALOB	
2	Scanraff	1				453 81 Lysekil	Isf/K-G Mattsson	Krackerfackla		
3	Svenska Shell AB	10								
4	Scanfuel	100				Halmstad	Isf/BA			
5	Samhall Dalväst	101			Box 24	662 00 Åmål	Isf/Jonas Edin	Panna, Eo1 0.1%/*		
6	Tre Kök Doggy	102			Box 154	447 00 Vårgårda	Isf/P-län	Panna, Eo1 & Eo5		
7	Electrolux Åmål	103			Box 127	662 00 Åmål	Isf/Jonas Edin	Panna, WRD 0.5%/*		
8	Boråstapeter	104			Box 1	501 02 Borås	Isf/U Samuelsson	Panna, Eo1/*		
9	Viared 2	105			Borås Energi,Box 49	501 02 Borås	Isf/P-län	Oljepanna/*		
10	H Kom Renhållning	106					Isf/BA			
11	Västsvenska Lantmän	107			Box 93	447 00 Vårgårda	Isf/Eva Bayard	Pannan		
12	Viared 1	108			Borås Energi,Box 49	501 02 Borås	Isf/P-län	Oljepanna/*		
13	Henrikssons Trädg	109					Isf/MHN	Panna, Koks/Kol		
14	Point_1_ExampleAermod	11								
15	Pilkington	110					Isf/JF			
16	Kragelund Trädgård	111					Isf/MHN	Panna, Koks/Kol		
17	KP Trädgårds	112					Isf/MHN	Panna, Koks/Kol		
18	Statens Provanstalt	113			Box 857	501 15 Borås	Isf/P-län	Panna, Nafta, Eo1/*		
19	Rya Kraft	114			Borås Energi,Box 49	501 02 Borås	Isf/P-län	Flis,Kol,Torv/*		
20	Göta Värme	115			Borås Energi,Box 49	501 02 Borås	Isf/P-län	Oljepanna/*		
21	Sjöbo Värme	116			Borås Energi,Box 49	501 02 Borås	Isf/P-län	Oljepanna/*		
22	Lasarettet Värme	117			Borås Energi,Box 49	501 02 Borås	Isf/P-län	Oljepanna/*		
23	Hulta Värme	118			Borås Energi,Box 49	501 02 Borås	Isf/P-län	Oljepanna/*		
24	Anderssons Sågverk	119				513 02 Borgstena	Isf/P-län	Bark/Spån/Kutter/*		
25	Panncentr Tynnered	12			L:a Grevegårdsv.2	421 44 V:a Frölunda	Isf/Paul Johansson			
26	Västsv. Fotolab.	120			Box 80	524 00 Herrljunga	Isf/U Samuelsson	Panna, Eo1 0.1%/*		
27	Herrljunga Sågverk	121			Pl.5026	524 00 Herrljunga	Isf/P-län	Panna, Bark		
28	Svenljunga Värme	122			Box 201	512 01 Svenljunga	Isf/P-län	Panna, flis/olja/*		
29	Almedahls-D	123			Box 17	516 00 Dalsjöfors	Isf/Birgitta Olsson	Ångpanna,Eo5 0.6%/*		
30	Hylte Bruks AB	124				Hylte	Isf/BA	Lutpanna P1		
31	Vårdcentral Knäred	125					Isf/MHN	Panna, Biobr/Olja		
32	Panncentral Knäred	126					Isf/MHN	Panna, Biobr/Gasol		
33	Jabo Träprodukter	127			Box 201	514 01 Tranemo	Isf/P-län	Panna 1,bark/spån/*		
34	Limmareds Skogar	128			Box 48	510 90 Limmared	Isf/P-län	Panna,Bark 70000m3		
35	PLM-Limmared	129			Box 93	510 90 Limmared	Isf/Sten Wolme	Glasugnar		
36	Vattenfall Sten	13			Kraftverksvägen	444 87 Stenungsund	Isf/Kenneth Haglund	Block B1		
37	EBE Energibränsle	130			Kvarngatan 22	502 44 Borås	Isf/Mikael Süld	Torkanläggningen		
38	Timmele Färgeri	131			Box 2044	Ulricehamn	Isf/P-län	Panna, olja/gasol/*		
39	Neste Polyeten	14				444 86 Stenungsund	Isf/Ulf Gustavson	Ångcentralen		

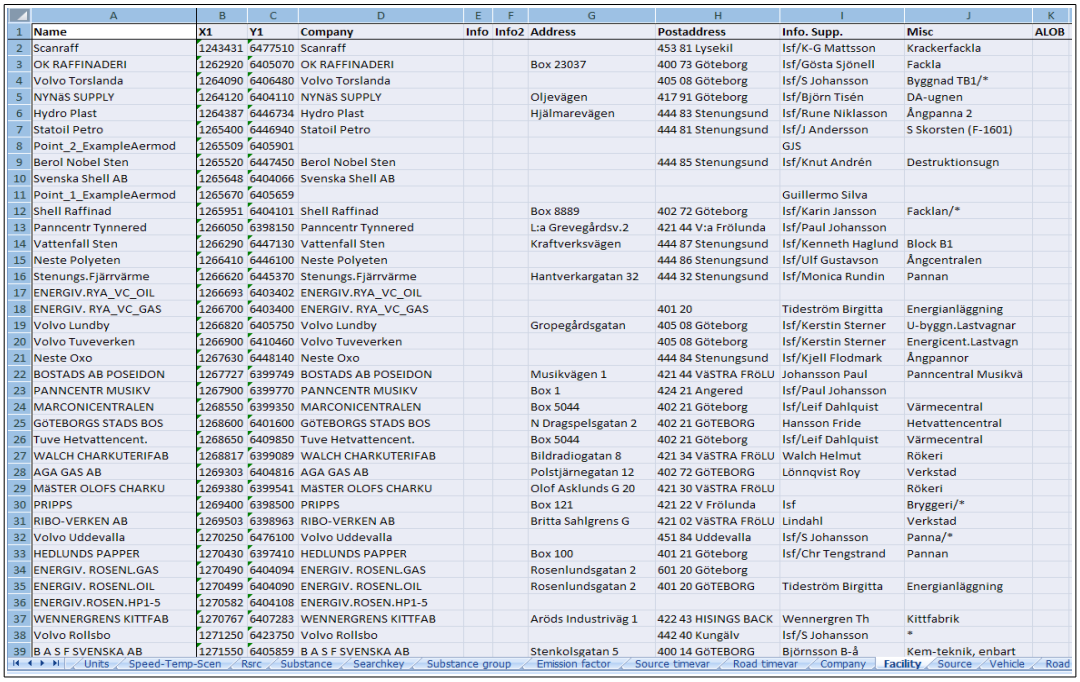
Units | Speed-Temp-Scen | Rsrc | Substance | Searchkey | Substance group | Emission factor | Source timevar | Road timevar | Company

Figure D13. Company Sheet.

1.D.9.10. Facility Sheet

This sheet corresponds to the Airviro facility table in EDB. After the **Name** and **XY** columns, the following information follows:

- Company: name of the associated company.
- Info, Info 2: string, additional information.
- Address and post address : string.
- Info. Supp.: the informant name.
- Misc and ALOB: string



	A	B	C	D	E	F	G	H	I	J	K
1	Name	X1	Y1	Company	Info	Info2	Address	Postaddress	Info. Supp.	Misc	ALOB
2	Scanraff	1243431	6477510	Scanraff				453 81 Lysekil	Isf/K-G Mattsson	Krackerfackla	
3	OK RAFFINADERI	1262920	6405070	OK RAFFINADERI			Box 23037	400 73 Göteborg	Isf/Gösta Sjönell	Fackla	
4	Volvo Torslanda	1264090	6406480	Volvo Torslanda				405 08 Göteborg	Isf/S Johansson	Byggnad TB1/*	
5	NYNäS SUPPLY	1264120	6404110	NYNäS SUPPLY			Oljevägen	417 91 Göteborg	Isf/Björn Tisén	DA-ugnen	
6	Hydro Plast	1264387	6446734	Hydro Plast			Hjälmarevägen	444 83 Stenungsund	Isf/Rune Niklasson	Ångpanna 2	
7	Statoil Petro	1265400	6446940	Statoil Petro				444 81 Stenungsund	Isf/J Andersson	S Skorsten (F-1601)	
8	Point_2_ExampleAermod	1265509	6405901						GJS		
9	Berol Nobel Sten	1265520	6447450	Berol Nobel Sten				444 85 Stenungsund	Isf/Knut Andrén	Destruktionsugn	
10	Svenska Shell AB	1265648	6404066	Svenska Shell AB							
11	Point_1_ExampleAermod	1265670	6405659						Guillermo Silva		
12	Shell Raffinad	1265951	6404101	Shell Raffinad			Box 8889	402 72 Göteborg	Isf/Karin Jansson	Facklan/*	
13	Panncentr Tynnered	1266050	6398150	Panncentr Tynnered			L:a Grevegårdsv.2	421 44 V:a Frölunda	Isf/Paul Johansson		
14	Vattenfall Sten	1266290	6447130	Vattenfall Sten			Kraftverksvägen	444 87 Stenungsund	Isf/Kenneth Haglund	Block B1	
15	Neste Polyeten	1266410	6446100	Neste Polyeten				444 86 Stenungsund	Isf/Ulf Gustavson	Ångcentralen	
16	Stenungs.Fjärrvärme	1266620	6445370	Stenungs.Fjärrvärme			Hantverkargatan 32	444 32 Stenungsund	Isf/Monica Rundin	Pannan	
17	ENERGIV.RYA_VC_OIL	1266693	6403402	ENERGIV.RYA_VC_OIL							
18	ENERGIV. RYA_VC_GAS	1266700	6403400	ENERGIV. RYA_VC_GAS				401 20	Tideström Birgitta	Energianläggning	
19	Volvo Lundby	1266820	6405750	Volvo Lundby			Gropegårdsgatan	405 08 Göteborg	Isf/Kerstin Sterner	U-byggn.Lastvagnar	
20	Volvo Tuveverken	1266900	6410460	Volvo Tuveverken				405 08 Göteborg	Isf/Kerstin Sterner	Energicent.Lastvagn	
21	Neste Oxo	1267630	6448140	Neste Oxo				444 84 Stenungsund	Isf/Kjell Flodmark	Ångpannor	
22	BOSTADS AB POSEIDON	1267727	6399749	BOSTADS AB POSEIDON			Musikvägen 1	421 44 VäSTRA FRöLU	Johansson Paul	Panncentral Musikvä	
23	PANNCENTR MUSIKV	1267900	6399770	PANNCENTR MUSIKV			Box 1	424 21 Angered	Isf/Paul Johansson		
24	MARCONICENTRALEN	1268550	6399350	MARCONICENTRALEN			Box 5044	402 21 Göteborg	Isf/Leif Dahlquist	Värmecentral	
25	GöTEBORGS STADS BOS	1268600	6401600	GöTEBORGS STADS BOS			N Dragspelsgatan 2	402 21 GöTEBORG	Hansson Fride	Hetvattencentral	
26	Tuve Hetvattencent.	1268650	6409850	Tuve Hetvattencent.			Box 5044	402 21 Göteborg	Isf/Leif Dahlquist	Värmecentral	
27	WALCH CHARKUTERIFAB	1268817	6399089	WALCH CHARKUTERIFAB			Bildradiogatan 8	421 34 VäSTRA FRöLU	Walch Helmut	Rökeri	
28	AGA GAS AB	1269303	6404816	AGA GAS AB			Polstjärnegatan 12	402 72 GöTEBORG	Lönnqvist Roy	Verkstad	
29	MäSTER OLOFS CHARKU	1269380	6399541	MäSTER OLOFS CHARKU			Olof Asklunds G 20	421 30 VäSTRA FRöLU		Rökeri	
30	PRIPPS	1269400	6398500	PRIPPS			Box 121	421 22 V Frölunda	Isf	Bryggeri/*	
31	RIBO-VERKEN AB	1269503	6398963	RIBO-VERKEN AB			Britta Sahlgrens G	421 02 VäSTRA FRöLU	Lindahl	Verkstad	
32	Volvo Uddevalla	1270250	6476100	Volvo Uddevalla				451 84 Uddevalla	Isf/S Johansson	Panna/*	
33	HEDLUNDS PAPPER	1270430	6397410	HEDLUNDS PAPPER			Box 100	401 21 Göteborg	Isf/Chr Tengstrand	Pannan	
34	ENERGIV. ROSENL.GAS	1270490	6404094	ENERGIV. ROSENL.GAS			Rosenlundsgatan 2	601 20 Göteborg			
35	ENERGIV. ROSENL.OIL	1270499	6404090	ENERGIV. ROSENL.OIL			Rosenlundsgatan 2	401 20 GöTEBORG	Tideström Birgitta	Energianläggning	
36	ENERGIV.ROSEN.HP1-5	1270582	6404108	ENERGIV.ROSEN.HP1-5							
37	WENNERGRENS KITTFAB	1270767	6407283	WENNERGRENS KITTFAB			Aröds Industriväg 1	422 43 HISINGS BACK	Wennergren Th	Kittfabrik	
38	Volvo Rollsbo	1271250	6423750	Volvo Rollsbo				442 40 Kungälv	Isf/S Johansson	*	
39	B A S F SVENSKA AB	1271550	6405859	B A S F SVENSKA AB			Stenkolsgatan 5	400 14 GöTEBORG	Björnsson B-å	Kem-teknik, enbart	

Units | Speed-Temp-Scen | Rsrc | Substance | Searchkey | Substance group | Emission factor | Source timevar | Road timevar | Company | Facility | Source | Vehicle | Road

Figure D14. Sheet Facility.

1.D.9.11. Source Sheet

This sheet corresponds to the Airviro point and area sources in EDB. One point or area source per row. Below is a description of the columns:

1• **Name** Name of the point or area source.

• **X1** X coordinate for point sources and left X coordinate for area sources.

• **Y1** Y coordinate for point sources and lower Y coordinate for area sources.

• **X2** Empty for point sources and right X coordinate for area sources.

• **Y2** Empty for point sources and upper Y coordinate for area sources.

• **Facility** String

• **Info** String.

• **Info2** String.

• **Date**

• **Changed**

• **Chimney hgt.** Number.

• **Gas temp.** Number.

• **Gas Flow** Number.

• **Chimney out** Number.

• **Chimney in** Number.

• **House Width** Number.

• **House hgt.** Number.

• **No. seg.**

• **Build width**.

• **Build hgt.**

• **Build len.**

- **Build dist far wall.**

- **Build dist center.**

- **S1, S2, S3, S4 and S5 (Searchkeys)**

- **Timevar macro**

- **Geographical code**

- **ALOB**

It exist three different ways to specify the Emissions for a Source: Using Substance (Emission sub), Emission factor (Emmision fac) and Emission function (Emission func). The three can be used in the same time.

- **Emission sub 1:** Substance

- **Emission sub 1:** Timevar

- **Emission sub 1:** Emission

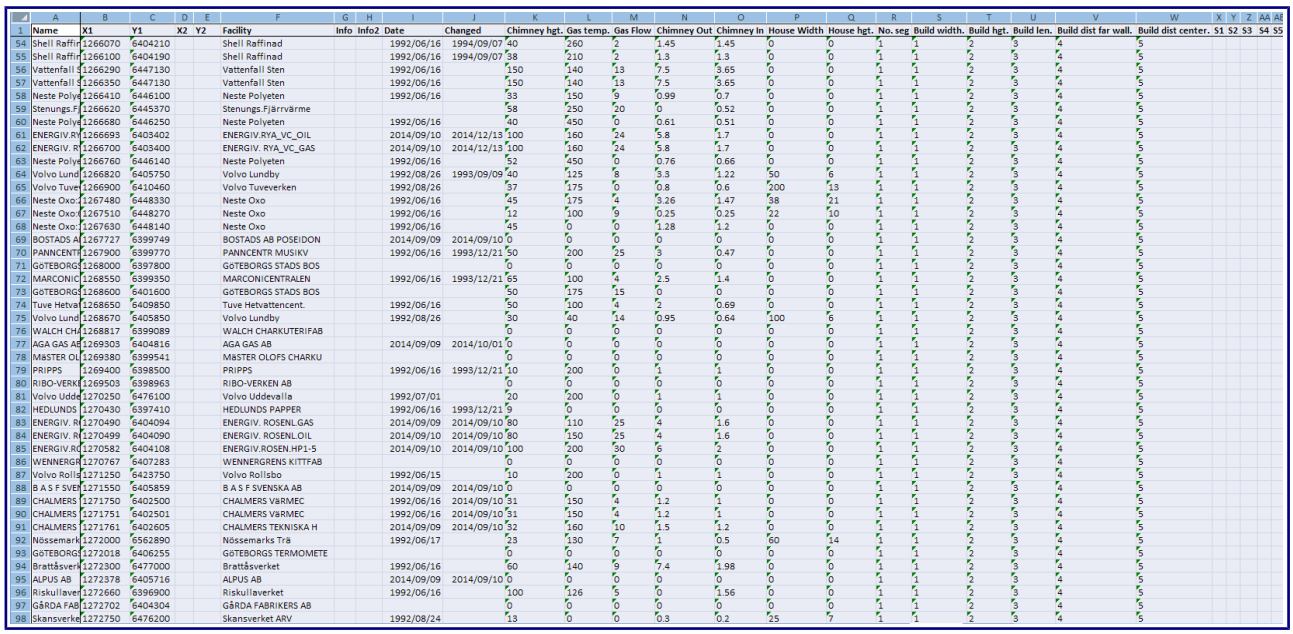
- **Emission sub 1:** Unit

- **Emission sub 1:** Macro

- **Emission sub 1:** Actcode

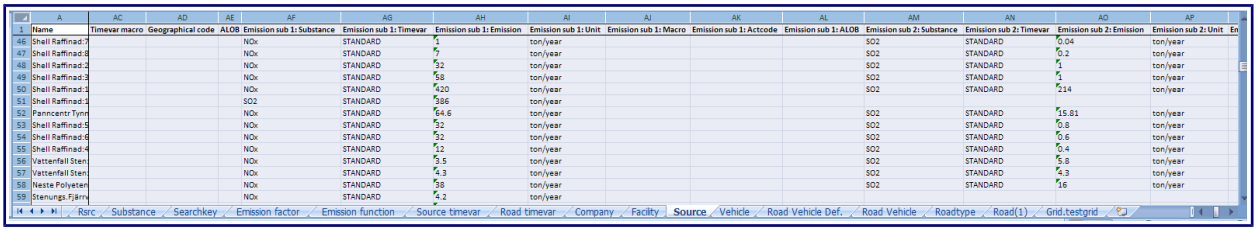
- **Emission sub 1**: ALOB

- **Emission fac 1: Factor**
- **Emission fac 1:** Timevar
- **Emission fac 1**:Activity
- **Emission fac 1:** Unit
- **Emission fac** : Actcode
- **Emission fac 1**: ALOB
- **Emission func 1**: Function
- **Emission func 1**: Timevar
- **Emission func Activity**
- **Emission func 1:** Unit
- **Emission func** : Actcode
- **Emission func 1**: ALOB



	Name	X1	Y1	X2	Y2	Facility	Info	Info2	Date	Changed	Chimney hgt.	Gas temp.	Gas Flow	Chimney Out	Chimney In	House Width	House hgt.	No. seg	Build width.	Build hgt.	Build len.	Build dist far wall.	Build dist center.	S1	S2	S3	S4	S5
54	Shell Raffin	1266070	6404210			Shell Raffinad			1992/06/16	1994/09/07	40	260	2	1.45	1.45	0	0	1	1	2	3	4	5					
55	Shell Raffin	1266100	6404190			Shell Raffinad			1992/06/16	1994/09/07	38	210	2	1.3	1.3	0	0	1	1	2	3	4	5					
56	Vattenfall S	1266290	6447130			Vattenfall Sten			1992/06/16		150	140	13	7.5	3.65	0	0	1	1	2	3	4	5					
57	Vattenfall S	1266350	6447130			Vattenfall Sten			1992/06/16		150	140	13	7.5	3.65	0	0	1	1	2	3	4	5					
58	Neste Polye	1266410	6446100			Neste Polyeten			1992/06/16		33	150	9	0.99	0.7	0	0	1	1	2	3	4	5					
59	Stenungs.F	1266620	6445370			Stenungs.Fjärrvärme					58	250	20	0	0.52	0	0	1	1	2	3	4	5					
60	Neste Polye	1266680	6446250			Neste Polyeten			1992/06/16		40	450	0	0.61	0.51	0	0	1	1	2	3	4	5					
61	ENERGIV.RY	1266693	6403402			ENERGIV.RYA_VC_OIL			2014/09/10	2014/12/13	100	160	24	5.8	1.7	0	0	1	1	2	3	4	5					
62	ENERGIV. R	1266700	6403400			ENERGIV. RYA_VC_GAS			2014/09/10	2014/12/13	100	160	24	5.8	1.7	0	0	1	1	2	3	4	5					
63	Neste Polye	1266760	6446140			Neste Polyeten			1992/06/16		52	450	0	0.76	0.66	0	0	1	1	2	3	4	5					
64	Volvo Lund	1266820	6405750			Volvo Lundby			1992/08/26	1993/09/09	40	125	8	3.3	1.22	50	6	1	1	2	3	4	5					
65	Volvo Tuve	1266900	6410460			Volvo Tuveverken			1992/08/26		37	175	0	0.8	0.6	200	13	1	1	2	3	4	5					
66	Neste Oxo:	1267480	6448330			Neste Oxo			1992/06/16		45	175	4	3.26	1.47	38	21	1	1	2	3	4	5					
67	Neste Oxo:	1267510	6448270			Neste Oxo			1992/06/16		12	100	9	0.25	0.25	22	10	1	1	2	3	4	5					
68	Neste Oxo:	1267630	6448140			Neste Oxo			1992/06/16		45	0	0	1.28	1.2	0	0	1	1	2	3	4	5					
69	BOSTADS A	1267727	6399749			BOSTADS AB POSEIDON			2014/09/09	2014/09/10	0	0	0	0	0	0	0	1	1	2	3	4	5					
70	PANNCENTR	1267900	6399770			PANNCENTR MUSIKV			1992/06/16	1993/12/21	50	200	25	3	0.47	0	0	1	1	2	3	4	5					
71	GöTEBORGS	1268000	6397800			GöTEBORGS STADS BOS					0	0	0	0	0	0	0	1	1	2	3	4	5					
72	MARCONIC	1268550	6399350			MARCONICENTRALEN			1992/06/16	1993/12/21	65	100	4	2.5	1.4	0	0	1	1	2	3	4	5					
73	GöTEBORGS	1268600	6401600			GöTEBORGS STADS BOS					50	175	15	0	0	0	0	1	1	2	3	4	5					
74	Tuve Hetva	1268650	6409850			Tuve Hetvattencent.			1992/06/16		50	100	4	2	0.69	0	0	1	1	2	3	4	5					
75	Volvo Lund	1268670	6405850			Volvo Lundby			1992/08/26		50	40	14	0.95	0.64	100	6	1	1	2	3	4	5					
76	WALCH CH	1268817	6399089			WALCH CHARKUTERIFAB					0	0	0	0	0	0	0	1	1	2	3	4	5					
77	AGA GAS AB	1269303	6404816			AGA GAS AB			2014/09/09	2014/10/01	0	0	0	0	0	0	0	1	1	2	3	4	5					
78	MäSTER OL	1269380	6399541			MäSTER OLOFS CHARKU					0	0	0	0	0	0	0	1	1	2	3	4	5					
79	PRIPPS	1269400	6398500			PRIPPS			1992/06/16	1993/12/21	10	200	0	1	1	0	0	1	1	2	3	4	5					
80	RIBO-VERK	1269503	6398963			RIBO-VERKEN AB					0	0	0	0	0	0	0	1	1	2	3	4	5					
81	Volvo Udde	1270250	6476100			Volvo Uddevalla			1992/07/01		20	200	0	1	1	0	0	1	1	2	3	4	5					
82	HEDLUNDS	1270430	6397410			HEDLUNDS PAPPER			1992/06/16	1993/12/21	9	0	0	0	0	0	0	1	1	2	3	4	5					
83	ENERGIV. R	1270490	6404094			ENERGIV. ROSENL.GAS			2014/09/09	2014/09/10	80	110	25	4	1.6	0	0	1	1	2	3	4	5					
84	ENERGIV. R	1270499	6404090			ENERGIV. ROSENL.OIL			2014/09/10	2014/09/10	80	150	25	4	1.6	0	0	1	1	2	3	4	5					
85	ENERGIV.RO	1270582	6404108			ENERGIV.ROSEN.HP1-5			2014/09/10	2014/09/10	100	200	30	6	2	0	0	1	1	2	3	4	5					
86	WENNERGR	1270767	6407283			WENNERGRENS KITTFAB					0	0	0	0	0	0	0	1	1	2	3	4	5					
87	Volvo Rolls	1271250	6423750			Volvo Rollsbo			1992/06/15		10	200	0	1	1	0	0	1	1	2	3	4	5					
88	B A S F SVE	1271550	6405859			B A S F SVENSKA AB			2014/09/09	2014/09/10	0	0	0	0	0	0	0	1	1	2	3	4	5					
89	CHALMERS	1271750	6402500			CHALMERS VäRMEC			1992/06/16	2014/09/10	31	150	4	1.2	1	0	0	1	1	2	3	4	5					
90	CHALMERS	1271751	6402501			CHALMERS VäRMEC			1992/06/16	2014/09/10	31	150	4	1.2	1	0	0	1	1	2	3	4	5					
91	CHALMERS	1271761	6402605			CHALMERS TEKNISKA H			2014/09/09	2014/09/10	32	160	10	1.5	1.2	0	0	1	1	2	3	4	5					
92	Nössemark	1272000	6562890			Nössemarks Trä			1992/06/17		23	130	7	1	0.5	60	14	1	1	2	3	4	5					
93	GöTEBORG	1272018	6406255			GöTEBORGS TERMOMETE					0	0	0	0	0	0	0	1	1	2	3	4	5					
94	Brattåsver	1272300	6477000			Brattåsverket			1992/06/16		60	140	9	7.4	1.98	0	0	1	1	2	3	4	5					
95	ALPUS AB	1272378	6405716			ALPUS AB			2014/09/09	2014/09/10	0	0	0	0	0	0	0	1	1	2	3	4	5					
96	Riskullaver	1272660	6396900			Riskullaverket			1992/06/16		100	126	5	0	1.56	0	0	1	1	2	3	4	5					
97	GÅRDA FAB	1272702	6404304			GÅRDA FABRIKERS AB					0	0	0	0	0	0	0	1	1	2	3	4	5					
98	Skansverke	1272750	6476200			Skansverket ARV			1992/08/24		13	0	0	0.3	0.2	25	7	1	1	2	3	4	5					

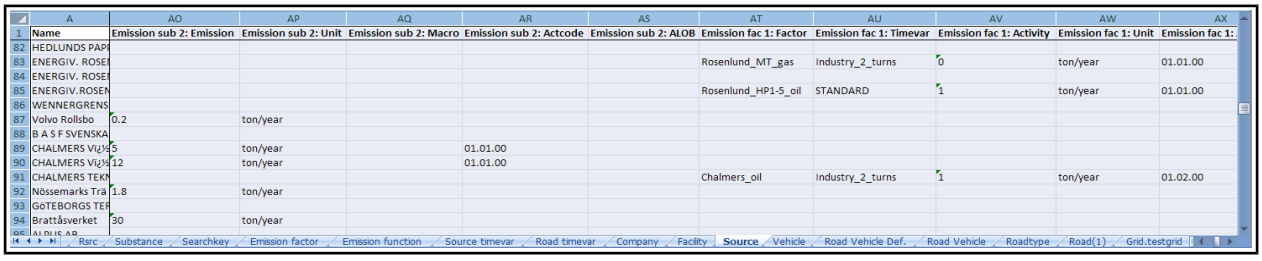
Figure D15. Sources Sheet.



	Name	Timevar macro	Geographical code	ALOB	Emission sub 1: Substance	Emission sub 1: Timevar	Emission sub 1: Emission	Emission sub 1: Unit	Emission sub 1: Macro	Emission sub 1: Actcode	Emission sub 1: ALOB	Emission sub 2: Substance	Emission sub 2: Timevar	Emission sub 2: Emission	Emission sub 2: Unit	En
46	Shell Raffinad:7				NOx	STANDARD	1	ton/year				SO2	STANDARD	0.04	ton/year	
47	Shell Raffinad:8				NOx	STANDARD	7	ton/year				SO2	STANDARD	0.2	ton/year	
48	Shell Raffinad:2				NOx	STANDARD	32	ton/year				SO2	STANDARD	1	ton/year	
49	Shell Raffinad:3				NOx	STANDARD	58	ton/year				SO2	STANDARD	1	ton/year	
50	Shell Raffinad:1				NOx	STANDARD	420	ton/year				SO2	STANDARD	214	ton/year	
51	Shell Raffinad:1				SO2	STANDARD	386	ton/year								
52	Panncentr Tyn				NOx	STANDARD	64.6	ton/year				SO2	STANDARD	15.81	ton/year	
53	Shell Raffinad:5				NOx	STANDARD	32	ton/year				SO2	STANDARD	0.8	ton/year	
54	Shell Raffinad:6				NOx	STANDARD	32	ton/year				SO2	STANDARD	0.6	ton/year	
55	Shell Raffinad:4				NOx	STANDARD	12	ton/year				SO2	STANDARD	0.4	ton/year	
56	Vattenfall Sten				NOx	STANDARD	3.5	ton/year				SO2	STANDARD	3.8	ton/year	
57	Vattenfall Sten				NOx	STANDARD	4.3	ton/year				SO2	STANDARD	4.3	ton/year	
58	Neste Polyeten				NOx	STANDARD	38	ton/year				SO2	STANDARD	16	ton/year	
59	Stenungs.Fjärrv				NOx	STANDARD	4.2	ton/year								

Rsrc | Substance | Searchkey | Emission factor | Emission function | Source timevar | Road timevar | Company | Facility | **Source** | Vehicle | Road Vehicle Def. | Road Vehicle | Roadtype | Road(1) | Grid.testgrid

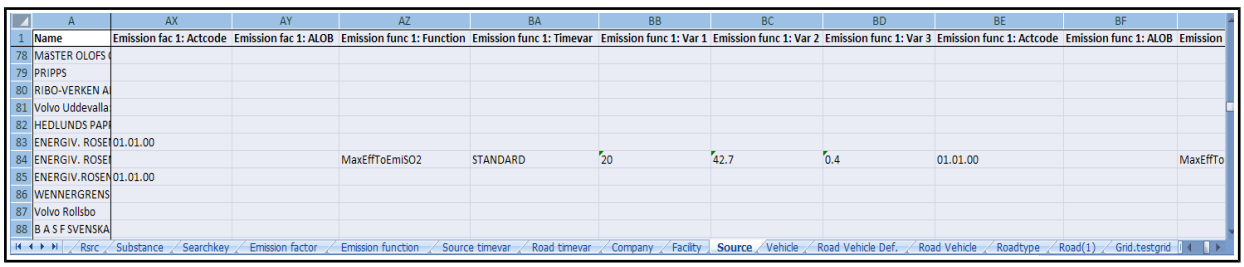
Figure D16. Sources Sheet. Emission sub.



	Name	Emission sub 2: Emission	Emission sub 2: Unit	Emission sub 2: Macro	Emission sub 2: Actcode	Emission sub 2: ALOB	Emission fac 1: Factor	Emission fac 1: Timevar	Emission fac 1: Activity	Emission fac 1: Unit	Emission fac 1:
82	HEDLUNDS PAP										
83	ENERGIV. ROSE						Rosenlund_MT_gas	Industry_2_turns	0	ton/year	01.01.00
84	ENERGIV. ROSE										
85	ENERGIV.ROSEN						Rosenlund_HP1-5_oil	STANDARD	1	ton/year	01.01.00
86	WENNERGRENS										
87	Volvo Rollsbo	0.2	ton/year								
88	B A S F SVENSKA										
89	CHALMERS Vä	5	ton/year		01.01.00						
90	CHALMERS Vä	12	ton/year		01.01.00						
91	CHALMERS TEKN						Chalmers_oil	Industry_2_turns	1	ton/year	01.02.00
92	Nössemarks Trä	1.8	ton/year								
93	GöTEBORGS TEF										
94	Brattåsverket	30	ton/year								
95	ALPUS AB										

Rsrc | Substance | Searchkey | Emission factor | Emission function | Source timevar | Road timevar | Company | Facility | **Source** | Vehicle | Road Vehicle Def. | Road Vehicle | Roadtype | Road(1) | Grid.testgrid

Figure D17. Sources Sheet. Emission factor.



	Name	Emission fac 1: Actcode	Emission fac 1: ALOB	Emission func 1: Function	Emission func 1: Timevar	Emission func 1: Var 1	Emission func 1: Var 2	Emission func 1: Var 3	Emission func 1: Actcode	Emission func 1: ALOB	Emission
78	MäSTER OLOFS										
79	PRIPPS										
80	RIBO-VERKEN A										
81	Volvo Uddevalla										
82	HEDLUNDS PAP										
83	ENERGIV. ROSE	01.01.00									
84	ENERGIV. ROSE			MaxEffToEmiSO2	STANDARD	20	42.7	0.4	01.01.00		MaxEffTo
85	ENERGIV.ROSEN	01.01.00									
86	WENNERGRENS										
87	Volvo Rollsbo										
88	B A S F SVENSKA										

Rsrc | Substance | Searchkey | Emission factor | Emission function | Source timevar | Road timevar | Company | Facility | **Source** | Vehicle | Road Vehicle Def. | Road Vehicle | Roadtype | Road(1) | Grid.testgrid

Figure D18. Sources Sheet. Emission function.

1.D.9.12. Vehicle Sheet

This sheet corresponds to the Airviro vehicle table in EDB. Each vehicle spans over eleven rows. Names and indices must be unique. The speed column must contain the eleven speed labels ordered as in the Speed-Temperature-Scen sheet. After the **Name**, **Index** and **Speed** columns, substance columns follow. Add a substance by adding it after the last existing substance. To delete a substance remove the column of the substance. The order of substances is not significant.

	A	B	C	D	E	F	G
1	Name	Index	Activity code	Speed	NOx	CO	VOC
2	Lv th 50 5s	21		20	2056.000000	11575.000000	1395.000000
3				30	2390.000000	12525.000000	1299.000000
4				40	2990.000000	13141.000000	1280.000000
5				50	2828.000000	14773.000000	1402.000000
6				60	2828.000000	14773.000000	1402.000000
7				70	2828.000000	14773.000000	1402.000000
8				80	2828.000000	14773.000000	1402.000000
9				90	2828.000000	14773.000000	1402.000000
10				100	2828.000000	14773.000000	1402.000000
11				110	2828.000000	14773.000000	1402.000000
12				120	2828.000000	14773.000000	1402.000000
13	Lv cat th 70 1s	23		20	1877.000000	10843.000000	1279.000000
14				30	2178.000000	10529.000000	1234.000000
15				40	2845.000000	11631.000000	1103.000000
16				50	2826.000000	11556.000000	1235.000000
17				60	1994.000000	11901.000000	1079.000000
18				70	1755.000000	11072.000000	981.000000
19				80	1755.000000	11072.000000	981.000000
20				90	1755.000000	11072.000000	981.000000
21				100	1755.000000	11072.000000	981.000000
22				110	1755.000000	11072.000000	981.000000
23				120	1755.000000	11072.000000	981.000000
24	Lv th 50 3s	26		20	1967.000000	11209.000000	1337.000000
25				30	2190.000000	11527.000000	1165.000000
26				40	2392.000000	11359.000000	1068.000000
27				50	1940.000000	11801.000000	1063.000000
28				60	1686.000000	11801.000000	1064.000000
29				70	1940.000000	11801.000000	1064.000000
30				80	1940.000000	11801.000000	1064.000000
31				90	1940.000000	11801.000000	1064.000000
32				100	1940.000000	11801.000000	1064.000000
33				110	1940.000000	11801.000000	1064.000000
34				120	1940.000000	11801.000000	1064.000000
35	Lv hig	29		20	1051.000000	8014.000000	650.000000
36				30	1051.000000	8014.000000	650.000000
37				40	1051.000000	8014.000000	650.000000
38				50	1051.000000	8014.000000	650.000000
39				60	1216.000000	8729.000000	721.000000

Road timevar | Company | Facility | Source | Vehicle | Road Vehicle Def. | Roa

Figure D19 Sheet Vehicle.

1.D.9.13. Road Vehicle Def Sheet

This sheet corresponds to the Airviro road vehicle definitions table.

	A	B	C	D	E	F	G	H	I	J	K	L
1	Name	Label 1	Label 2	Label 3	Label 4	Label 5	Label 6	Label 7	Label 8	Label 9	Label 10	Label 11
2	Road type	Urban-Motorway-Nat	Urban-Motorway-City	Urban-TrunkRoad/Primary-Nat.	Urban-TrunkRoad/Primary-City	Urban-Distributor/Secondary	Urban-Local/Collector	Urban-Access-residential	Not_used	Not_used1	Not_used2	Rural-Motorway-Nat
3	Speed	30	40	50	60	70	80	90	100	110	120	130
4	Gradient	-6	-4	-2	-1	0	1	2	4	6		

Figure D20 Vehicle Def. Sheet.

1.D.9.14. Road Vehicle Sheet

This sheet corresponds to the Airviro road vehicles sub table in EDB. Firstly the name, Index, Activity Code, Ls heavy, Ls traffic, Weight, Emission model, Flow equiv, and Info, are defined.

For each substance that the vehicle emits and for each combination of variables in the emission model, we can specify emission factors for four different kind of traffic: Free Flowing, Heavy Traffic, Congested and Stop and go.

In the example below we have defined, in Road Vehicle Def., three variables. The variables appears as columns: Road Type, Speed and Gradient, For each combination of values for the variables emission factors are defined.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Name	Index	Activity code	Is heavy	Is traffic	Weight	Emission model	Flow equiv.	Info	Substance	Road type	Speed	Gradient	Free flowing	Heavy traffic	Congested	Stop and go
2	car_cold_petrol	5		0	0	0	0	0.000000		NOx	Urban-Motorway-Nat	90	0	553.543	553.543	553.543	553.543
3										NOx	Urban-Motorway-Nat	110	0	553.543	553.543	553.543	553.543
4										NOx	Urban-Motorway-Nat	120	0	553.543	553.543	553.543	553.543
5										NOx	Urban-Motorway-City	60	0	553.543	553.543	553.543	553.543
6										NOx	Urban-Motorway-City	70	0	553.543	553.543	553.543	553.543
7										NOx	Urban-Motorway-City	90	0	553.543	553.543	553.543	553.543
8										NOx	Urban-Motorway-City	110	0	553.543	553.543	553.543	553.543
9										NOx	Urban-TrunkRoad/Primary-Nat.	70	0	553.543	553.543	553.543	553.543
10										NOx	Urban-TrunkRoad/Primary-Nat.	90	0	553.543	553.543	553.543	553.543
11										NOx	Urban-TrunkRoad/Primary-Nat.	110	0	553.543	553.543	553.543	553.543
12										NOx	Urban-TrunkRoad/Primary-City	50	0	553.543	553.543	553.543	553.543
13										NOx	Urban-TrunkRoad/Primary-City	70	0	553.543	553.543	553.543	553.543
14										NOx	Urban-TrunkRoad/Primary-City	90	0	553.543	553.543	553.543	553.543
15										NOx	Urban-Distributor/Secondary	50	0	553.543	553.543	553.543	553.543
16										NOx	Urban-Distributor/Secondary	70	0	553.543	553.543	553.543	553.543
17										NOx	Urban-Local/Collector	50	0	553.543	553.543	553.543	553.543
18										NOx	Urban-Local/Collector	60	0	553.543	553.543	553.543	553.543
19										NOx	Urban-Access-residential	30	0	553.543	553.543	553.543	553.543
20										NOx	Urban-Access-residential	50	0	553.543	553.543	553.543	553.543
21										NOx	Rural-Motorway-Nat	90	0	553.543	553.543	553.543	553.543
22										NOx	Rural-Motorway-Nat	110	0	553.543	553.543	553.543	553.543
23										NOx	Rural-Motorway-Nat	120	0	553.543	553.543	553.543	553.543
24										NOx	Rural-Semi-Motorway	90	0	553.543	553.543	553.543	553.543
25										NOx	Rural-Semi-Motorway	110	0	553.543	553.543	553.543	553.543
26										NOx	Rural-TrunkRoad/Primary-Nat	60	0	553.543	553.543	553.543	553.543
27										NOx	Rural-TrunkRoad/Primary-Nat	70	0	553.543	553.543	553.543	553.543
28										NOx	Rural-TrunkRoad/Primary-Nat	90	0	553.543	553.543	553.543	553.543
29										NOx	Rural-TrunkRoad/Primary-Nat	110	0	553.543	553.543	553.543	553.543
30										NOx	Rural-Distributor/Secondary	50	0	553.543	553.543	553.543	553.543
31										NOx	Rural-Distributor/Secondary	70	0	553.543	553.543	553.543	553.543
32										NOx	Rural-Distributor/Secondary	90	0	553.543	553.543	553.543	553.543
33										NOx	Rural-Local/Collector	50	0	553.543	553.543	553.543	553.543
34										NOx	Rural-Local/Collector	70	0	553.543	553.543	553.543	553.543
35										NOx	Rural-Local/Collector(sinuous)	50	0	553.543	553.543	553.543	553.543
36										NOx	Rural-Local/Collector(sinuous)	70	0	553.543	553.543	553.543	553.543
37										NOx	Rural-Access-residential	30	0	553.543	553.543	553.543	553.543
38										NOx	Rural-Access-residential	50	0	553.543	553.543	553.543	553.543

Figure D21 Road Vehicle Sheet.

1.D.9.15. Roadtypes Sheet

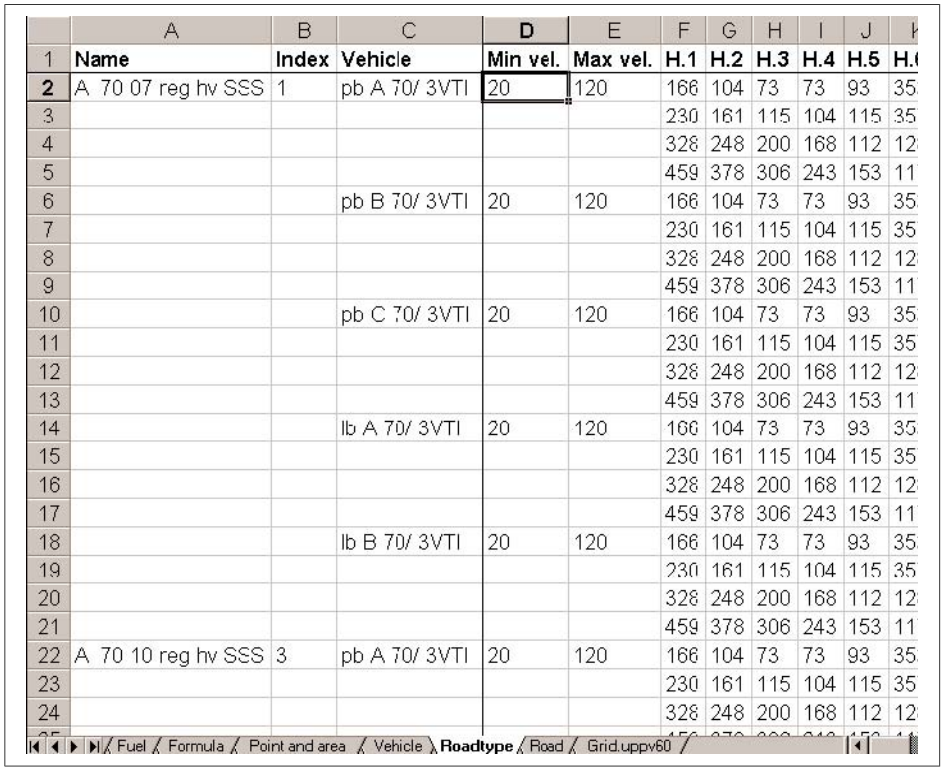
This sheet corresponds to the Airviro roadtype table in EDB. Names and indices must be unique. Each roadtype may contain up to ten vehicle variations. Each vehicle variation spans over four rows. In the first line of each vehicle variation, the **Vehicle**, **Min vel** and **Max vel** must be specified. The **Vehicle** column contains reference to the Vehicle sub

table. The **Min vel** and **Max vel** columns contains references to the **Speed** sub table. After the **Name**, **Index**, **Vehicle**, **Min vel** and **Max vel** columns, the following columns follow:

• **H.1** to **H.24** stating the hourly variations. The four rows correspond to type days Mon-Thu, Fri, Sat and Sun.

• **Jan** to **Dec** stating the monthly variations. Only first row of each vehicle variation.

• *Scenario1* to *Scenario10* stating the scenario variations. Only first row of each vehicle variation.



	A	B	C	D	E	F	G	H	I	J	K
1	**Name**	**Index**	**Vehicle**	**Min vel.**	**Max vel.**	**H.1**	**H.2**	**H.3**	**H.4**	**H.5**	**H.6**
2	A 70 07 reg hv SSS	1	pb A 70/ 3VTI	20	120	166	104	73	73	93	35
3						230	161	115	104	115	35
4						328	248	200	168	112	12
5						459	378	306	243	153	11
6			pb B 70/ 3VTI	20	120	166	104	73	73	93	35
7						230	161	115	104	115	35
8						328	248	200	168	112	12
9						459	378	306	243	153	11
10			pb C 70/ 3VTI	20	120	166	104	73	73	93	35
11						230	161	115	104	115	35
12						328	248	200	168	112	12
13						459	378	306	243	153	11
14			lb A 70/ 3VTI	20	120	166	104	73	73	93	35
15						230	161	115	104	115	35
16						328	248	200	168	112	12
17						459	378	306	243	153	11
18			lb B 70/ 3VTI	20	120	166	104	73	73	93	35
19						230	161	115	104	115	35
20						328	248	200	168	112	12
21						459	378	306	243	153	11
22	A 70 10 reg hv SSS	3	pb A 70/ 3VTI	20	120	166	104	73	73	93	35
23						230	161	115	104	115	35
24						328	248	200	168	112	12

Fuel | Formula | Point and area | Vehicle | **Roadtype** | Road | Grid.uppv60

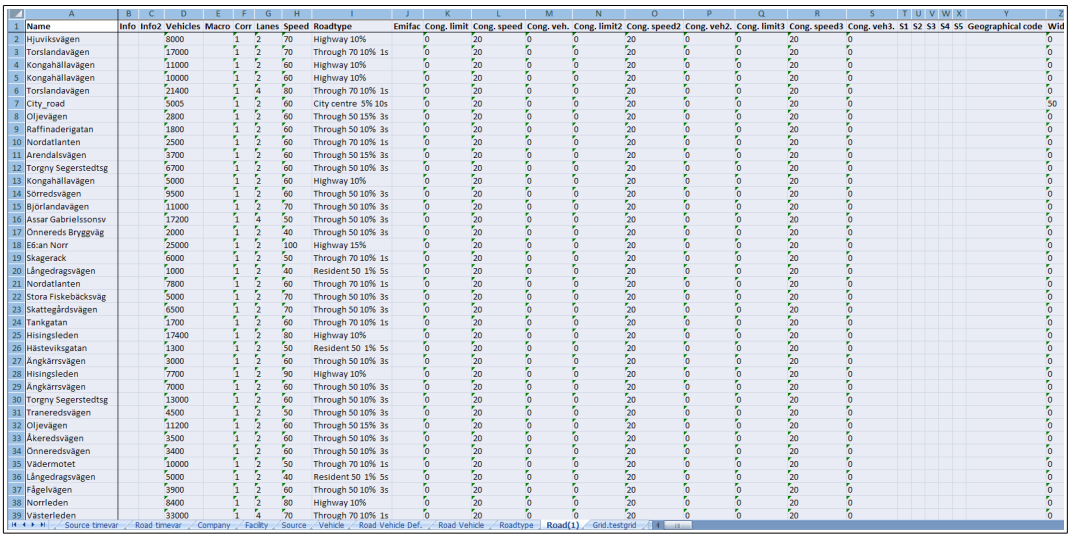
Figure D22. Sheet Road types.

1.D.9.16. Road Sheet

This sheet corresponds to the Airviro road database in EDB. One road source per row. Below is a description of the columns:

- **Name** Name of the point or area source.
- **Info** String.
- **Info2** String.
- **Vehicles** Number.
- Macro
- **Corr** Number.
- **Lanes** Number.
- **Speed** Reference to **Speed** sub table.
- **Roadtype** Reference to **Roadtype** sub table.
- Emifac: The values that specifies which emission factor to use for road vehicles. There is one number per dimension specified in the road vehicle definition.
- **Cong. Limit, Cong. speed and Cong, veh :** References to congestion data (limit, speed and vehicles.
- **S1** to **S5** References to **Searchkey** sub tables.
- **Geografical code**
- Width
- Dist Houses
- Slope
- Build heights
- Noise

Then follows coordinate pairs: **X0**, **Y0**, **X1**, **Y1**, **… X100, Y100**



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	Name	Info	Info2	Vehicles	Macro	Corr	Lanes	Speed	Roadtype	Emifac	Cong. limit	Cong. speed	Cong. veh.	Cong. limit2	Cong. speed2	Cong. veh2.	Cong. limit3	Cong. speed3	Cong. veh3.	S1	S2	S3	S4	S5	Geographical code	Wid
2	Hjuviksvägen			8000		1	2	70	Highway 10%		0	20	0	0	20	0	0	20	0							0
3	Torslandavägen			17000		1	2	70	Through 70 10% 1s		0	20	0	0	20	0	0	20	0							0
4	Kongahällavägen			11000		1	2	60	Highway 10%		0	20	0	0	20	0	0	20	0							0
5	Kongahällavägen			10000		1	2	60	Highway 10%		0	20	0	0	20	0	0	20	0							0
6	Torslandavägen			21400		1	4	80	Through 70 10% 1s		0	20	0	0	20	0	0	20	0							0
7	City_road			5005		1	2	60	City centre 5% 10s		0	20	0	0	20	0	0	20	0							50
8	Oljevägen			2800		1	2	60	Through 50 15% 3s		0	20	0	0	20	0	0	20	0							0
9	Raffinaderigatan			1800		1	2	60	Through 50 10% 3s		0	20	0	0	20	0	0	20	0							0
10	Nordatlanten			2500		1	2	60	Through 70 10% 1s		0	20	0	0	20	0	0	20	0							0
11	Arendalsvägen			3700		1	2	60	Through 50 15% 3s		0	20	0	0	20	0	0	20	0							0
12	Torgny Segerstedtsg			6700		1	2	60	Through 50 10% 3s		0	20	0	0	20	0	0	20	0							0
13	Kongahällavägen			5000		1	2	60	Highway 10%		0	20	0	0	20	0	0	20	0							0
14	Sörredsvägen			9500		1	2	60	Through 50 10% 3s		0	20	0	0	20	0	0	20	0							0
15	Björlandavägen			11000		1	2	70	Through 50 10% 3s		0	20	0	0	20	0	0	20	0							0
16	Assar Gabrielssonsv			17200		1	4	50	Through 50 10% 3s		0	20	0	0	20	0	0	20	0							0
17	Önnereds Bryggväg			2000		1	2	40	Through 50 10% 3s		0	20	0	0	20	0	0	20	0							0
18	E6:an Norr			25000		1	2	100	Highway 15%		0	20	0	0	20	0	0	20	0							0
19	Skagerack			6000		1	2	50	Through 70 10% 1s		0	20	0	0	20	0	0	20	0							0
20	Långedragsvägen			1000		1	2	40	Resident 50 1% 5s		0	20	0	0	20	0	0	20	0							0
21	Nordatlanten			7800		1	2	60	Through 70 10% 1s		0	20	0	0	20	0	0	20	0							0
22	Stora Fiskebäcksväg			5000		1	2	70	Through 50 10% 3s		0	20	0	0	20	0	0	20	0							0
23	Skattegårdsvägen			6500		1	2	70	Through 50 10% 3s		0	20	0	0	20	0	0	20	0							0
24	Tankgatan			1700		1	2	60	Through 70 10% 1s		0	20	0	0	20	0	0	20	0							0
25	Hisingsleden			17400		1	2	90	Highway 10%		0	20	0	0	20	0	0	20	0							0
26	Hästeviksgatan			1300		1	2	50	Resident 50 1% 5s		0	20	0	0	20	0	0	20	0							0
27	Ängkärrsvägen			3000		1	2	60	Through 50 10% 3s		0	20	0	0	20	0	0	20	0							0
28	Hisingsleden			7700		1	2	90	Highway 10%		0	20	0	0	20	0	0	20	0							0
29	Ängkärrsvägen			7000		1	2	60	Through 50 10% 3s		0	20	0	0	20	0	0	20	0							0
30	Torgny Segerstedtsg			13000		1	2	60	Through 50 10% 3s		0	20	0	0	20	0	0	20	0							0
31	Traneredsvägen			4500		1	2	50	Through 50 10% 3s		0	20	0	0	20	0	0	20	0							0
32	Oljevägen			11200		1	2	60	Through 50 15% 3s		0	20	0	0	20	0	0	20	0							0
33	Åkeredsvägen			3500		1	2	60	Through 50 10% 3s		0	20	0	0	20	0	0	20	0							0
34	Önneredsvägen			3400		1	2	60	Through 50 10% 3s		0	20	0	0	20	0	0	20	0							0
35	Vädermotet			10000		1	2	50	Through 70 10% 1s		0	20	0	0	20	0	0	20	0							0
36	Långedragsvägen			5000		1	2	40	Resident 50 1% 5s		0	20	0	0	20	0	0	20	0							0
37	Fågelvägen			3900		1	2	60	Through 50 10% 3s		0	20	0	0	20	0	0	20	0							0
38	Norrleden			9400		1	2	80	Highway 10%		0	20	0	0	20	0	0	20	0							0
39	Västerleden			33000		1	4	70	Through 70 10% 1s		0	20	0	0	20	0	0	20	0							0

Source timevar | Road timevar | Company | Facility | Source | Vehicle | Road Vehicle Def. | Road Vehicle | Roadtype | Road(1) | Grid.testgrid

Figure D23. Road Sheet.

Högsboleden	0	0	0	0 0 0 0 0 0 0 0 0 0 0 0	1 1 1 1	1269280	6400254	1269406	6400490	1269414	6400695	1269244
Röda Stensmotet	0	0	0	0 0 0 0 0 0 0 0 0 0 0 0	1 1 1 1	1267586	6402544	1267445	6402343	1267288	6402256	1267402
City_OSPM	50	0	0	0 20 10 0 0 0 0 10 0 0 0 60		1267367	6398992	1268942	6401739			
					TRAFFIC	car CNG/petrol	STANDARD	10.000000				
Karl Johansgatan	0	0	0	0 0 0 0 0 0 0 0 0 0 0 0	1 1 1 1	1268058	6402930	1267576	6402453	1267401	6401993	
Fridhemsgatan	0	0	0	0 0 0 0 0 0 0 0 0 0 0 0	1 1 1 1	1267425	6401928	1268059	6402044			
Långströmsgatan	0	0	0	0 0 0 0 0 0 0 0 0 0 0 0	1 1 1 1	1268052	6407528	1267884	6407469	1267710	6407359	1267593
Oscarsleden	0	0	0	0 0 0 0 0 0 0 0 0 0 0 0	1 1 1 1	1269230	6403846	1269017	6403776	1268445	6403493	1268048
Soterusgatan	0	0	0	0 0 0 0 0 0 0 0 0 0 0 0	1 1 1 1	1267614	6404914	1267689	6405309	1267760	6405547	1267874
Björlandavägen	0	0	0	0 0 0 0 0 0 0 0 0 0 0 0	1 1 1 1	1267673	6408531	1268133	6408149	1268332	6407754	1268653

Figure D24. Road using Road Vehicles.

When a road is using Road Vehicles for the emissions, the road vehicles are referenced on a new row under the main one. A label TRAFFIC is shown under the “Noise” column, and then follows the Road Vehicle name (i.e. car CNG/petrol), then the Time Variation Road (i.e. Standard) and then the percentage of the vehicle of the total traffic, then the next road vehicle name and so on. There is no limitation of the number of road vehicles that a road can refer. The Emifac column must specify the values of the variables used for the Road vehicles.

1.D.9.18. Grid Sheet

Since there can be any number of grids in an Airviro EDB, each grid corresponds to a sheet in **Wedbed**. This sheet is named **Grid.***gridname*. In a grid, there can exist both static and dynamic information. Below the title row, a row follows that states if the information in

that column is static or dynamic. Static is indicated by a value (or empty) and dynamic is indicated by the string DYNAMIC. The following rows correspond to one grid cell each. Below is a description of the columns:

- **X** First row contains X coordinate for left side of whole grid. The following lines contains the left side coordinate for that grid cell. This information must be specified.
- **Y** First row contains Y coordinate for lower side of whole grid. The following lines contains the lower side coordinate for that grid cell. This information must be specified.
- **NX** Number of grid cells on the X-axis. Only on first row.
- **NY** Number of grid cells on the Y-axis. Only on first row.
- **DX** Width of each grid cell. Only on first row.
- **DY** Height of each grid cell. Only on first row.
- **Name** String.
- **Info** String.
- **Info2** String.
- **Address** String.
- Post Address String.
- **Info. supp.** String.
- **Created** Date.
- **Changed** Date.
- **Misc** String.
- **Time var** Reference to **Time variarion** sub table.

- **S1** to **S5** References to **Searchkey** sub tables.

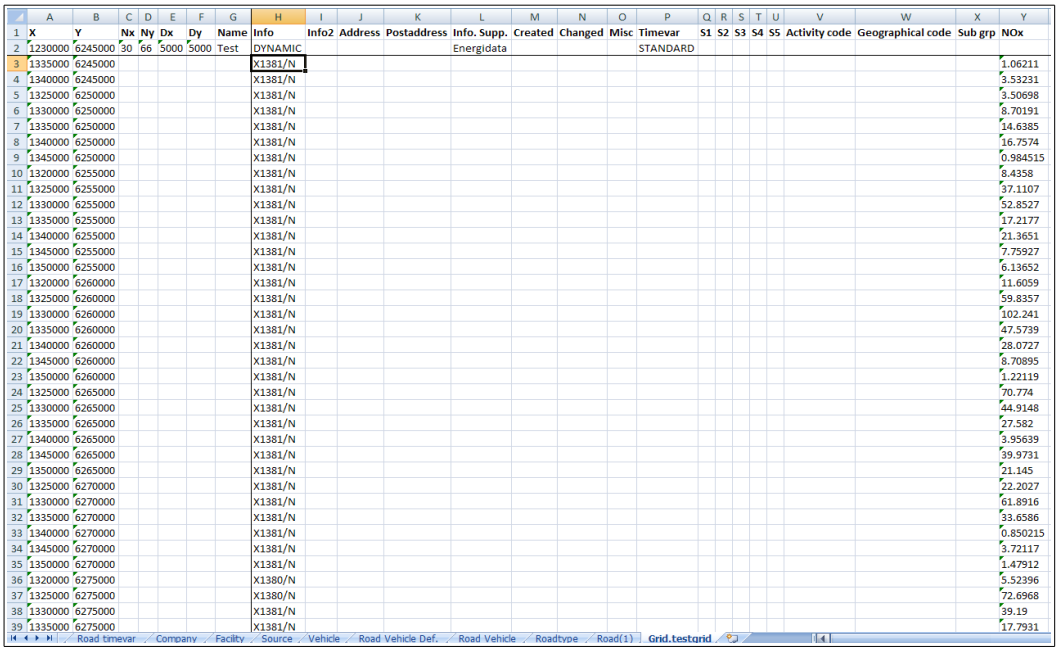
- **Activity Code**

- **Geographical Code**

If an emission factor is not used, then the name of the substances follows in the header row. Any number of substances are allowed.

- **Sub grp.** Reference to **Emission factor** sub table.

- **Sub grp emission**. Here the activity for the emission factor is specified. It must be specified for each cell of the grid is referring emission factors.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
1	X	Y	Nx	Ny	Dx	Dy	Name	Info	Info2	Address	Postaddress	Info. Supp.	Created	Changed	Misc	Timevar	S1	S2	S3	S4	S5	Activity code	Geographical code	Sub grp	NOx
2	1230000	6245000	30	66	5000	5000	Test	DYNAMIC				Energidata				STANDARD									
3	1335000	6245000						X1381/N																	1.06211
4	1340000	6245000						X1381/N																	3.53231
5	1325000	6250000						X1381/N																	3.50698
6	1330000	6250000						X1381/N																	8.70191
7	1335000	6250000						X1381/N																	14.6385
8	1340000	6250000						X1381/N																	16.7574
9	1345000	6250000						X1381/N																	0.984515
10	1320000	6255000						X1381/N																	8.4358
11	1325000	6255000						X1381/N																	37.1107
12	1330000	6255000						X1381/N																	52.8527
13	1335000	6255000						X1381/N																	17.2177
14	1340000	6255000						X1381/N																	21.3651
15	1345000	6255000						X1381/N																	7.75927
16	1350000	6255000						X1381/N																	6.13652
17	1320000	6260000						X1381/N																	11.6059
18	1325000	6260000						X1381/N																	59.8357
19	1330000	6260000						X1381/N																	102.241
20	1335000	6260000						X1381/N																	47.5739
21	1340000	6260000						X1381/N																	28.0727
22	1345000	6260000						X1381/N																	8.70895
23	1350000	6260000						X1381/N																	1.22119
24	1325000	6265000						X1381/N																	70.774
25	1330000	6265000						X1381/N																	44.9148
26	1335000	6265000						X1381/N																	27.582
27	1340000	6265000						X1381/N																	3.95639
28	1345000	6265000						X1381/N																	39.9731
29	1350000	6265000						X1381/N																	21.145
30	1325000	6270000						X1381/N																	22.2027
31	1330000	6270000						X1381/N																	61.8916
32	1335000	6270000						X1381/N																	33.6586
33	1340000	6270000						X1381/N																	0.850215
34	1345000	6270000						X1381/N																	3.72117
35	1350000	6270000						X1381/N																	1.47912
36	1320000	6275000						X1380/N																	5.52396
37	1325000	6275000						X1380/N																	72.6968
38	1330000	6275000						X1381/N																	39.19
39	1335000	6275000						X1381/N																	17.7931

Road timevar | Company | Facility | Source | Vehicle | Road Vehicle Def. | Road Vehicle | Roadtype | Road(1) | Grid.testgrid

Figure D25. Sheet Grid.