

# ELiPLAN / ELiPOS

## export guide

### Tekla Structures

#### Table of Contents

0.	Introduction.....	2
0.1	Background.....	2
0.2	Purpose of this document.....	2
0.3	Summarized overall workflow.....	2
1.	Elematic ELiPLAN / ELiPOS file export.....	3
2.	Configuration.....	4
2.1	Product Codes.....	4
2.1.1	User-defined Attributes for main part.....	5
2.1.2	User-defined attributes in profile catalog.....	6
2.1.3	Mapping of parametric profile name to ELiPLAN product codes.....	7
2.1.4	Main part name as product code.....	7
2.2	Product type.....	8
2.3	Accessory code.....	9
2.4	Data conversion file.....	11

## 0. Introduction

### 0.1 Background

EliPLAN / EliPOS -export is a function available in Tekla Structures 'Precast Detailing', 'Production Planner', 'Primary' and 'Full' configurations. The export function can be accessed from Tekla Structures Backstage.

This export can be used to take Tekla Structures precast object quantities with product and material information as well as production process information such as design status to precast EliPLAN production planning system (ERP-system). Additionally, the export can take plotting data for hollow-core slab geometry to be used by EliPOS production control system (CAM). This workflow streamlines the process from modelling to production enabling quick and up-to-date quantities and production data on the factory side.

EliPLAN and EliPOS are software by precast machinery supplier Elematic.

### 0.2 Purpose of this document

This document is intended to instruct users how to set up their model and profile catalogs with mapping for object types, profiles and materials to suit the model data usage alongside EliPLAN and EliPOS software.

### 0.3 Summarized overall workflow

- User sets up their profile and material catalog according to fabrication requirements
- User adjusts their profile catalog and modelling settings according to this guide to make sure the mapping to EliPLAN-system is done correctly
- User prepares an additional data conversion (mapping) file to complement this set-up according to this guide and the TUA-article
- User creates standard export settings within the EliPLAN-export dialog to be used later
- User models precast objects with their embedded content
- If hollow-core geometry is used for plotting within EliPOS, user makes sure recesses and embed position is accurate
- User performs the cast unit numbering in Tekla Structures (as a new feature, objects can now be exported even without numbering, though this is not recommended)
- As design progresses, user adds design status information to precast objects
- Objects are exported as .eli-files using model selection and suitable settings, and sent through to the production, as agreed
- User reviews the export log and the export file to ensure the objects exported correctly and as mapped
- User marks relevant objects as 'released to production' using UDA-fields for example
- If desired, user imports the status information from EliPLAN using the import functionality with the .eli-file from production

## 1. Elematic ELIPLAN / ELIPOS file export

Addition to normal model data it is possible to input certain data into model which then will be transferred and used in ELIPLAN. This data is entered as user defined attributes, show in the following dialog.

BVBS	Concrete Cover	HMS	Tekla Structural Designer	Concrete information	
Parameters	Workflow	End Conditions	Analysis	Unitechnik	EliPlan
Product type	<input checked="" type="checkbox"/>				
Product code	<input checked="" type="checkbox"/>				
Erection sequence	<input checked="" type="checkbox"/>				
Ready for production	<input checked="" type="checkbox"/>				
<b>Eliplan status data - DO NOT EDIT</b>					
Status (EP)	<input checked="" type="checkbox"/>				
Production date	<input checked="" type="checkbox"/>				
Planned delivery date	<input checked="" type="checkbox"/>				
Delivery date	<input checked="" type="checkbox"/>				

Buttons: OK, Apply, Modify, Get,  /  (checkbox icon), Cancel

The attributes we need to check further:

**Product type** This is the product type. Normally you should be able to use the default 'Auto' but in some cases you may need to override the default. More info on this is given in paragraph 2.1.

**Product code** There is few alternatives to control where and how the product code is defined and this input can always used to override the default value. More info on this is given in paragraph 2.2.

## 2. Configuration

Before you can transfer data to ELIPLAN you need to do define how the product codes, types and accessory code (= material description) shall be translated. Following sections will describe how the export in Tekla Structures is working and what are the possible options to control the content of the data to be transferred.

### 2.1 Product Codes

There are four alternatives which will affect to "product code". The export function tries to define the product code in following order:

1. Look the attribute "EP\_CODE" from main part of the piece
2. Look the attribute "EP\_CODE" from profile catalog
3. Try to convert (parametric) profile name by using the data conversion file
4. Export part name as "product code"

### 2.1.1 User-defined Attributes for main part

You can always override the "product code" by giving the value as a user-defined attribute "EP\_CODE" to main part of the cast unit.

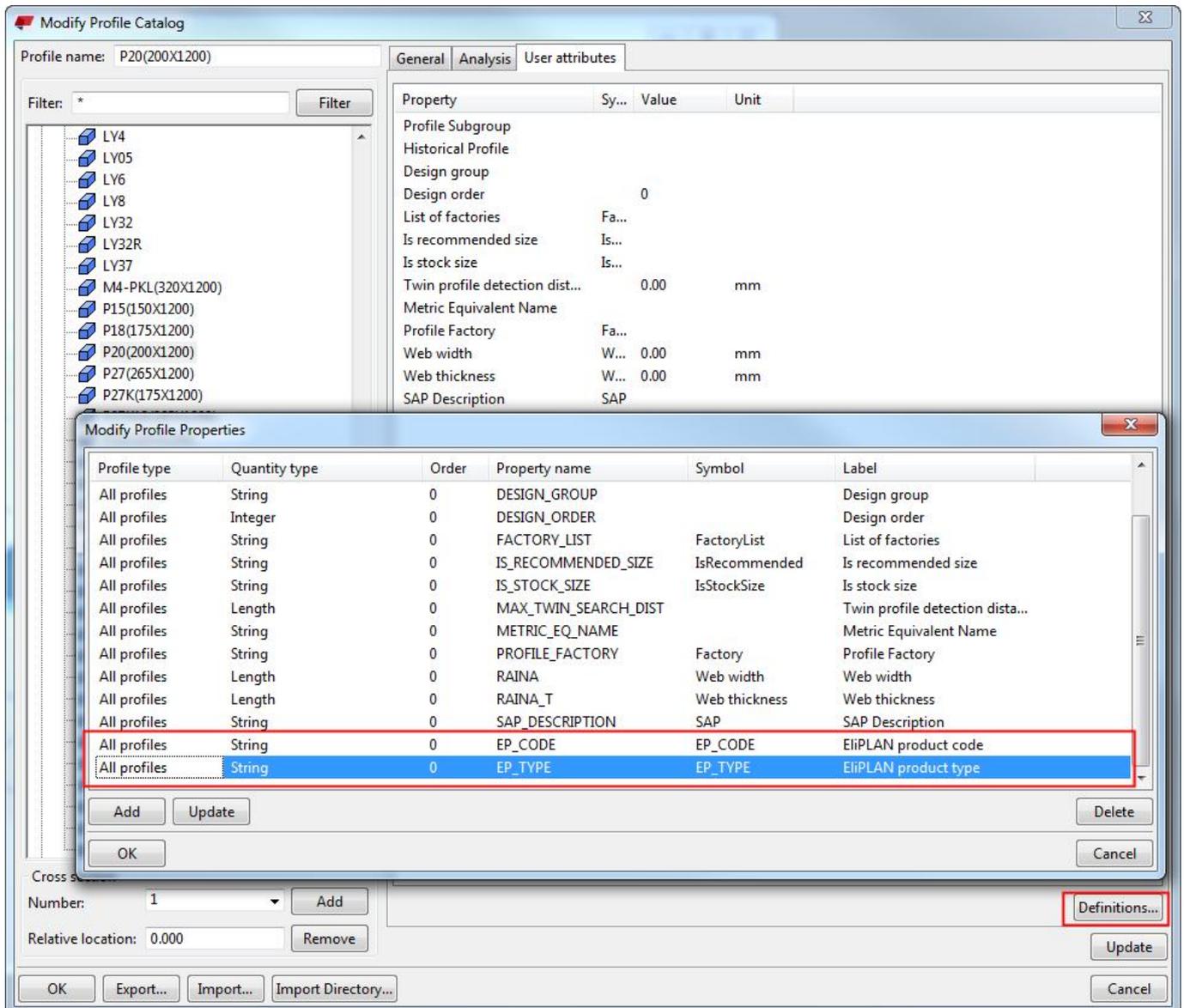
The screenshot shows the 'Tekla Structures Slab (1)' dialog box. It features several tabs: BVBS, Concrete Cover, HMS, Tekla Structural Designer, and Concrete information. Under the 'Concrete information' tab, there are sub-tabs for Parameters, Workflow, End Conditions, Analysis, IFC export, Unitechnik, and EliPlan. The 'Product code' field is highlighted with a red box and contains the value 'AX-104'. Other fields include 'Product type', 'Erection sequence', 'Ready for production', 'Status (EP)', 'Production date', 'Planned delivery date', and 'Delivery date'. The dialog also includes buttons for 'OK', 'Apply', 'Modify', 'Get', a checkbox, and 'Cancel'.

To get the ELIPLAN specific attributes shown in the dialog you need to have corresponding fields enabled in file 'objects.inp', under your model folder or in your firm folder. These UDA-fields are included in the 'objects.inp' provided within the common environment precast-role.

Please note that if you already have customized your user defined attributes (file 'objects.inp') you need to copy the necessary definitions into your version of the 'objects.inp' file.

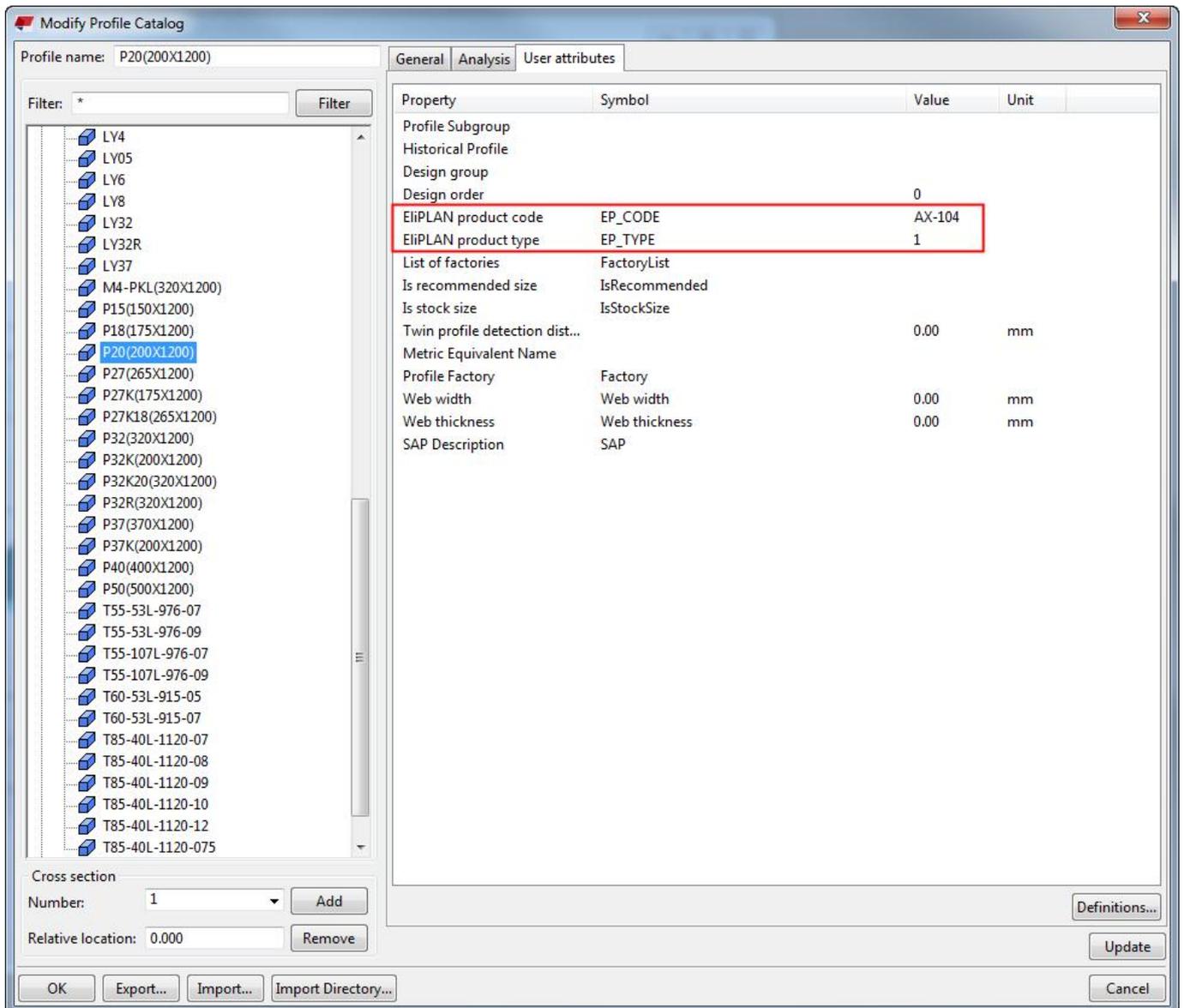
### 2.1.2 User-defined attributes in profile catalog

You can set the product code by adding a user defined attribute "EP\_CODE" into your profile catalog. To do this you need first define the attributes as shown in following picture.



Above picture shows also attribute "EP\_TYPE", more details about that are given in section 2.2.

After you have defined the attribute "EP\_CODE" you need to set the value for all profiles you will use. An example about how to make it is shown in following picture.



### 2.1.3 Mapping of parametric profile name to ELiPLAN product codes

If neither of the previous methods did lead to an explicit defined product code the export function will try to search the data from the conversion file. If it can find the profile name from there it will use the mapped product code. This method is feasible for parametric profiles i.e. profiles which are not stored in catalog.

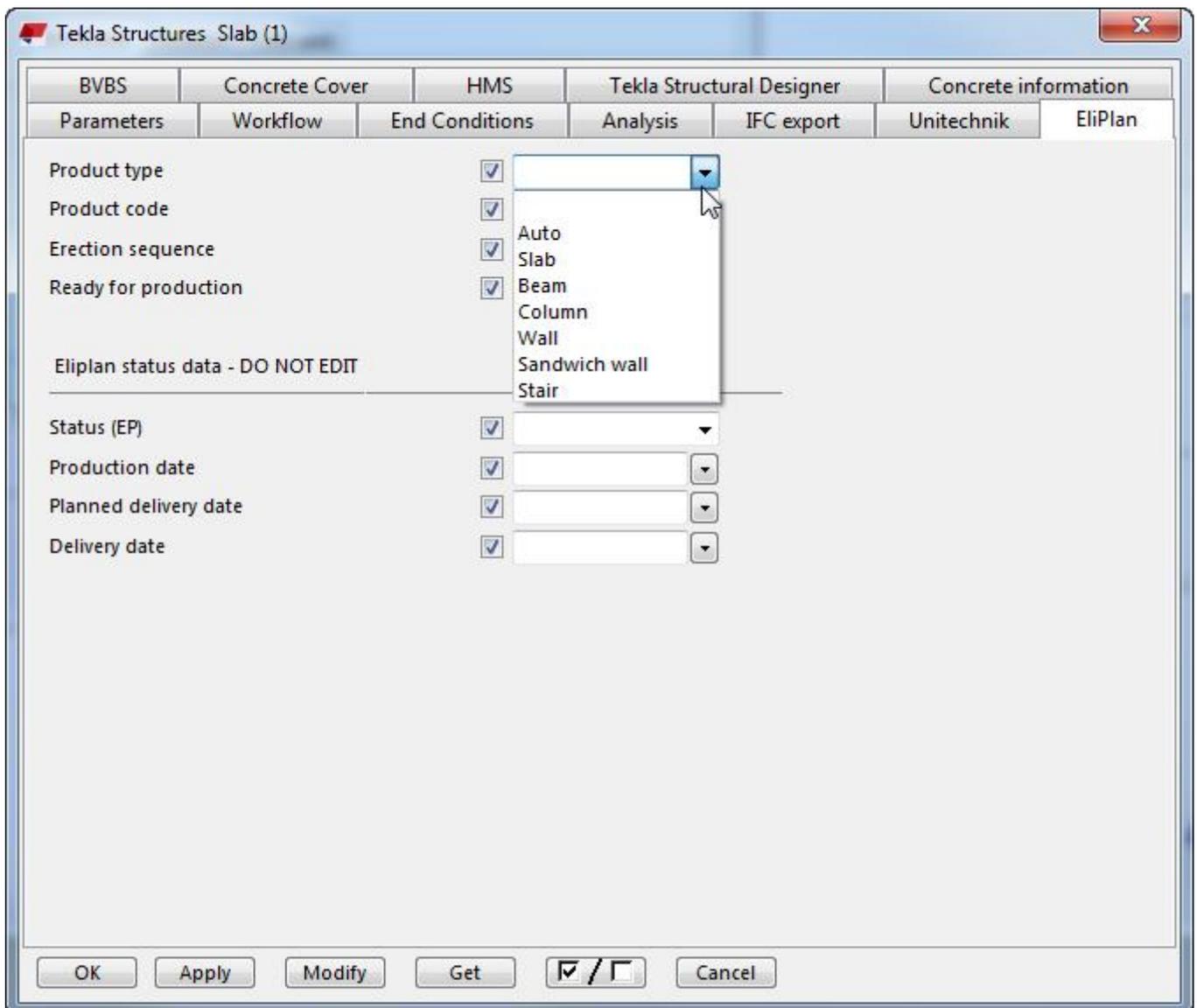
### 2.1.4 Main part name as product code

If any of the previous methods didn't succeed the export function exports the main part name as a product code.

## 2.2 Product type

ELIPLAN considers the piece dimensions 'LENGTH', 'LENGTH2', 'DELTA', 'width', 'height' and 'thickness' slightly differently depending on product type. Normally you should be able to use the "automatic" method to select product type but you can also override this value either by user defined attribute "EP\_TYPE" or by profile catalog attribute "EP\_TYPE".

To define the product type by main part attribute use the normal "userdefined attributes" dialog:



You can also define the product type for catalog profiles by setting the attribute EP\_TYPE in profile catalog.

Please note that in profile catalog the attribute value is given as a number (not by selection list). The values are as follow:

Type	Number
Slab	1
Beam	2
Column	3
Wall	4
Sandwich Wall	5
Stair	6

### 2.3 Accessory code

The export function of Tekla Structures forms the default accessory code based depending on material type as follows:

1. For concrete material the default accessory code is same as material name
2. For reinforcement mesh, bars or strand the default accessory code is equal to concatenated string *grade/size*
3. For embedded material the default accessory code is equal to concatenated string *name/size/material*

You can translate this string by adding the necessary mapping in data conversion file. You can see the default accessory codes by exporting a file without any translation and looking the section "#Materials" in the output file.

You can also override the default accessory code for embedded material by giving the user-defined attribute "Accessory code" for the main part of the embed component as shown in following picture. Please note that in custom component editor you may also specify a formula for attribute "EP\_ACCESSORY" in case you want to make the accessory code parametric to some embed variables.

In case the accessory code shall be made parametric, within the custom component a formula can be defined.

The image shows a workflow for configuring a beam component in Tekla Structures. It consists of three main windows:

- Custom component browser:** Shows a tree view of model objects. Under 'User-defined attributes', the attribute 'EP\_ACCESSORY' is highlighted with a red circle.
- Beam Properties:** A dialog box for configuring beam attributes. Under 'User-defined attributes...', the 'User-defined attributes...' option is checked and highlighted with a red circle.
- Tekla Structures - Beam (1):** The main application window showing the 'Accessory code' field with the value 'CON-L100ID2390358' checked. A red arrow points from the 'User-defined attributes...' option in the Beam Properties dialog to this field.

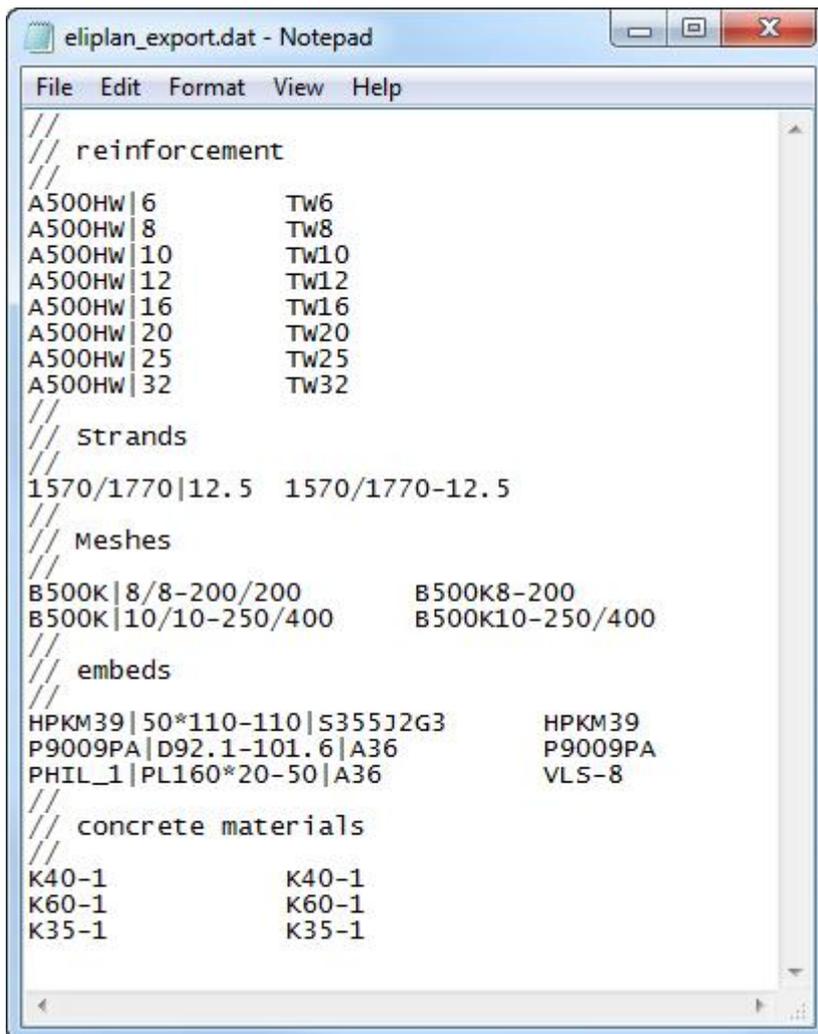
At the bottom of the main window, there are buttons for 'OK', 'Apply', 'Modify', 'Get', a checked checkbox, and 'Cancel'.

In case the accessory code is fixed the user can enter the code manually for the main part here.

## 2.4 Data conversion file

The data conversion file contains string pairs separated with one or more tabs. The string on left side shall be the profile name or Tekla Structures material description and the string on right side is the corresponding ELIPLAN data.

The content of the sample file is shown in the following dialog. Please note that the ELIPLAN codes are depending on the fabricator and the codes which are valid for one fabricator are most probably not valid for other fabricators.



```

eliplan_export.dat - Notepad
File Edit Format View Help
//
// reinforcement
//
A500Hw|6      Tw6
A500Hw|8      Tw8
A500Hw|10     Tw10
A500Hw|12     Tw12
A500Hw|16     Tw16
A500Hw|20     Tw20
A500Hw|25     Tw25
A500Hw|32     Tw32
//
// strands
//
1570/1770|12.5 1570/1770-12.5
//
// Meshes
//
B500K|8/8-200/200      B500K8-200
B500K|10/10-250/400   B500K10-250/400
//
// embeds
//
HPKM39|50*110-110|S355J2G3      HPKM39
P9009PA|D92.1-101.6|A36          P9009PA
PHIL_1|PL160*20-50|A36          VLS-8
//
// concrete materials
//
K40-1      K40-1
K60-1      K60-1
K35-1      K35-1

```

Recently the conversion file was extended, read here more about the latest improvements and the related settings.

The product code and the material code are now separate: mappings following the line #PRODUCT CODE are used for product code conversion and mappings following the line #MATERIAL CODE are used for material conversion. Example of a new conversion file:

## #PRODUCT CODES

INNER WYTHE	SW
P27 (265X1200)	P27
COLUMN	C
BEAM   RC DL	B_LP2P
BEAM   RCL	B_LP
BEAM	B_SK

## #MATERIAL CODES

K30-2	C0030B	m3
K40-1	C0040A	m3
K50-1	C0040A	m3
A500HW   25	RF0025	kg
A500HW   8	RF0008	kg
PLATE   PL10*150-200   S235JR	STL_01	pcs
PAD   PL10   Neoprene	NEO_10	dm2
B500K   5/5-200/200	M05200	m2
B500K   5/5-150/150	M05150	m2
Insulation   *160	ERI0160	m2

You can now combine several mappings in one, because the product and material code conversion is now based on tags separated with the pipe character ("|"). A matching conversion is used when all tags are found in the source code. For example, the following mapping for meshes will be used for mesh sizes 5/5-200/200-2000/4000 and 5/5-200/200-2000/3600:

B500K   5/5-200/200	M05200
---------------------	--------

The mapping can now contain also the unit for quantity for material codes. Supported units are defined as follow.

Meaning	Unit
Length	mm
	cm
	dm
	m
	in
	ft
	yd
Area	dm <sup>2</sup>
	m <sup>2</sup>
	sqft
	sqyd
Volume	dm <sup>3</sup>
	m <sup>3</sup>
	cuft
	cuyd
Weight	kg, m/t (metric ton)
	s/t (short ton 2000 lbs)
	l/t (long ton 2240 lbs)
Quantity / counts	pcs