Tutorial
GrafCompounder 4.0

12. October 2022

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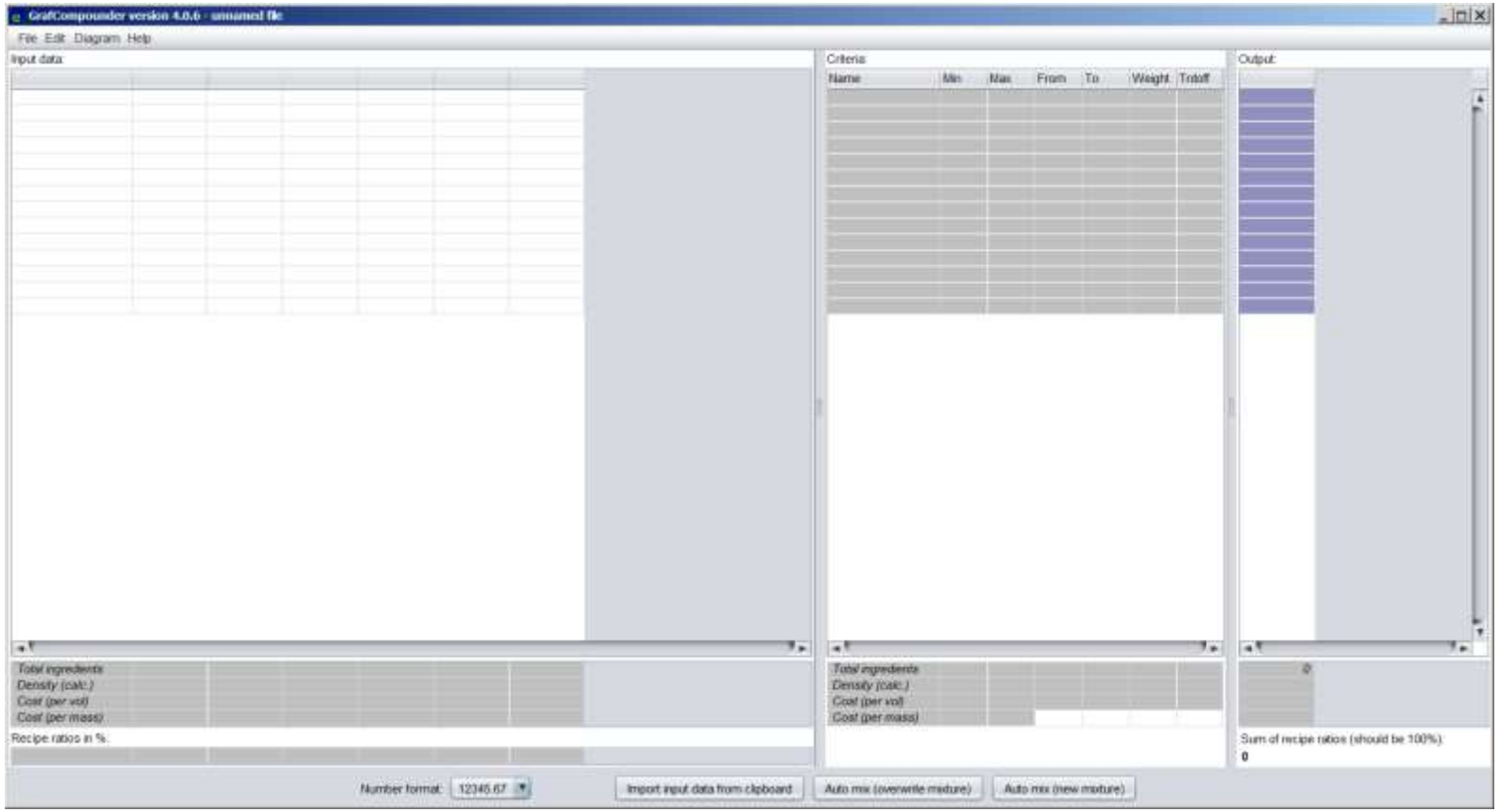
Content of this Presentation:

GrafCompounder

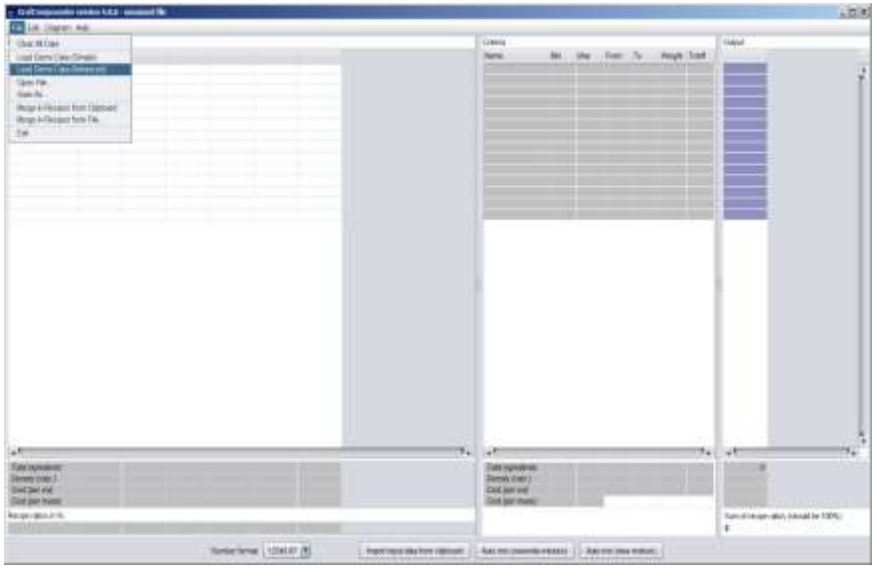
Step by Step

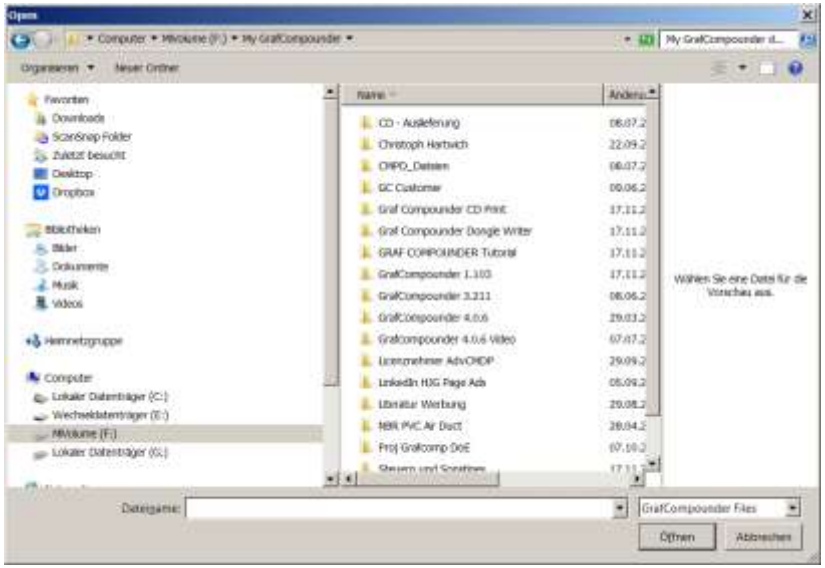
Conclusion

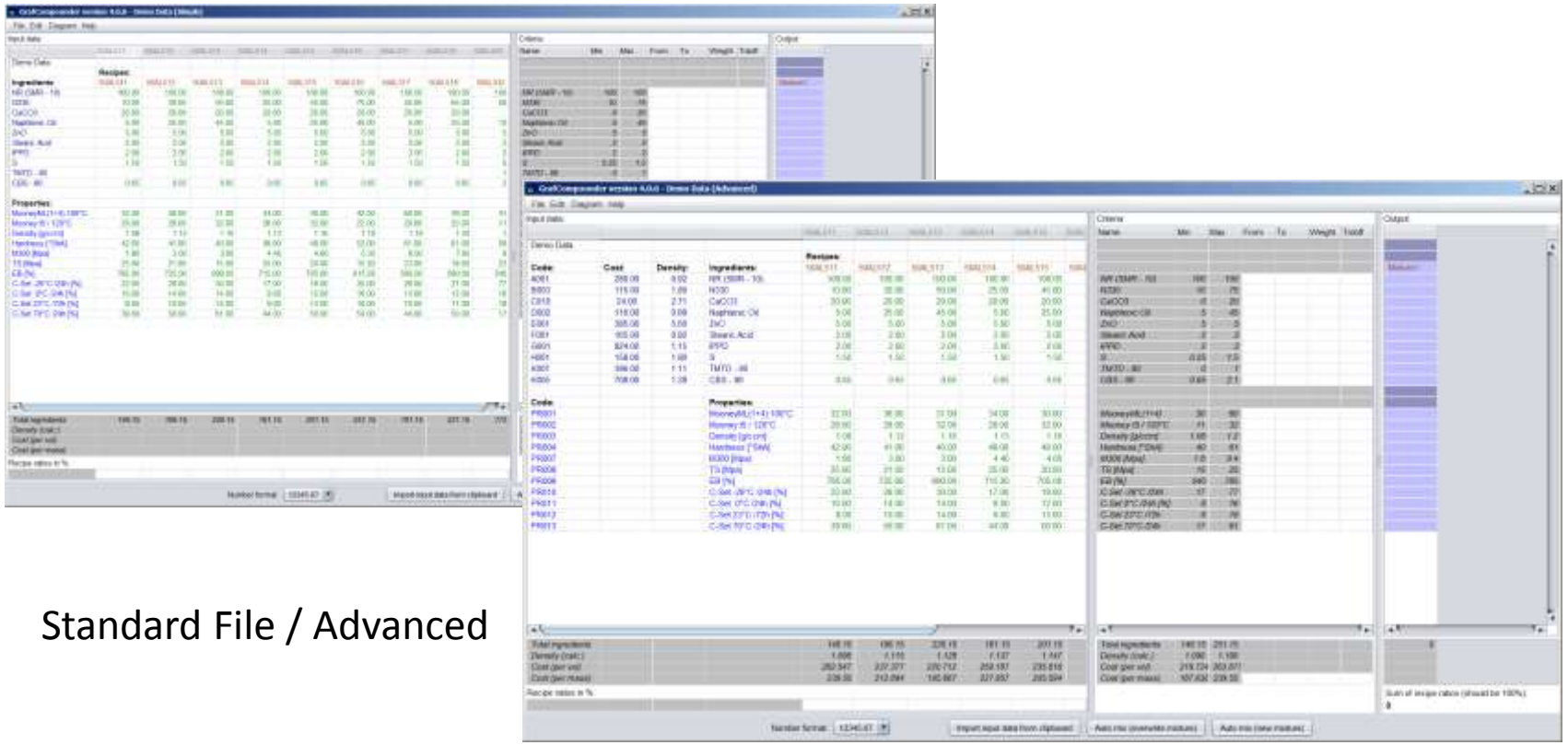


Screen shot after start

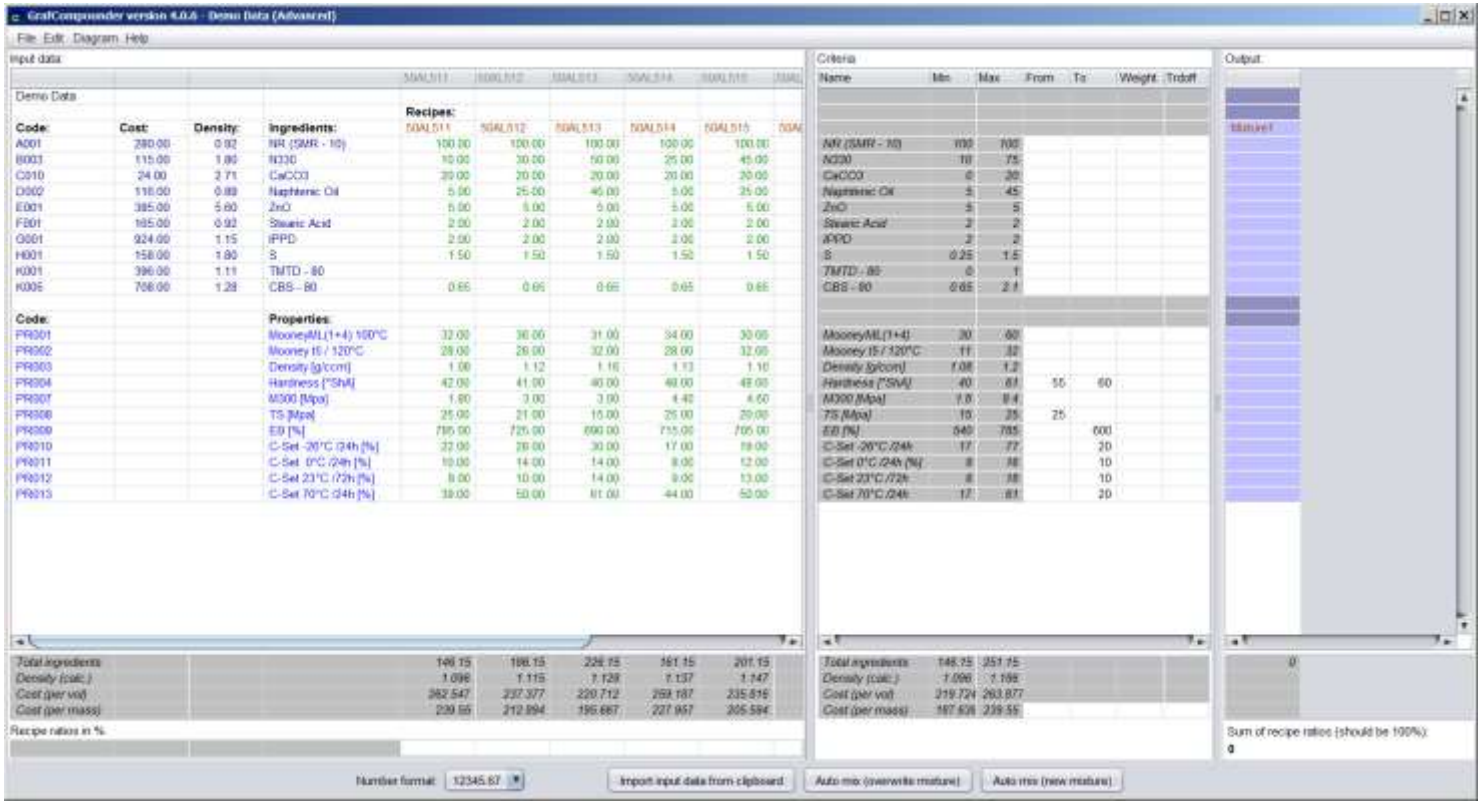
Open File “compound.gc”
Other files than .gc files have to be “Copy / Paste” for incorporation



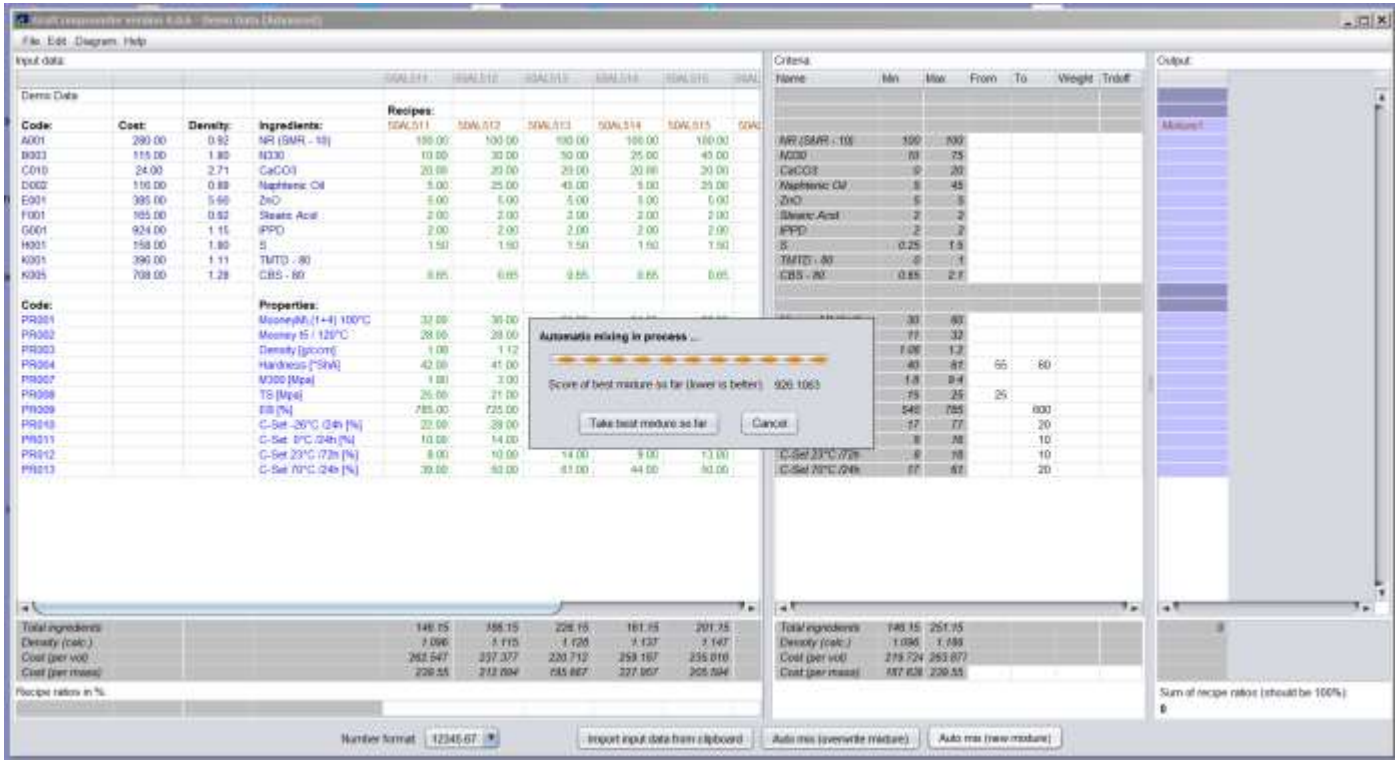




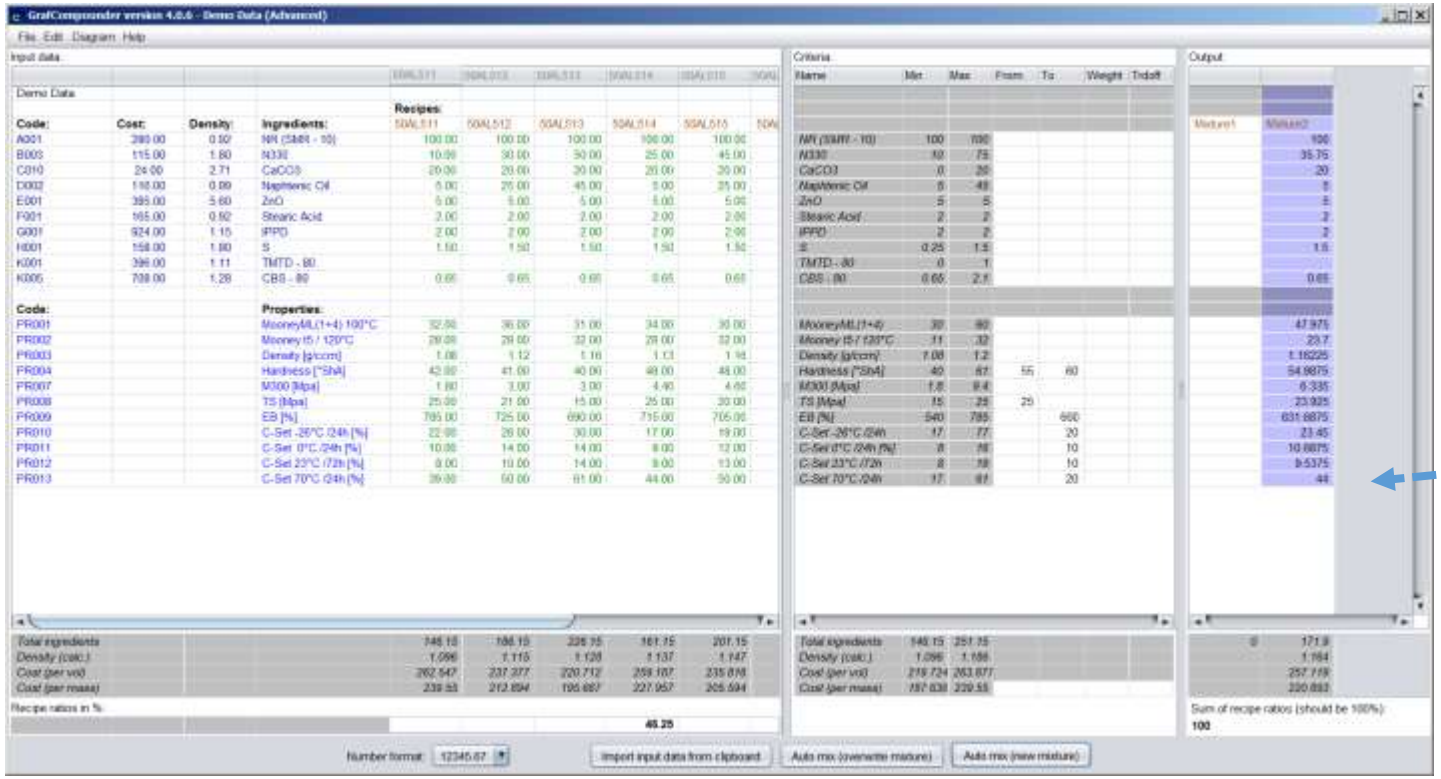
Standard File / Advanced



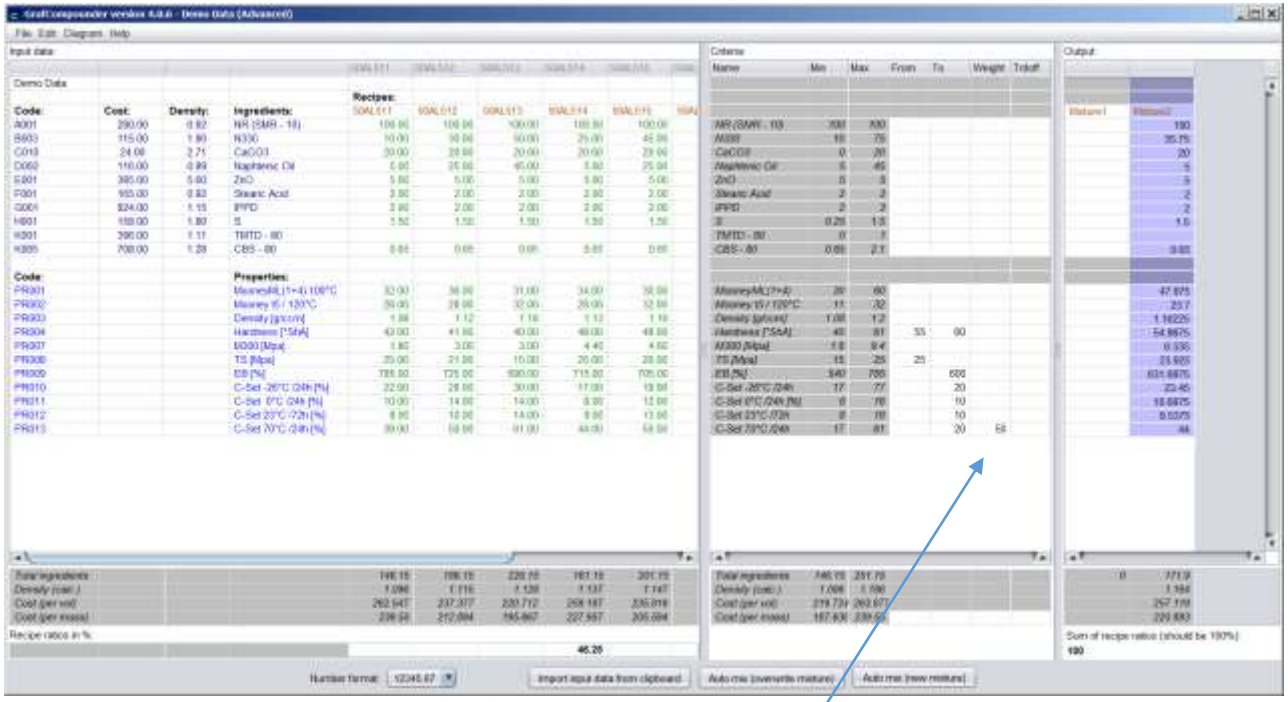
Criteria fill in



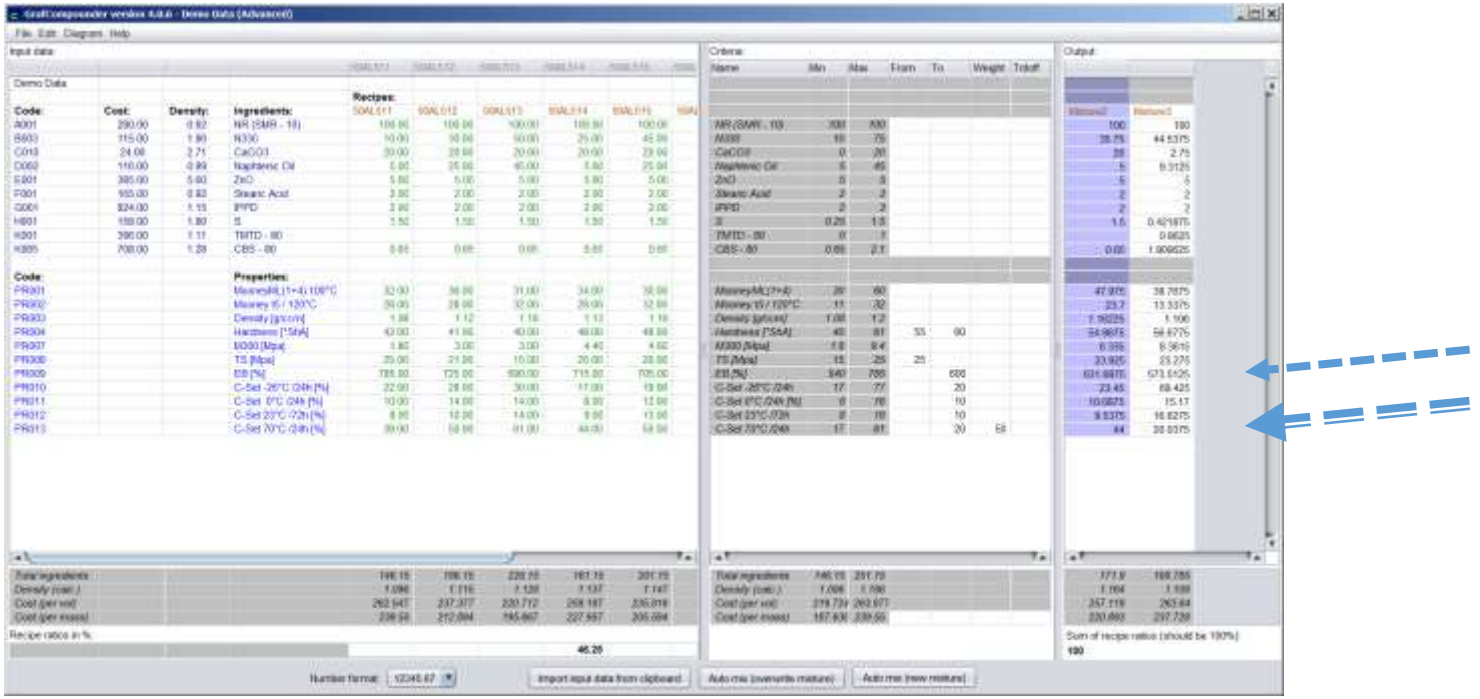
Button “Automix (overwrite mixture)



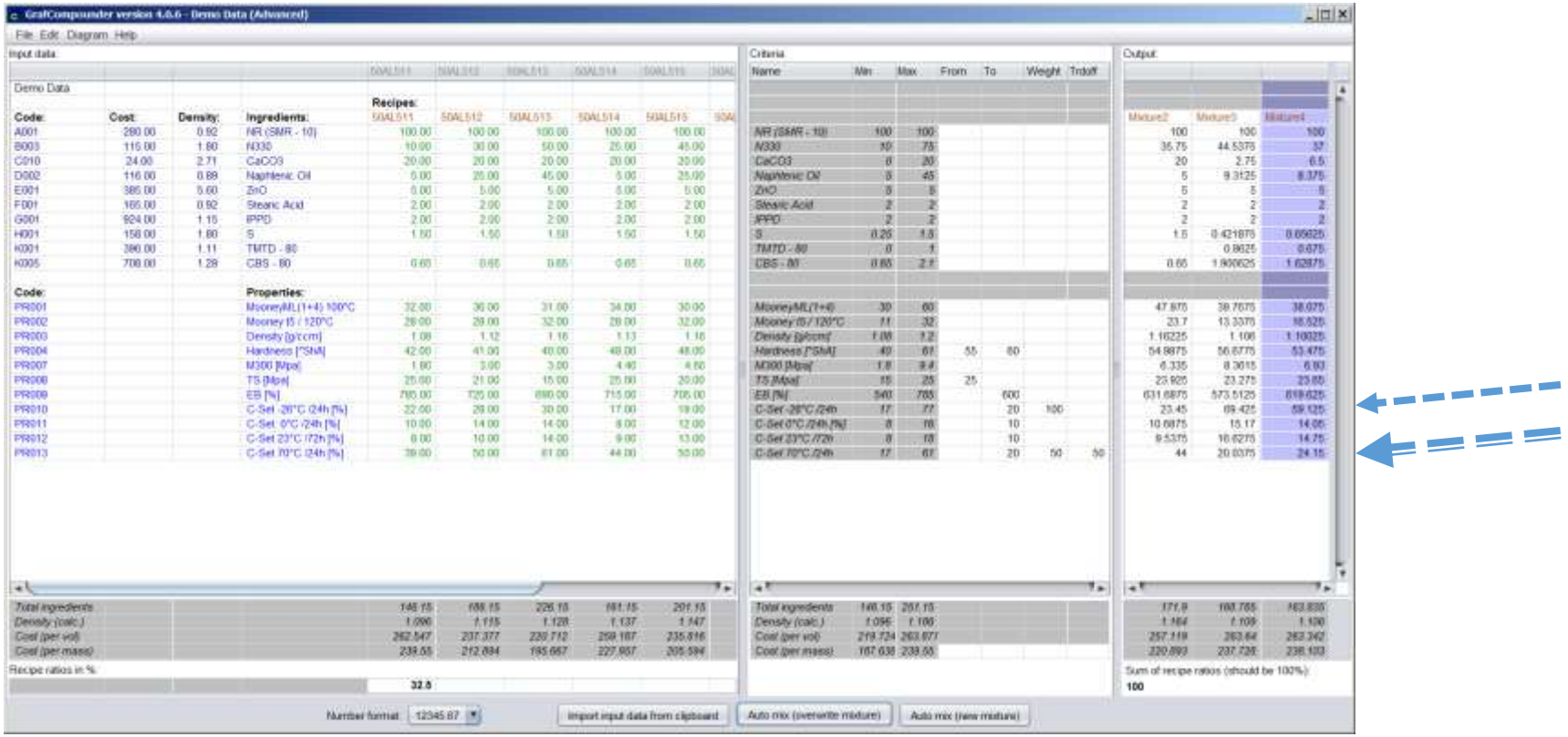
Accept: “Take best mixture so far”



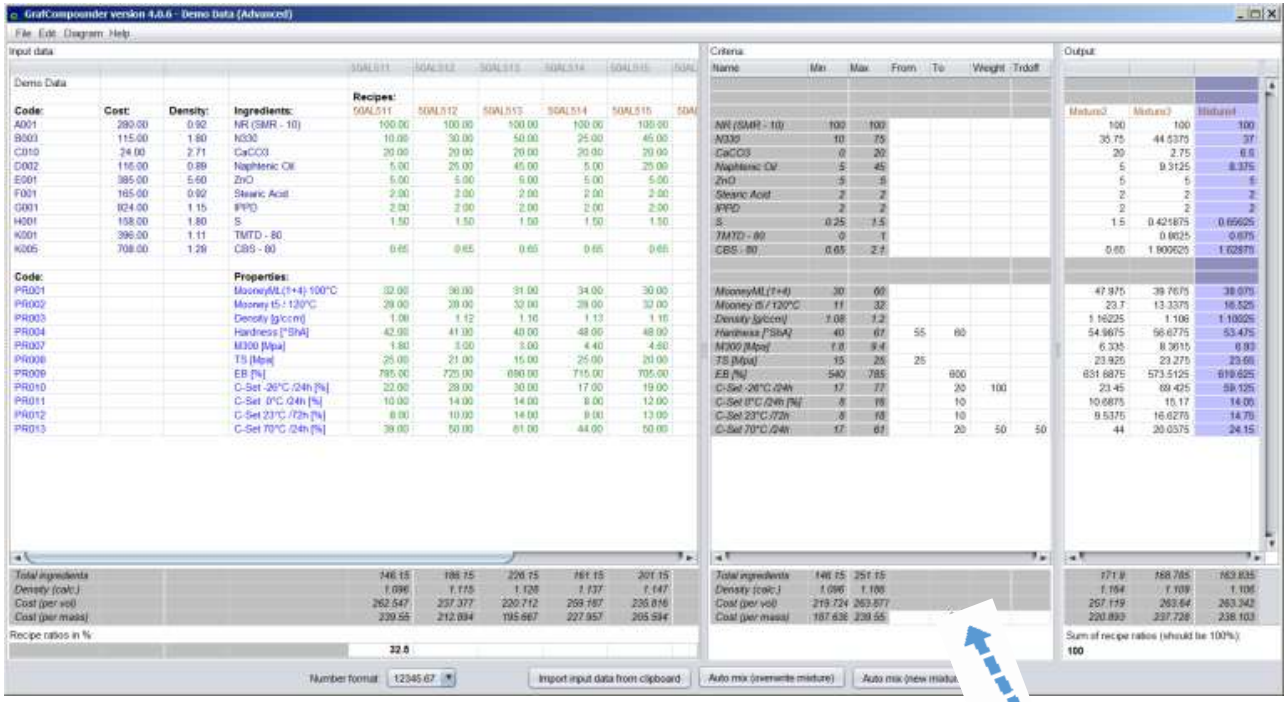
Criteria Window: Put in “Weight”



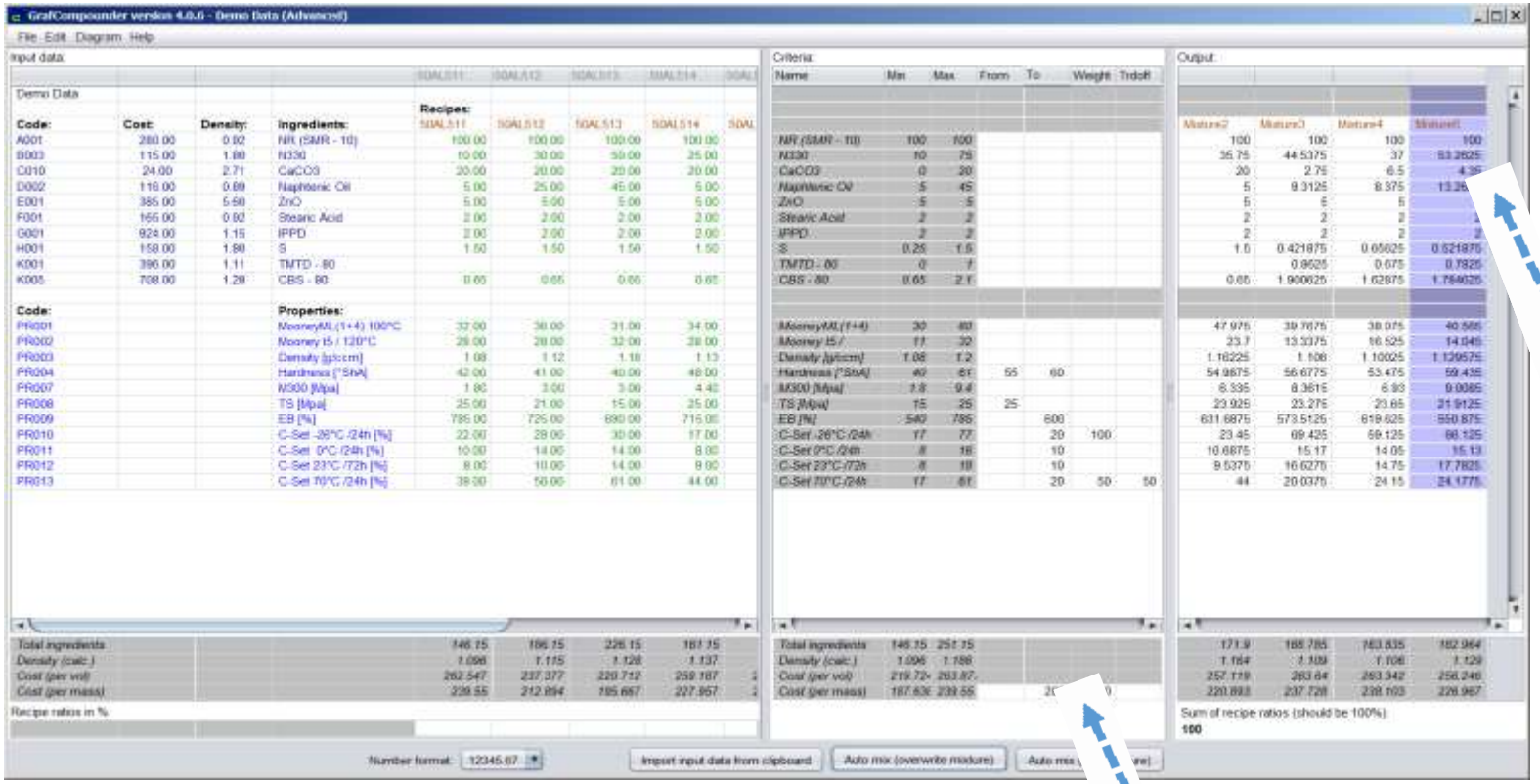
Button “Automix (new mixture)”
Accept result and evaluate

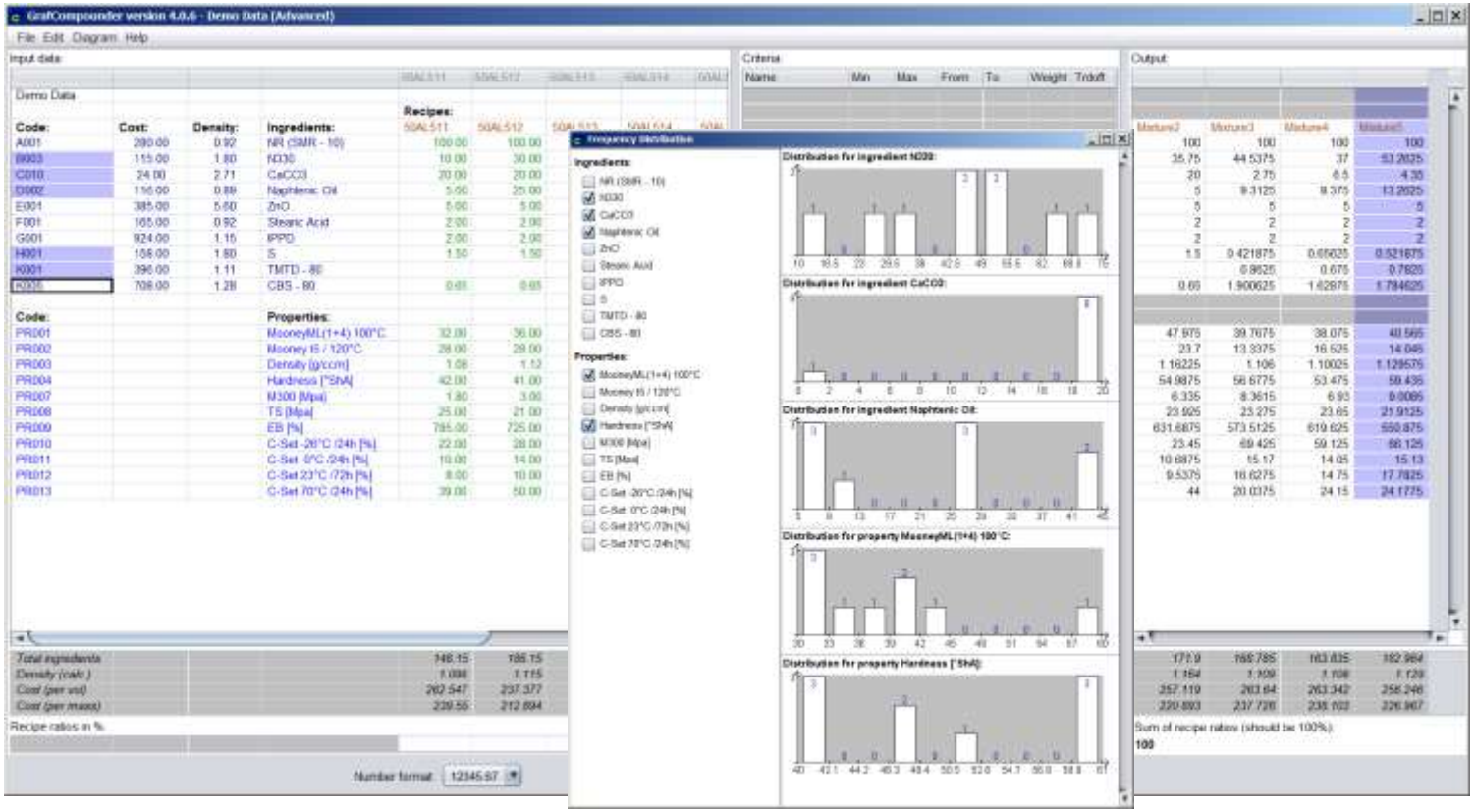


Criteria Window: Put in additional “Weight” and “TrdOff”
Then Auto mix (new mixture), evaluate results

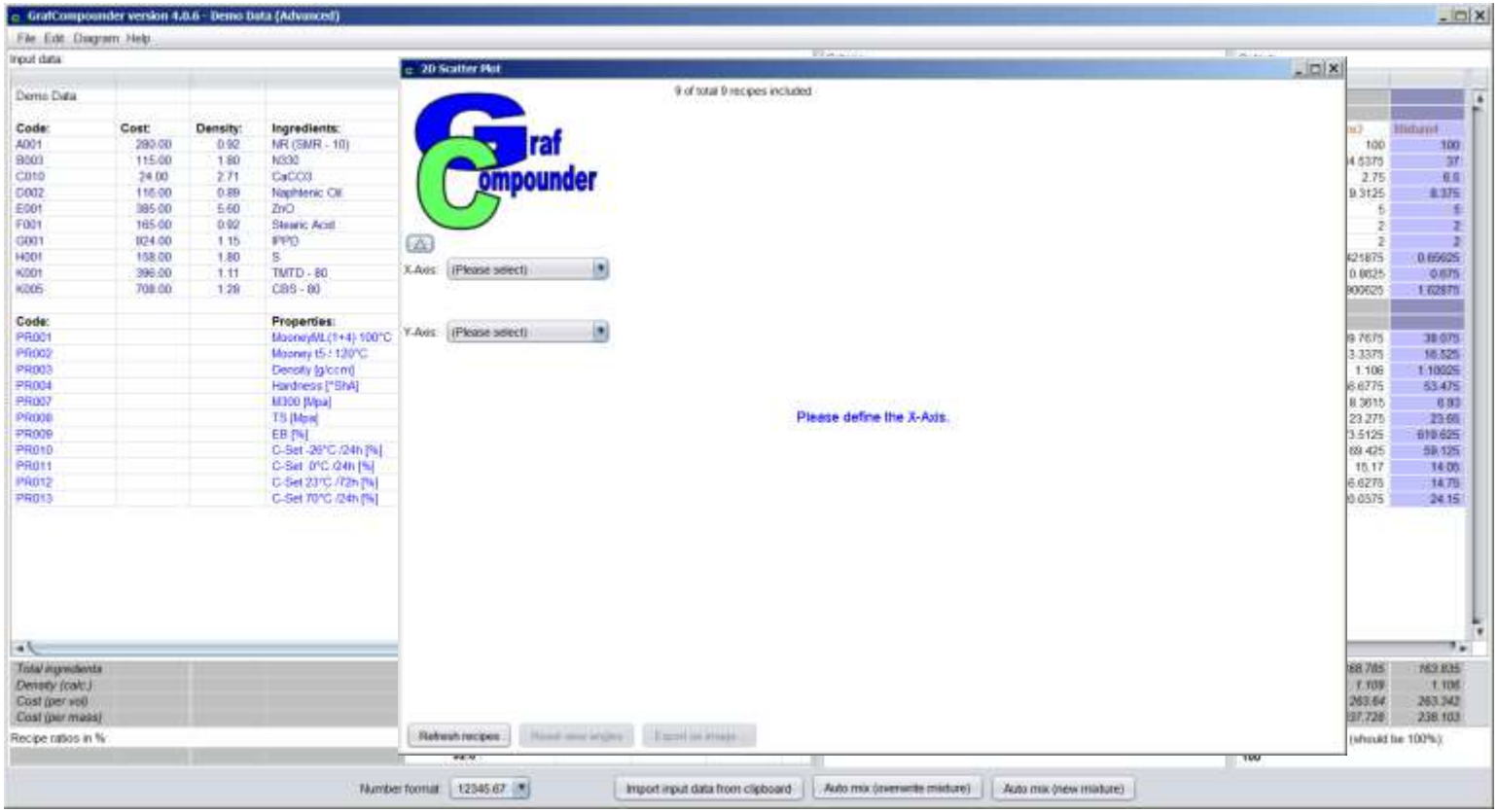


Criteria Window: Put in cost target in “Cost per mass” cell

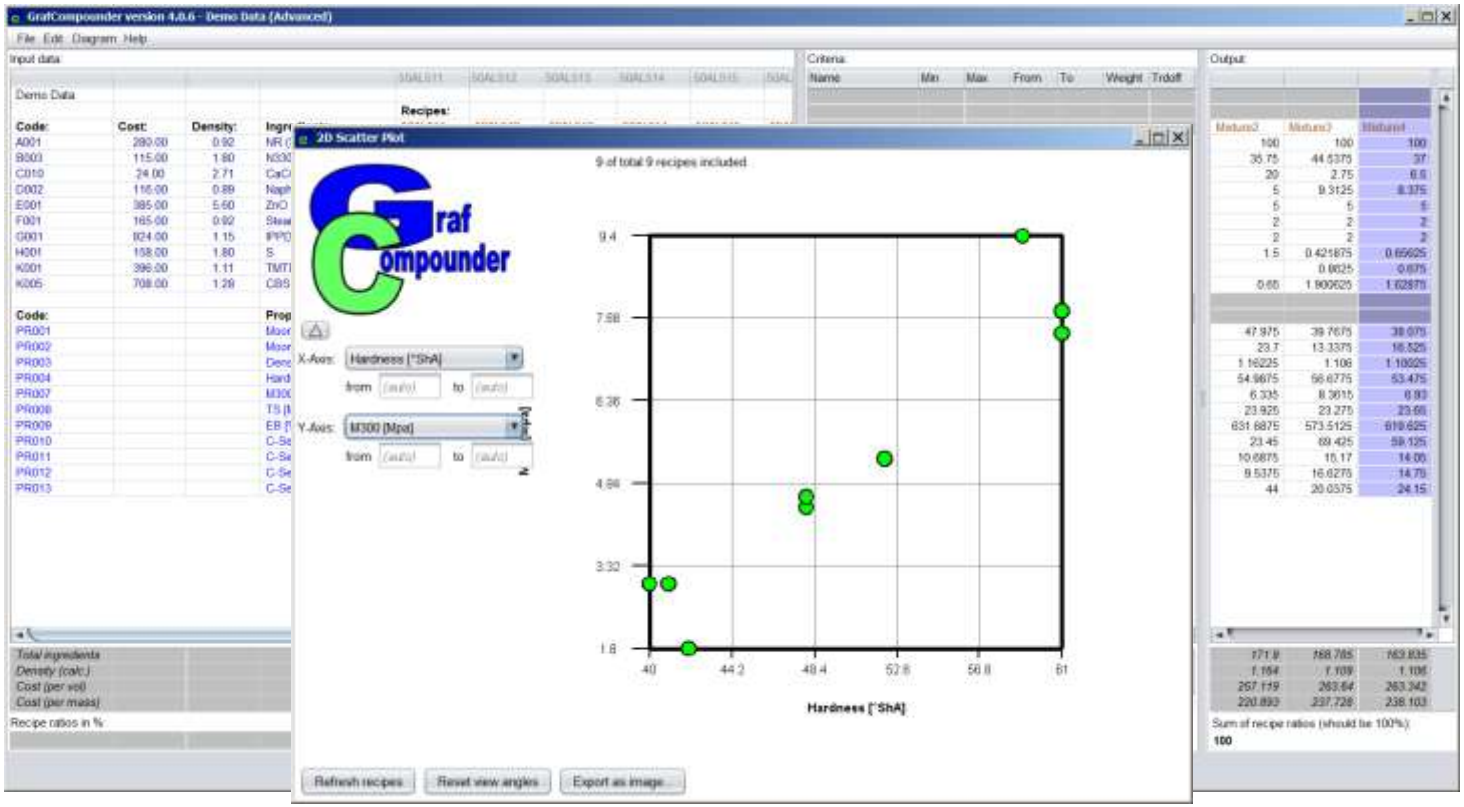

GrafCompounder version 4.0.0 - Demo Data (Advanced)
File Edit Diagram Help
Input data
Demo Data
Code: Cost: Density: Ingredients:
A001 280.00 0.92 NR (SMR - 10)
B003 115.00 1.80 N330
C010 24.00 2.71 CaCO3
D002 116.00 0.89 Naphtenic Oil
E001 385.00 5.60 ZnO
F001 165.00 0.92 Stearic Acid
G001 924.00 1.15 IPPD
H001 158.00 1.80 S
K001 386.00 1.11 TMTD - 80
K005 708.00 1.29 CBS - 80
Code: Properties:
PR001 MooneyML(1+4) 100°C
PR002 Mooney I5 / 120°C
PR003 Density [g/ccm]
PR004 Hardness [°ShA]
PR007 M300 [Mpa]
PR008 TS [Mpa]
PR009 EB [%]
PR010 C-Set -26°C /24h [%]
PR011 C-Set 0°C /24h [%]
PR012 C-Set 23°C /72h [%]
PR013 C-Set 70°C /24h [%]
Recipes:
Total ingredients
Density (calc.)
Cost (per vol)
Cost (per mass)
Recipe ratios in %
Criteria:
Name Min Max From To Weight Tradoff
Output:
Sum of recipe ratios (should be 100%)
100
Number format: 12345.67
Import input data from clipboard
Auto mix (overwrite mixture)



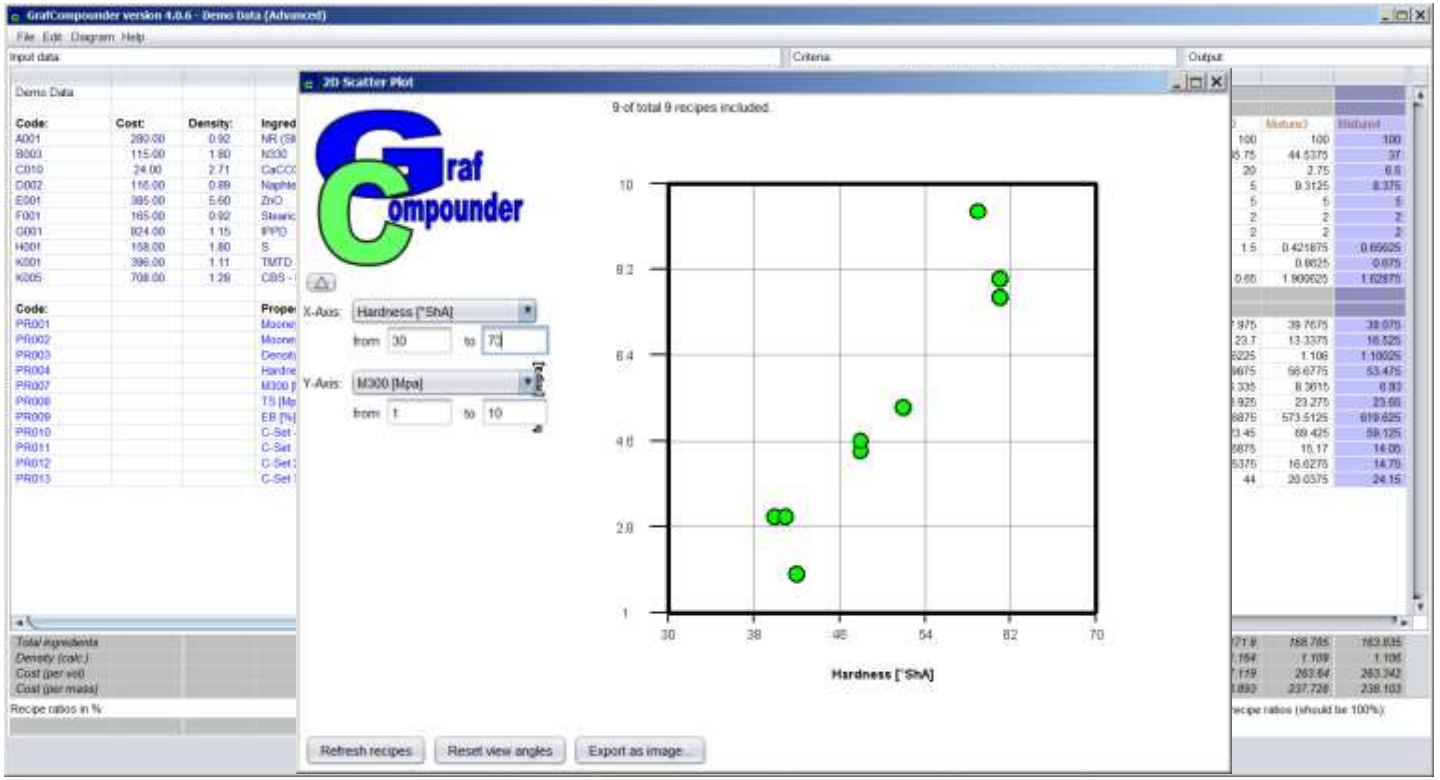
Pull down menu: “Diagram”,“Frequency Distribution” and make selection



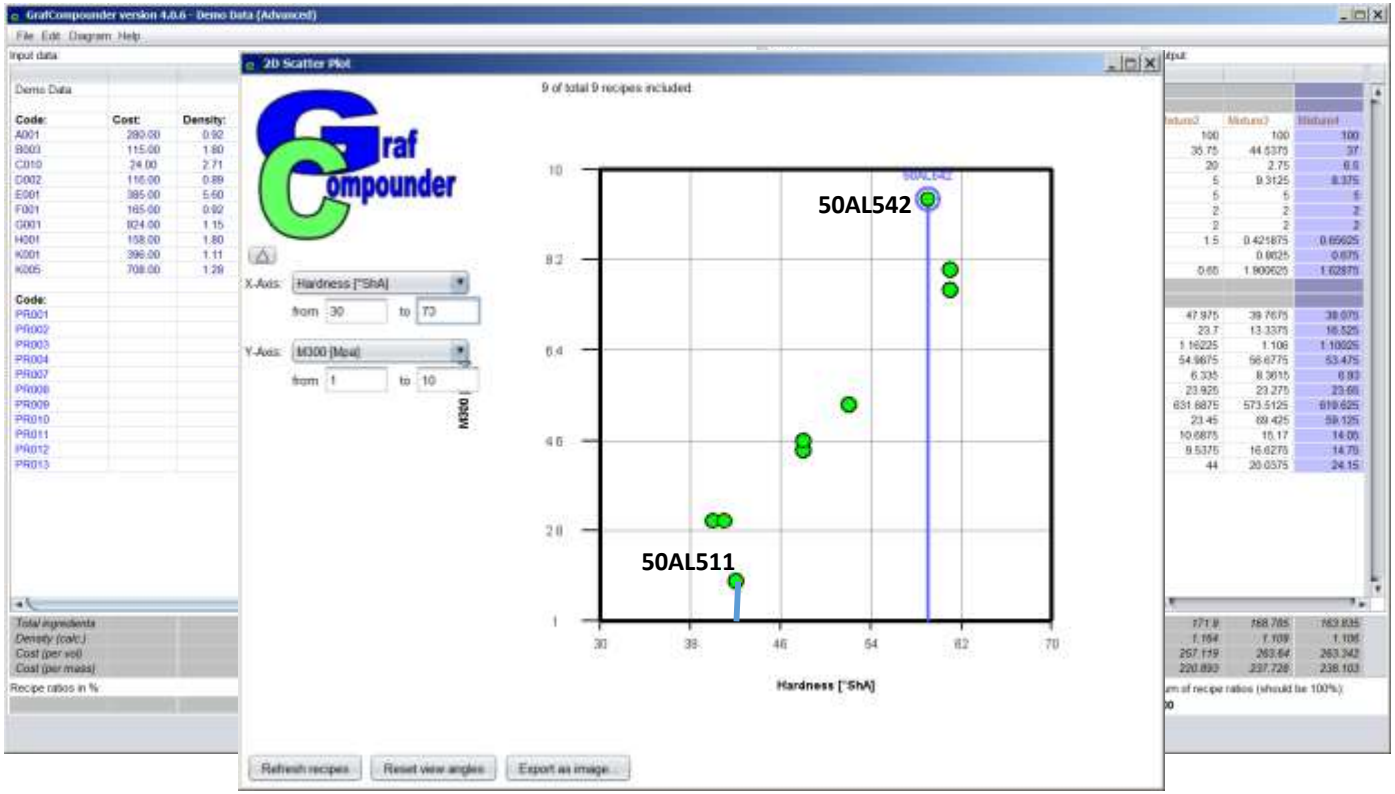
Pull down menu: “Diagram”,“2D Scatter Plot”



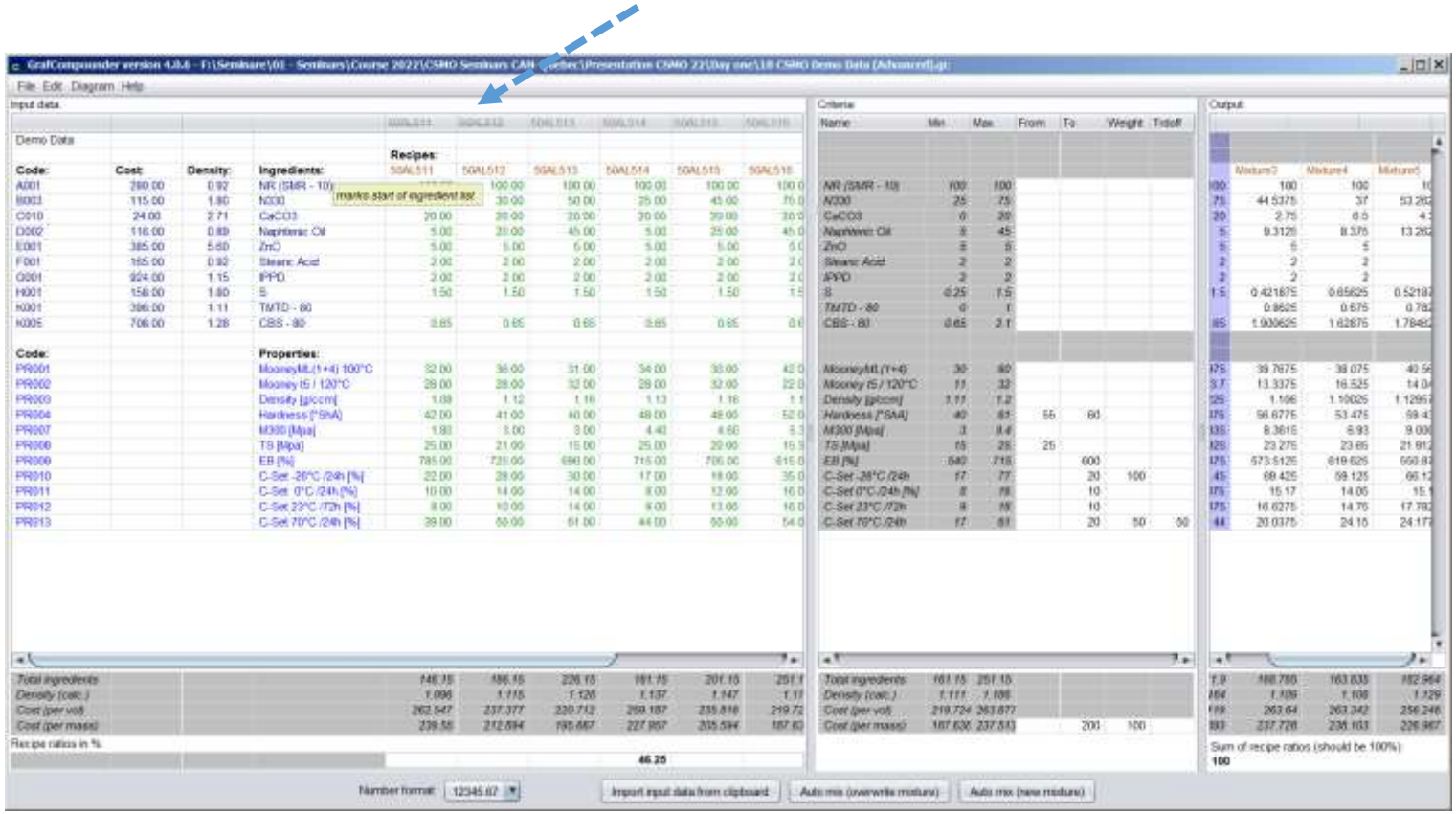
Pull down menu: “Diagram”,“2D Scatter Plot”, make selection



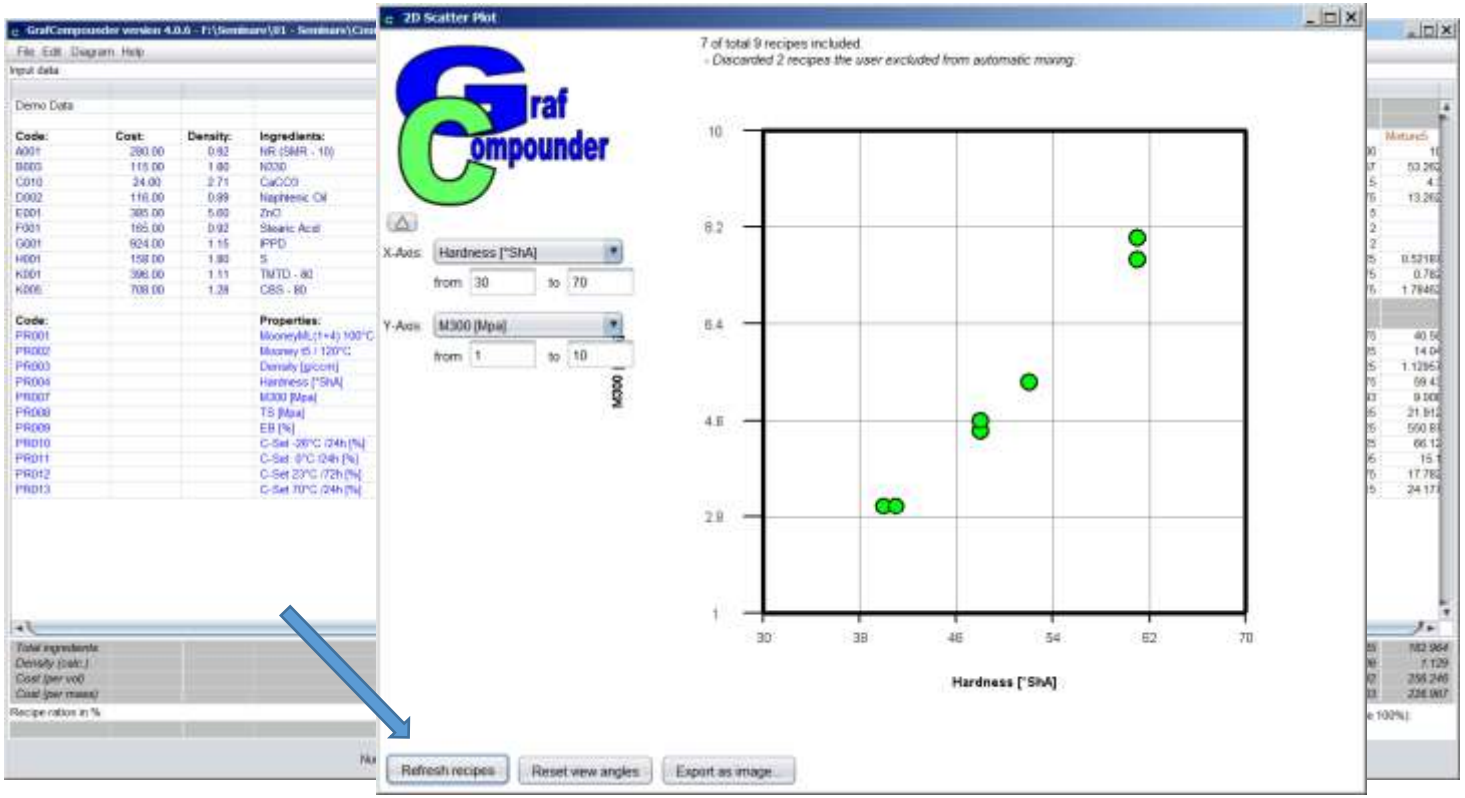
Pull down menu: “Diagram”,“2D Scatter Plot”, make selection Format Axis



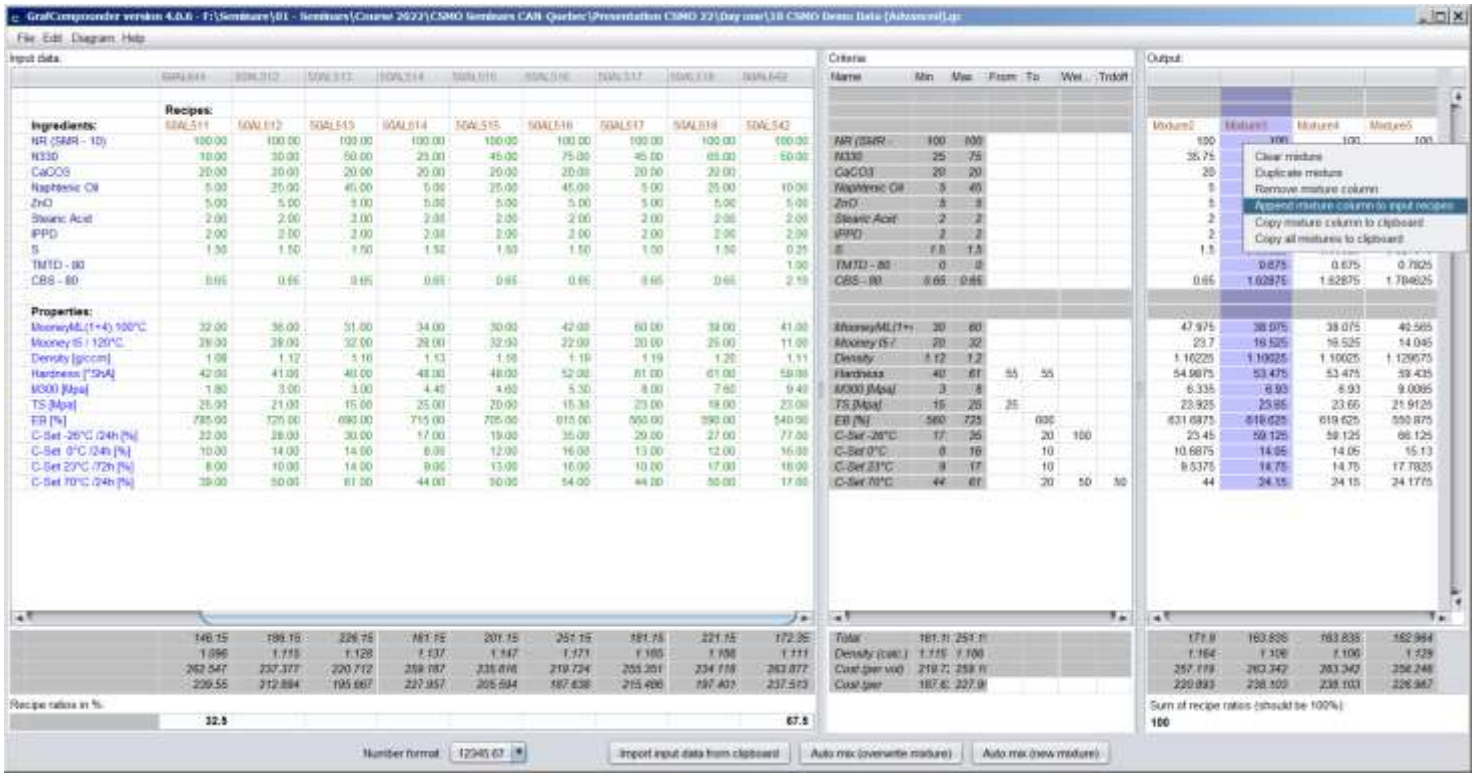
Pull down menu: “Diagram”,“2D Scatter Plot”, Highlight outliers



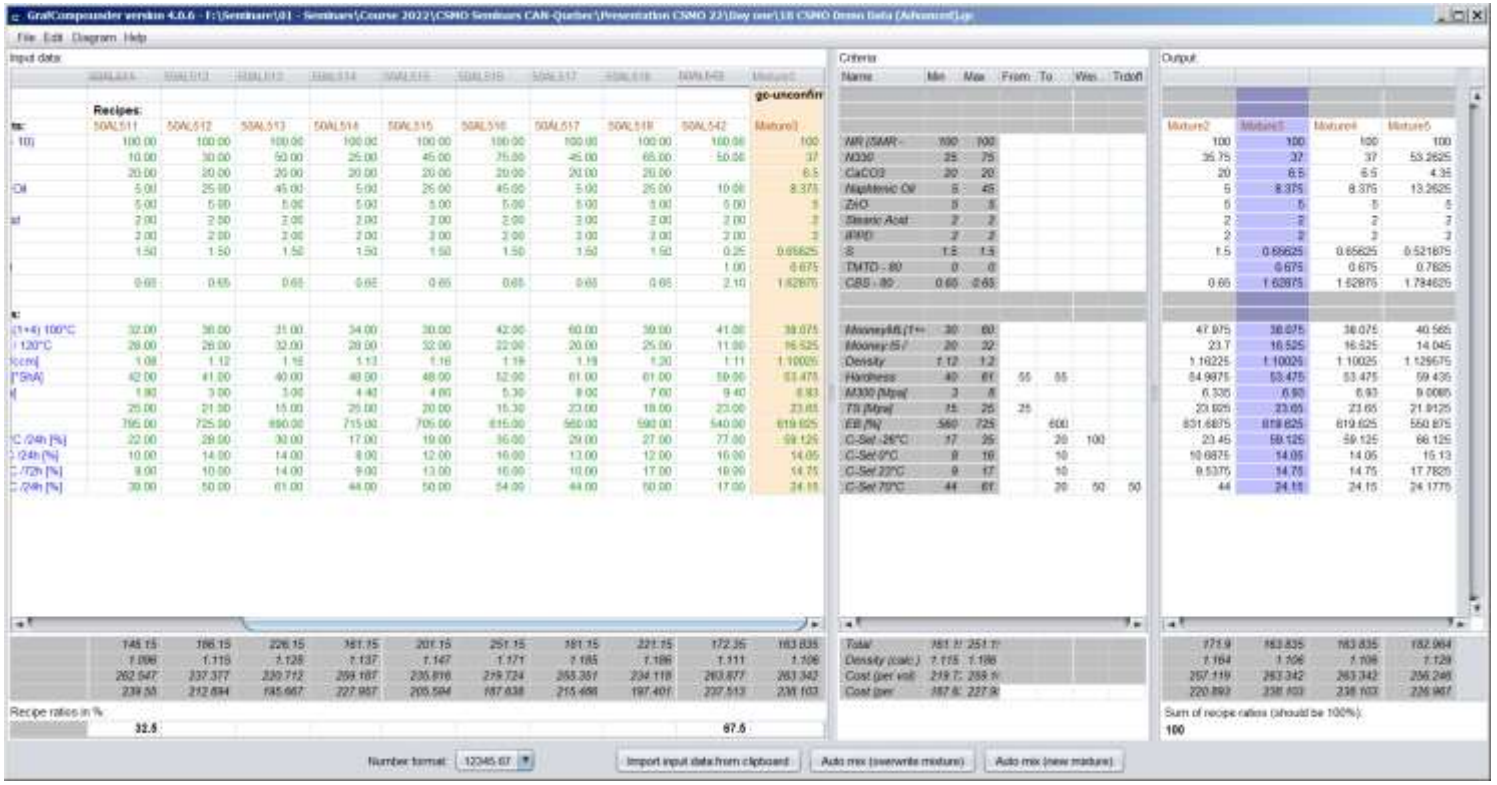
Switch to Data Window, Deactivate Datasets with “right click”



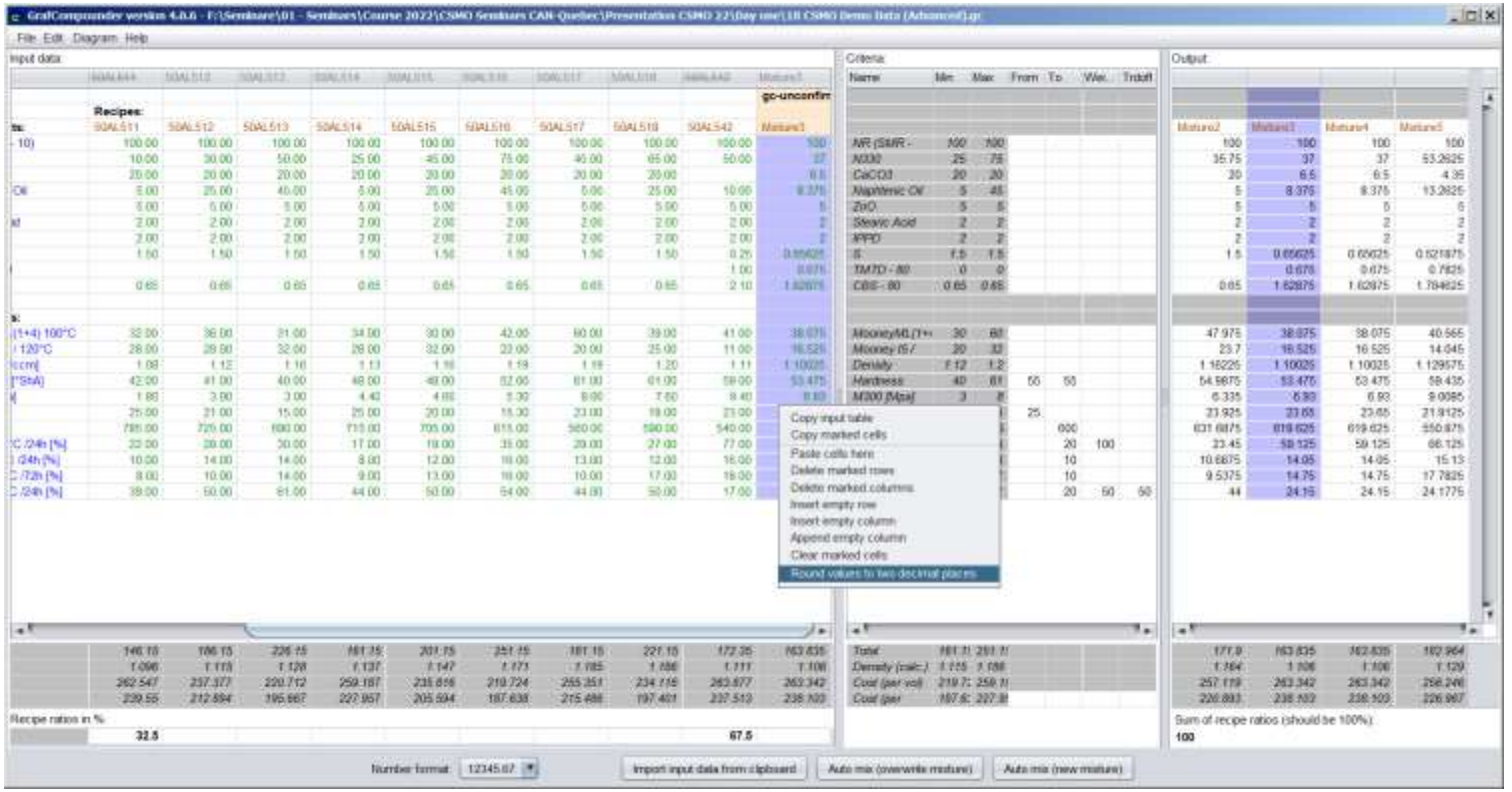
Click “Refresh Recipes” in “Diagram”;“2D Scatter Plot”



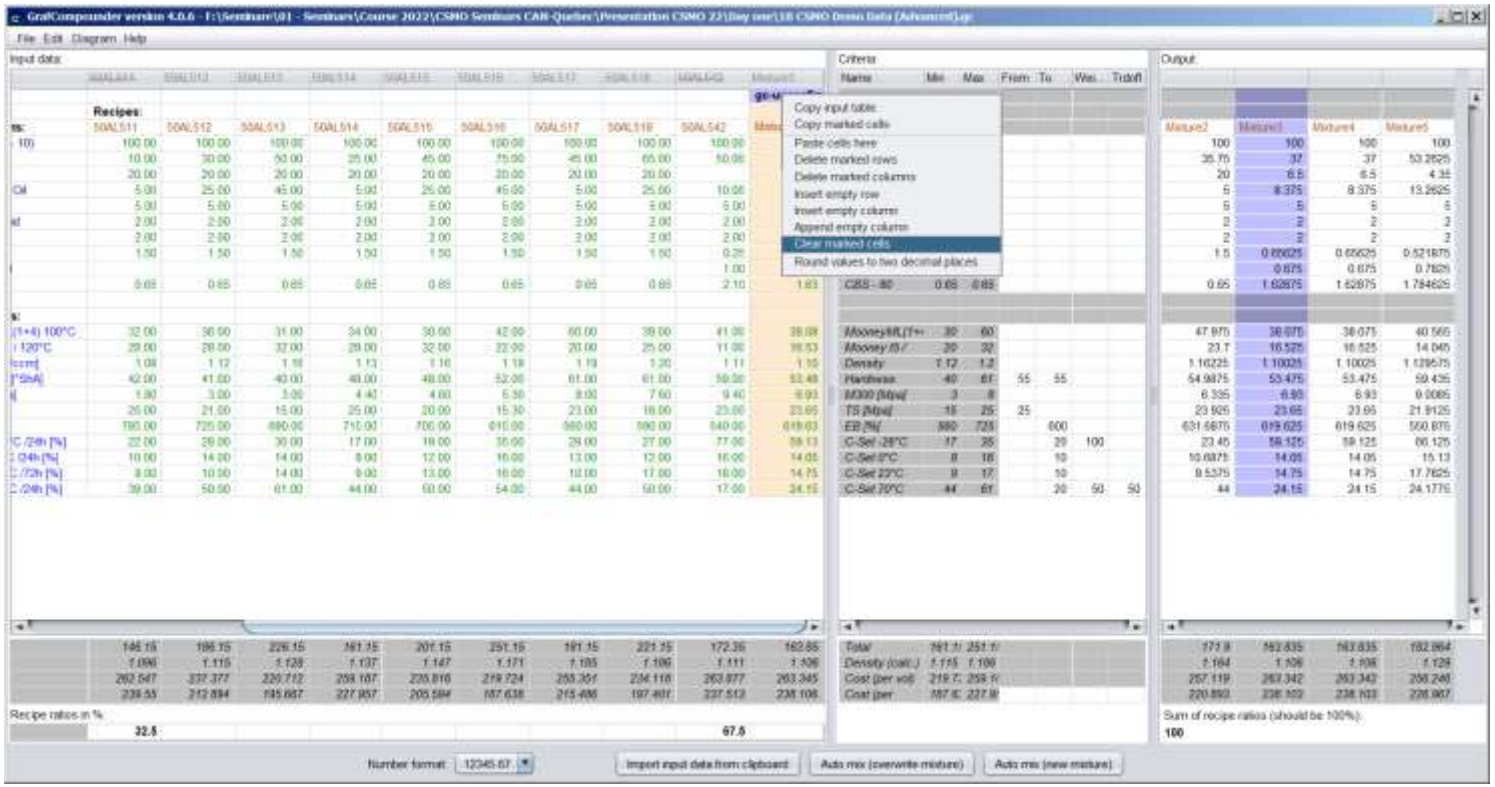
Click “Automix (new mixture)” and pull down menu select “Append mixture column to input recipes”



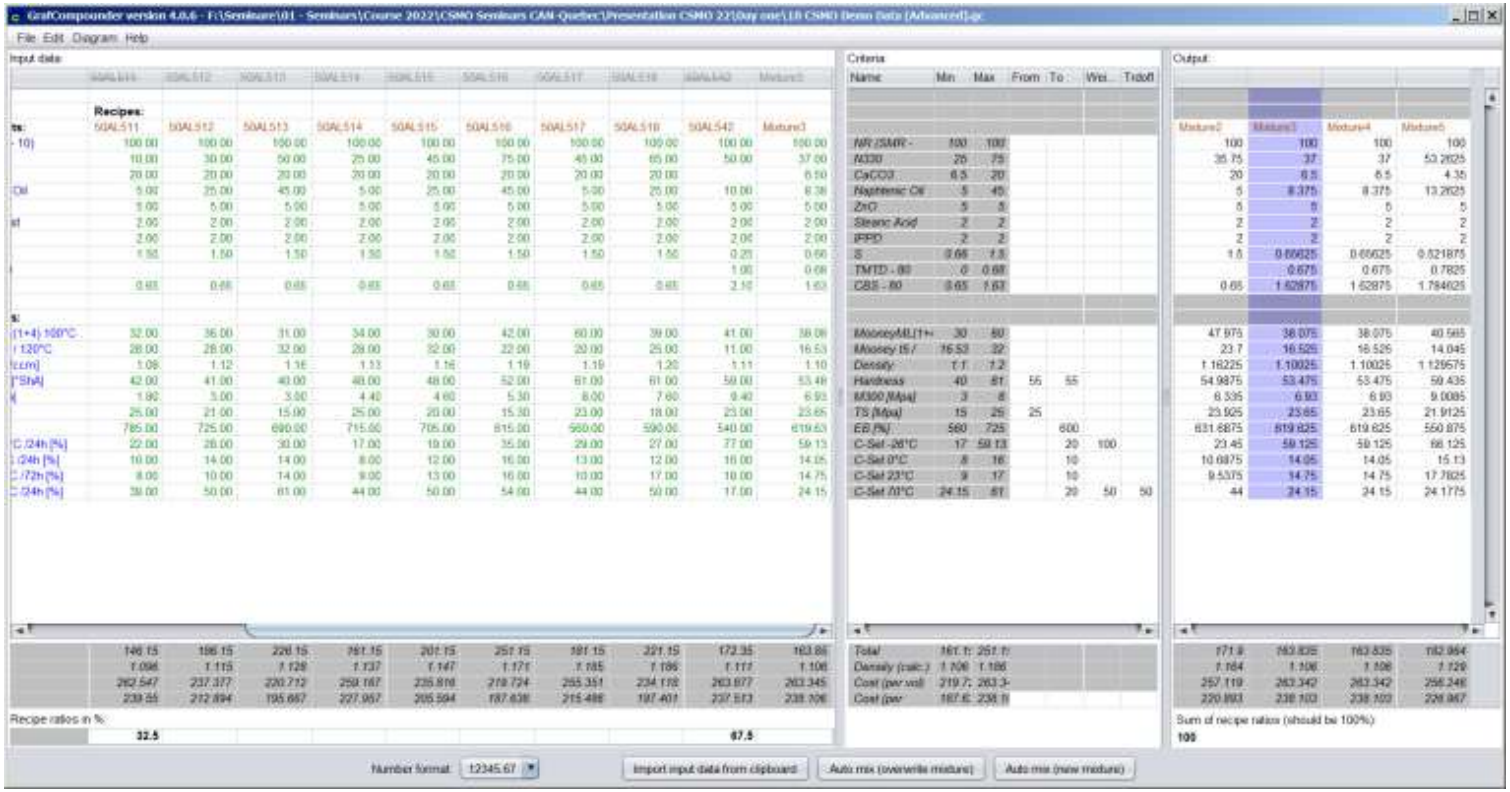
Data Column “gc-unconfirmed” and background color different



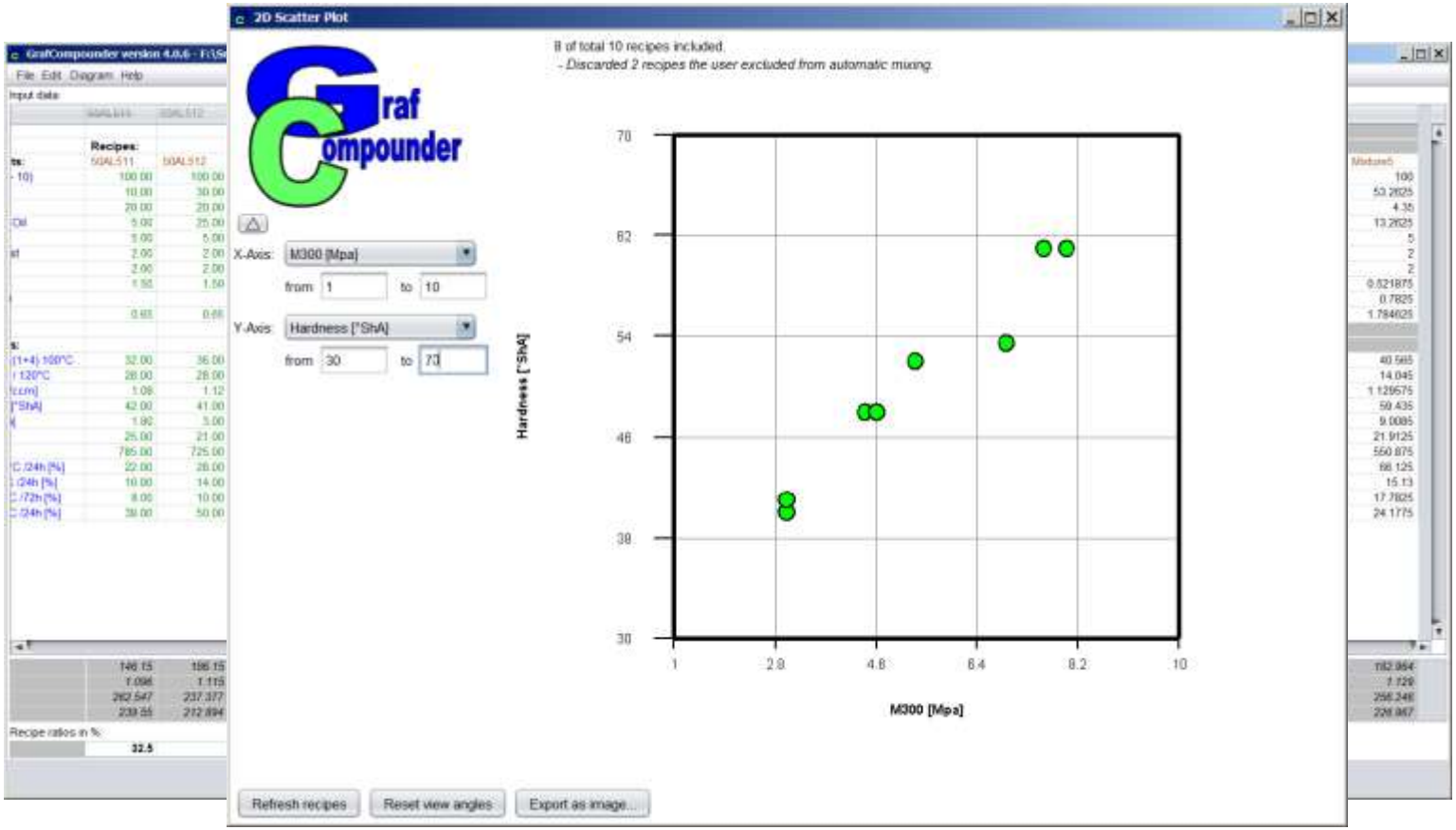
Data Column “gc-unconfirmed” click “round values to two decimal places”

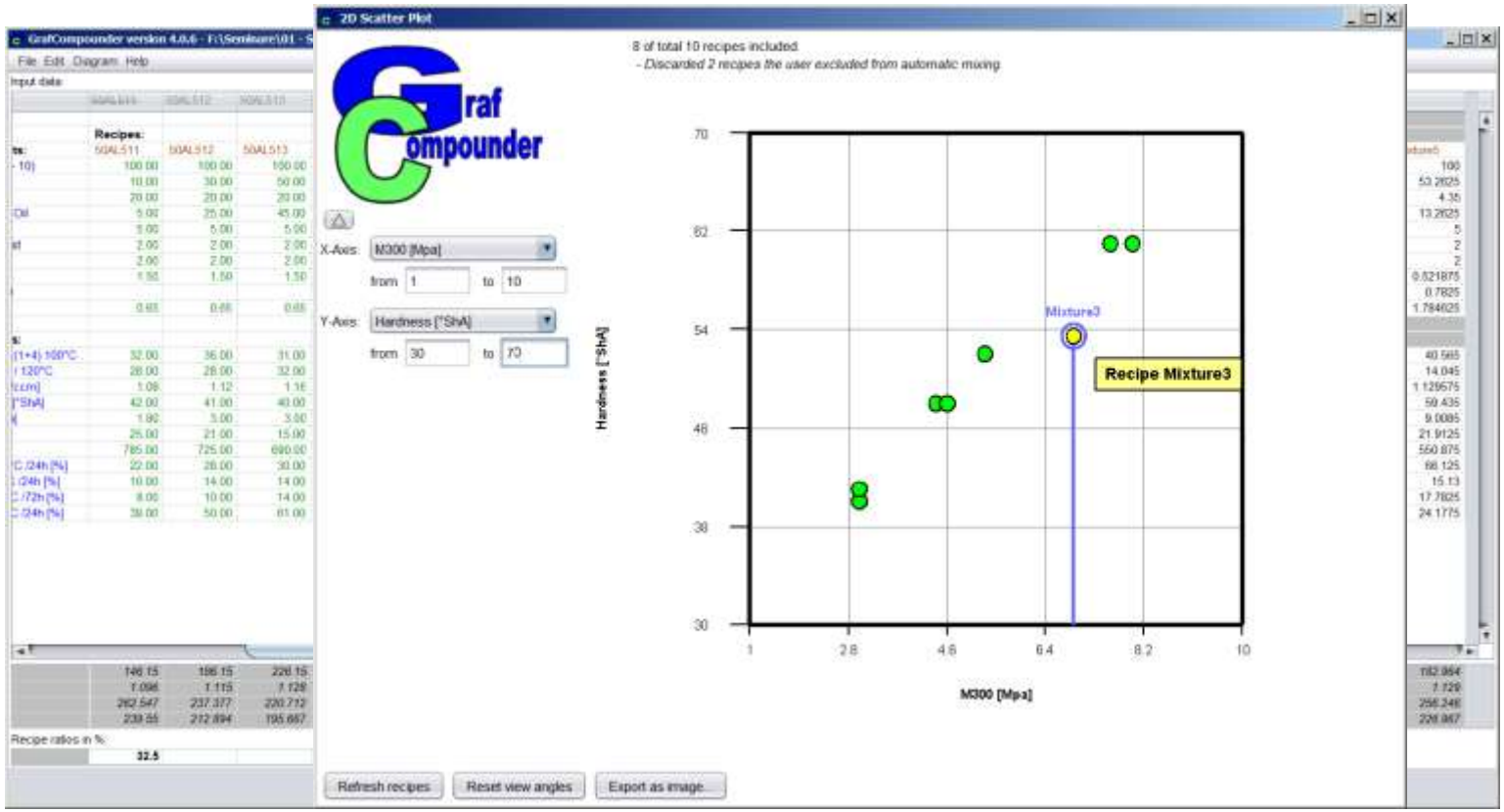


Data Column “gc-unconfirmed” put in confirmed data and clear cell “gc-unconfirmed”

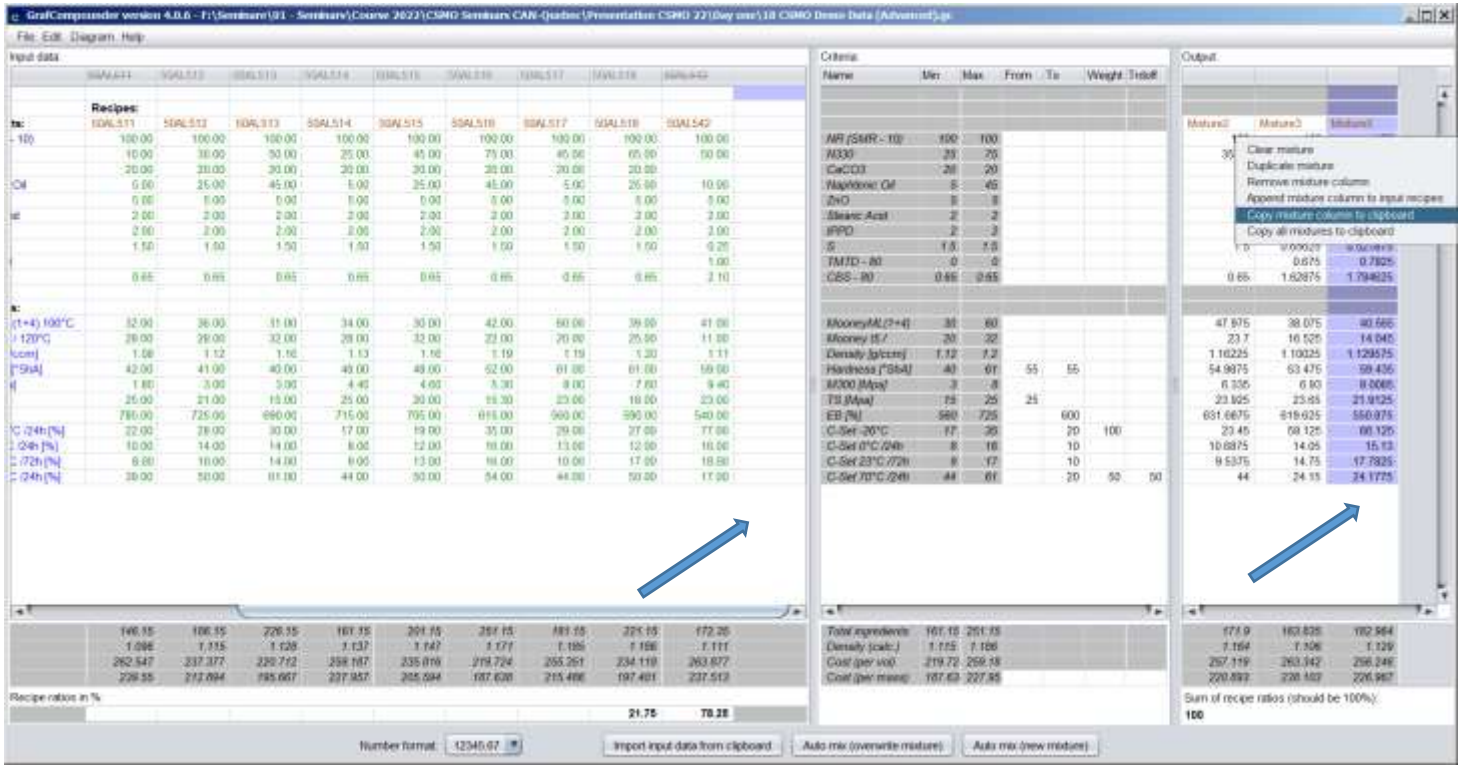


Make new “Auto mix (new mixture)”

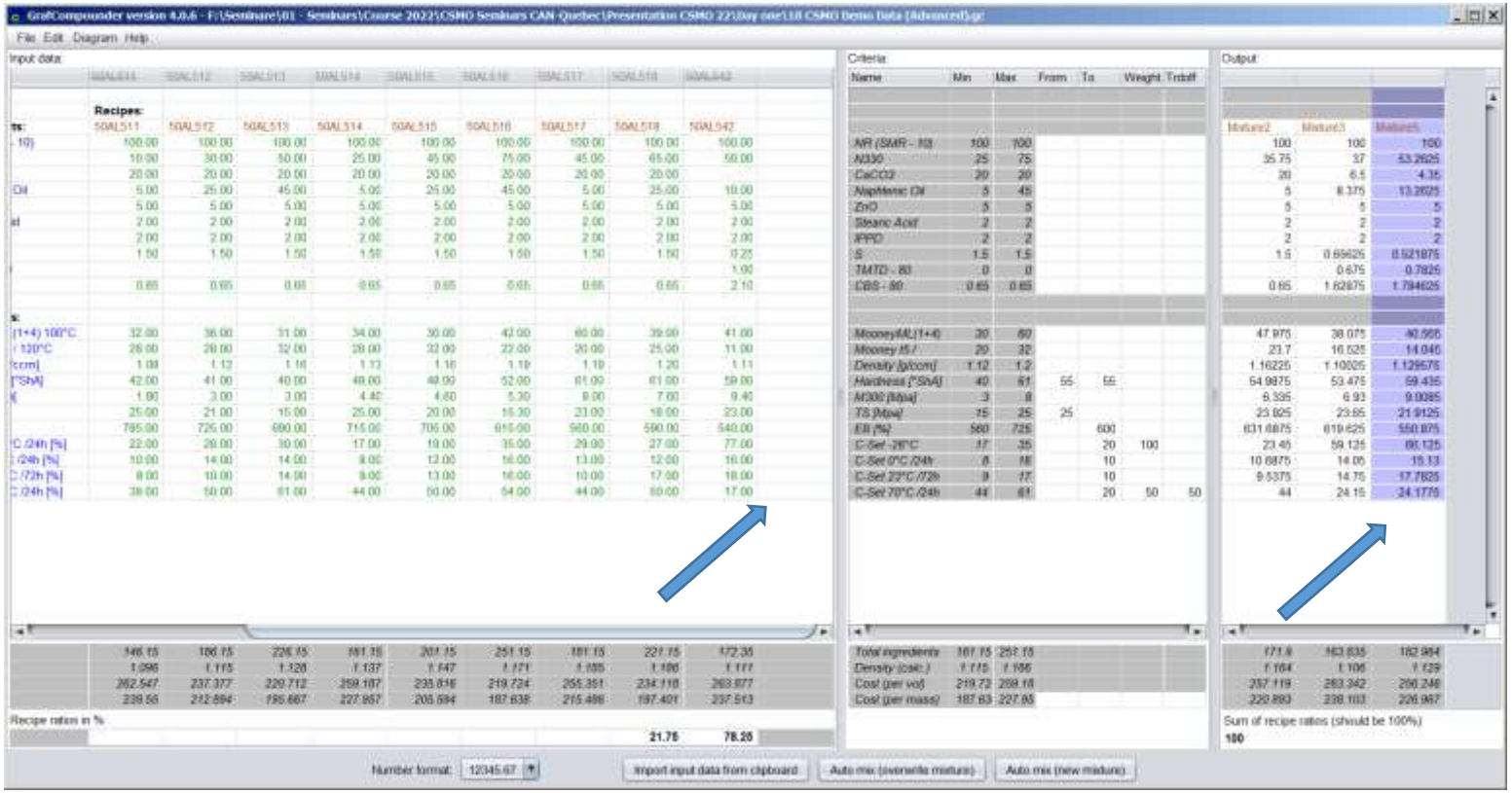

2D Scatter Plot
8 of total 10 recipes included.
- Discarded 2 recipes the user excluded from automatic mixing.
X-Axis:
M300 [Mpa]
from 1
to 10
Y-Axis:
Hardness [°ShA]
from 30
to 70
Hardness [°ShA]
M300 [Mpa]
70
62
54
46
38
30
1
2.8
4.6
6.4
8.2
10
Refresh recipes
Reset view angles
Export as image...



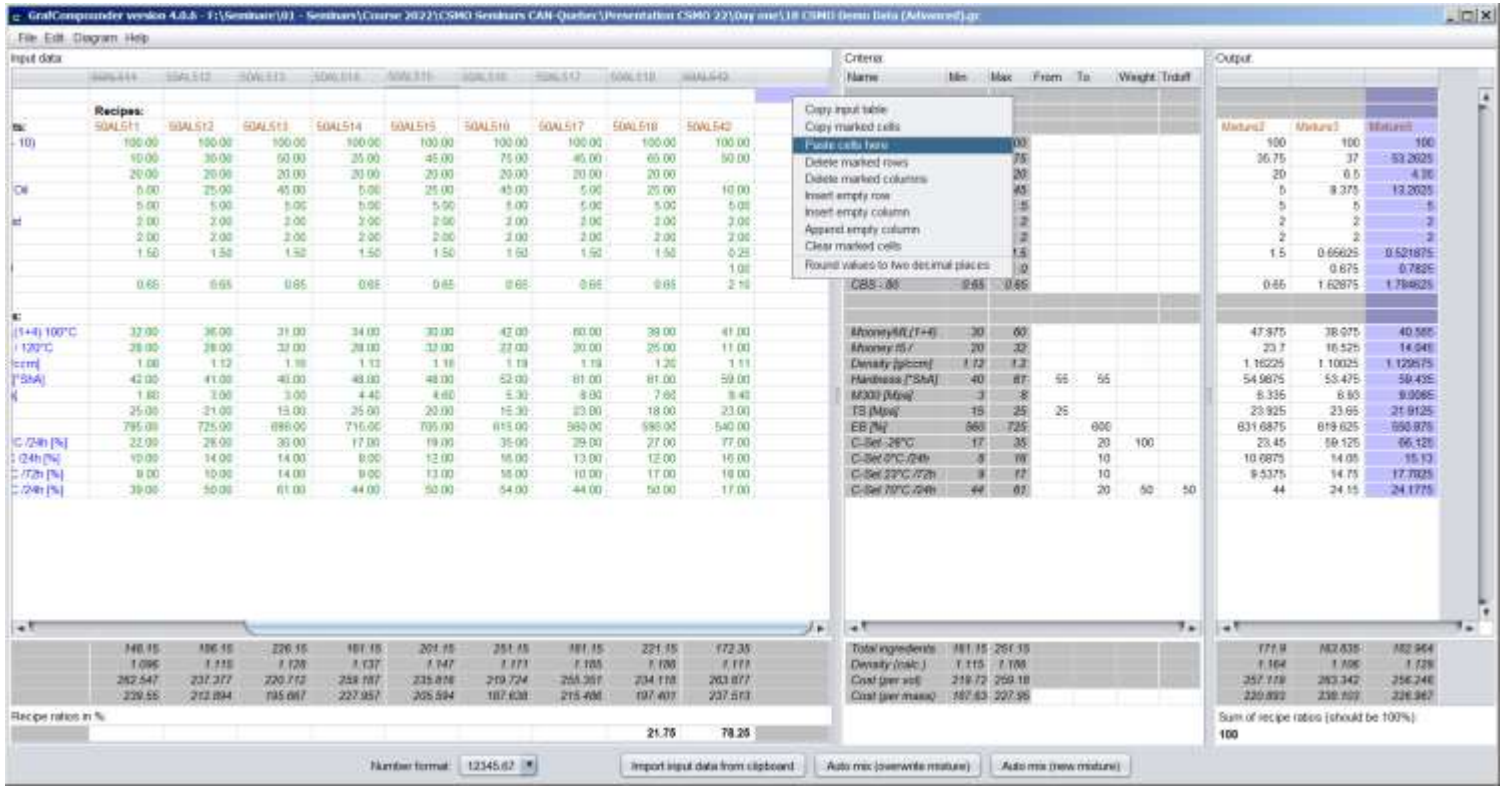
2D Scatter Plot; Refresh recipes and identify position of “Mixture 3”



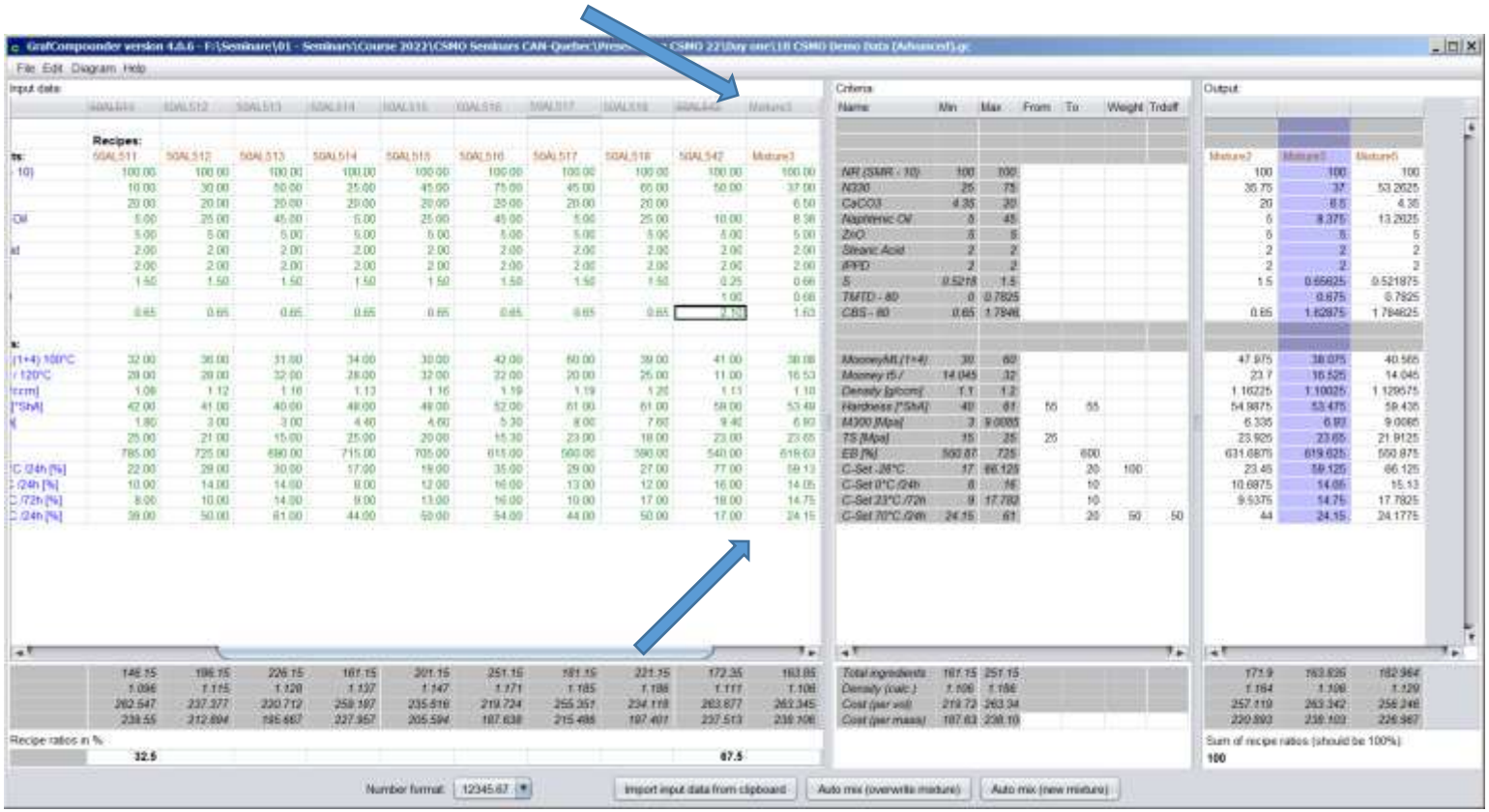
Alternative “append empty column” and “copy mixture column to clipboard”



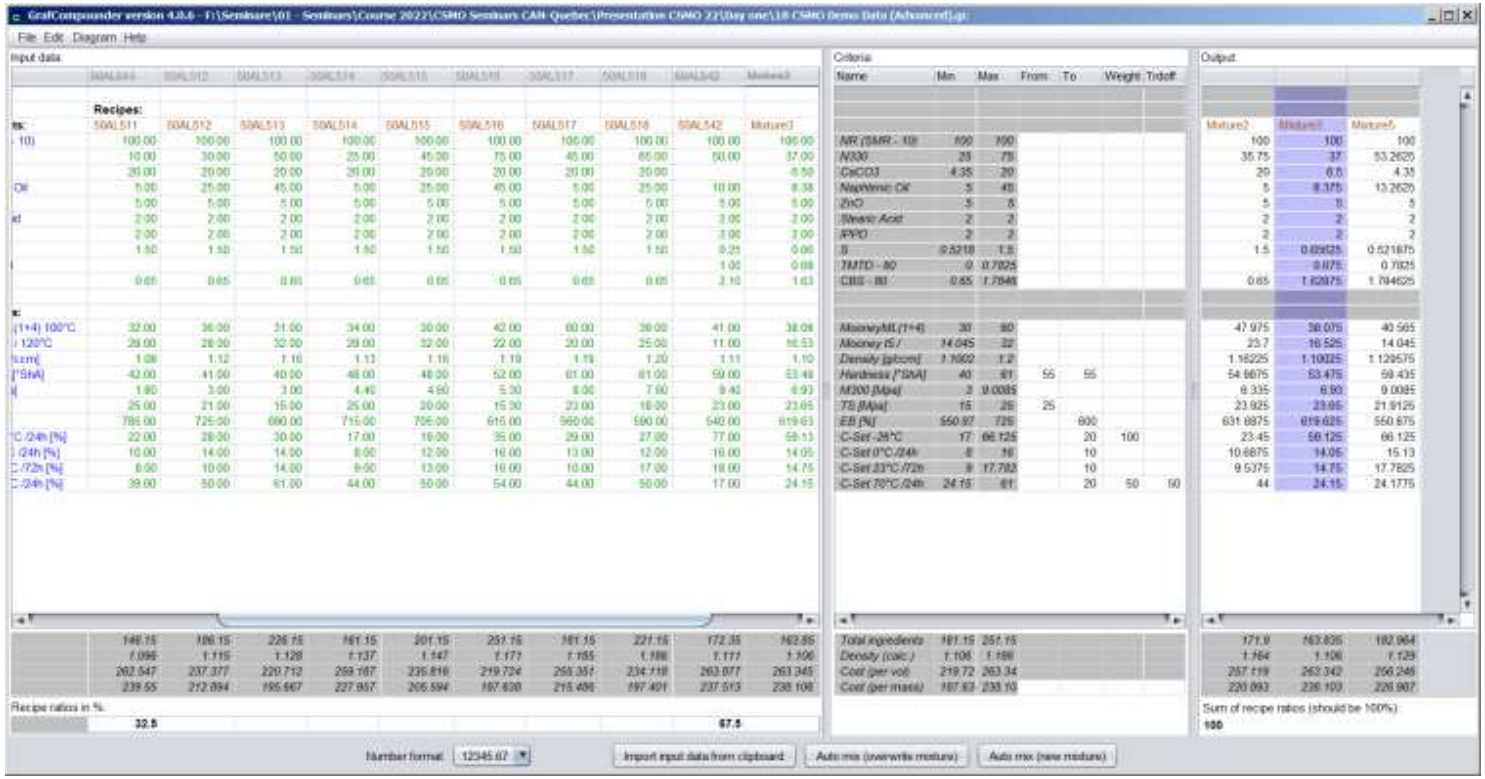
Click top cell in empty column,



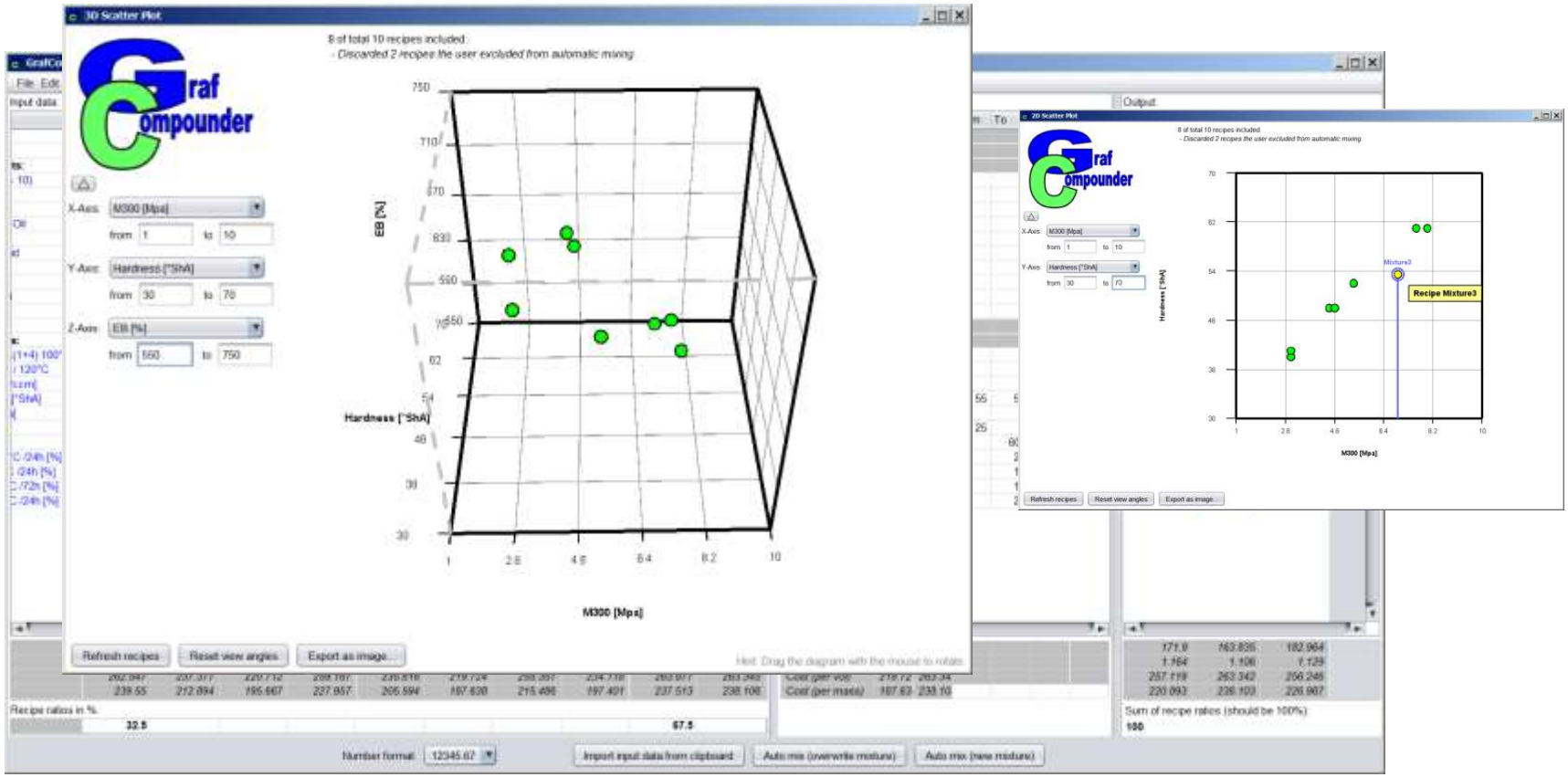
Right click, “Paste cells here”



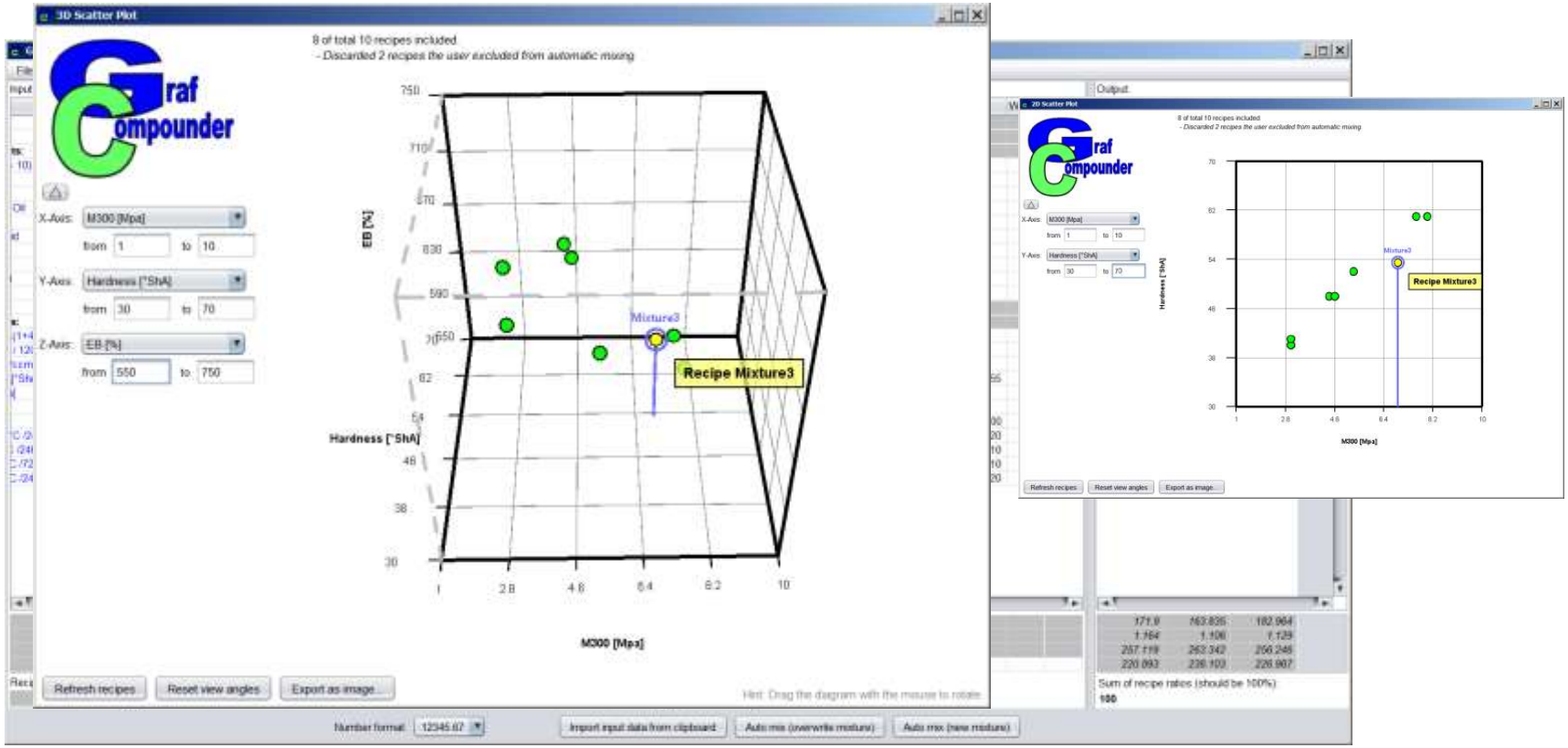
Proceed as shown before



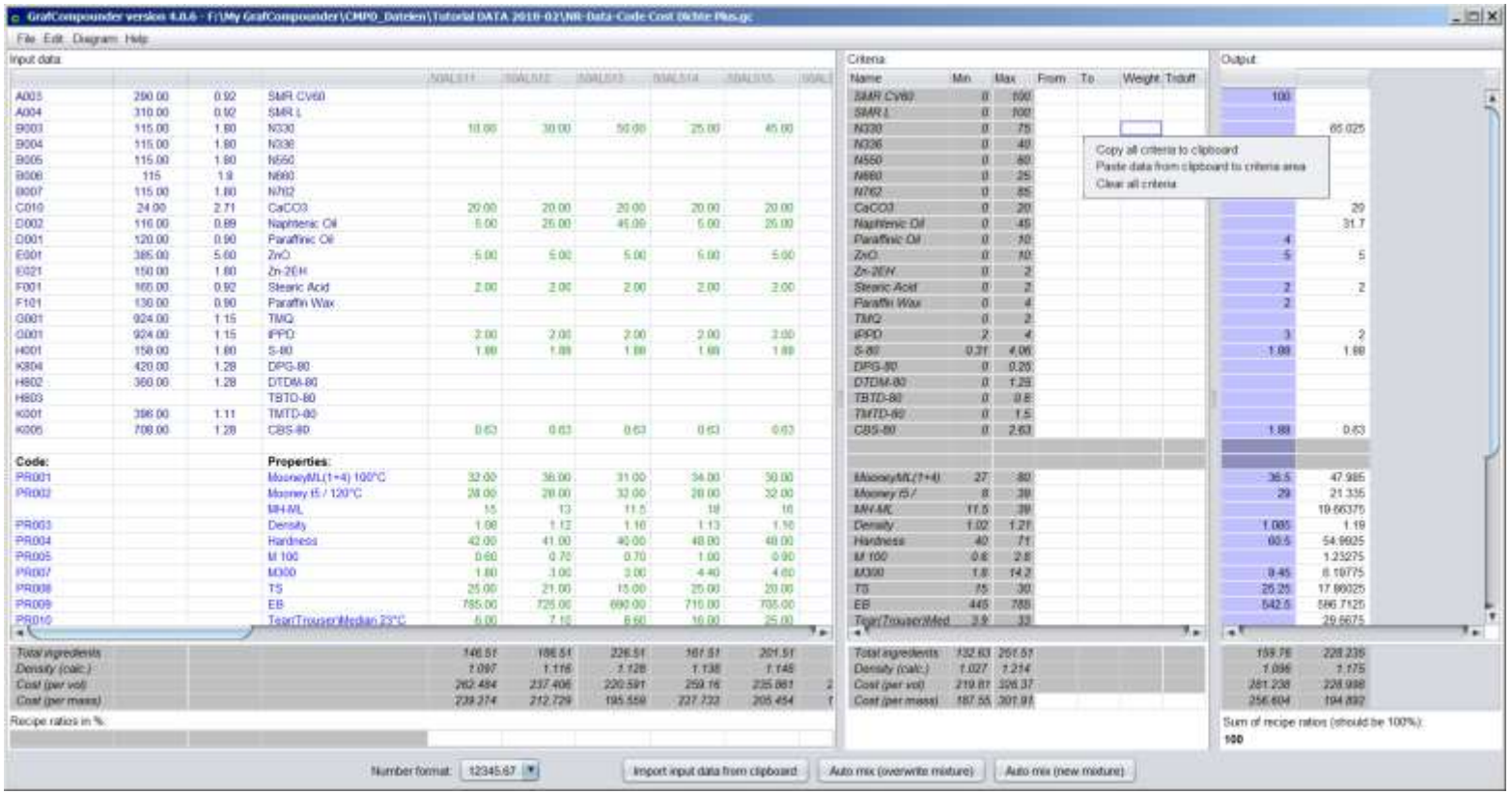
Round values to two decimal places



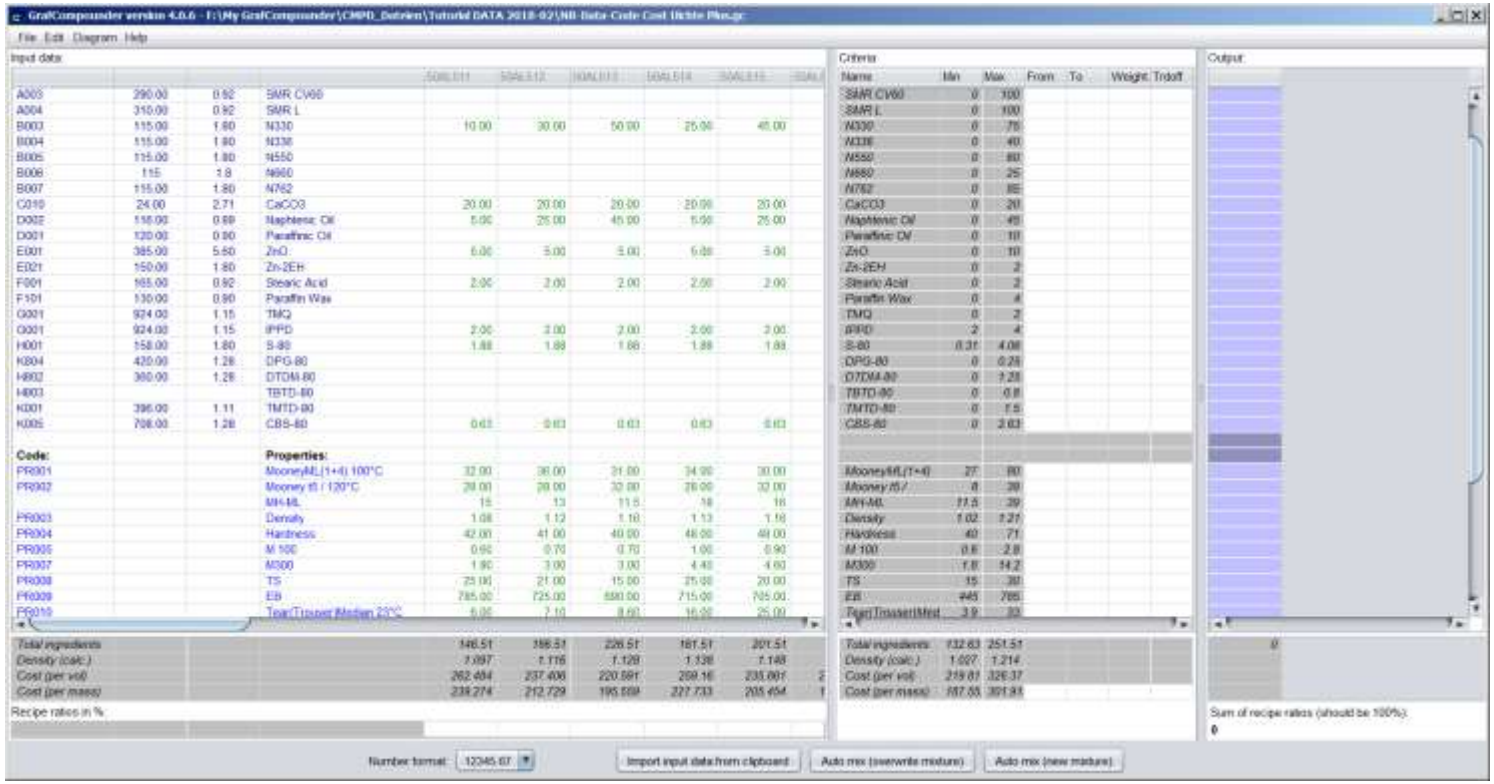
Select 3D Diagram, add z-axis, eventually reformat axis



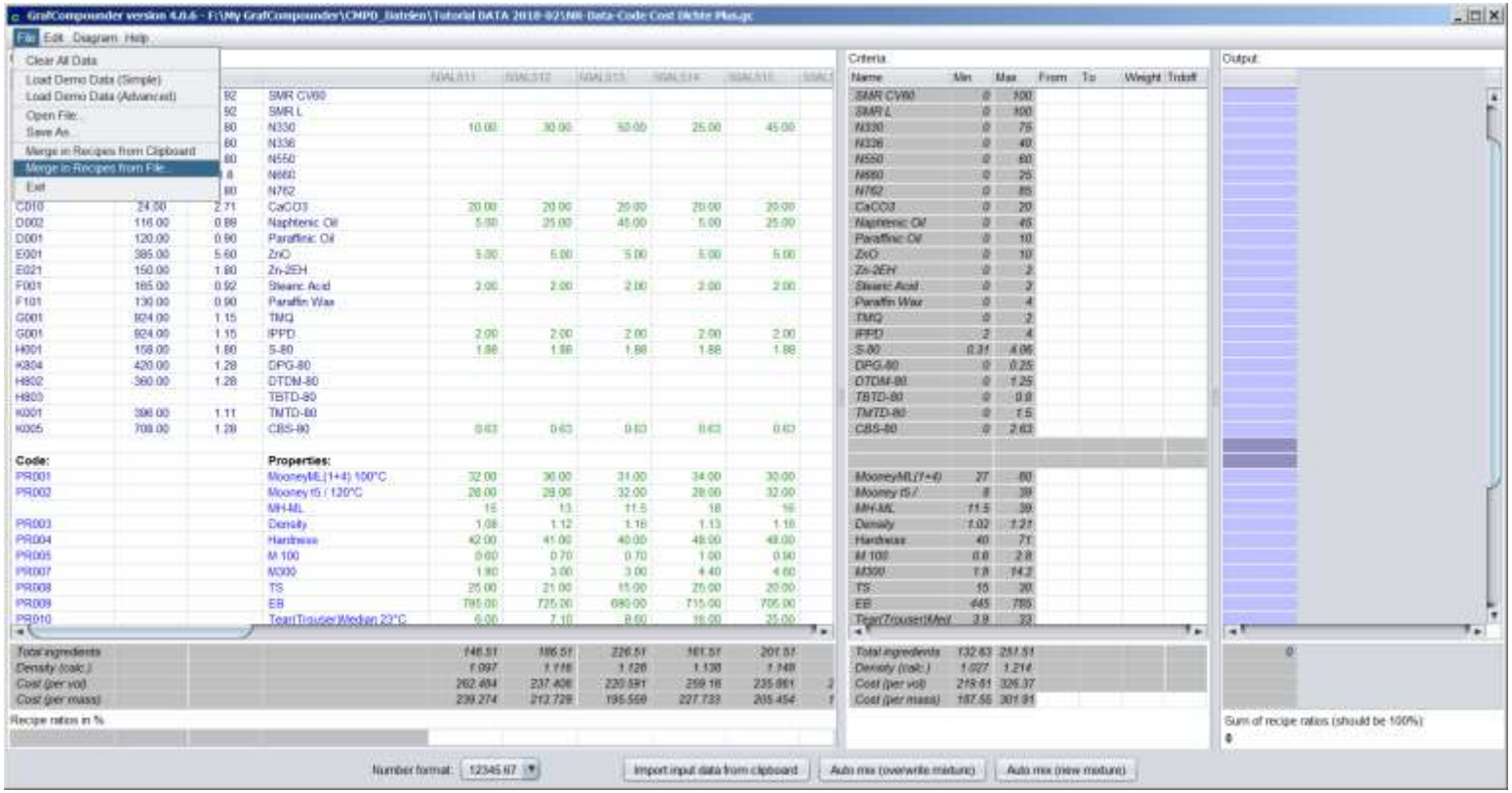
Identify calculated Mixture 3 in 3D Diagram



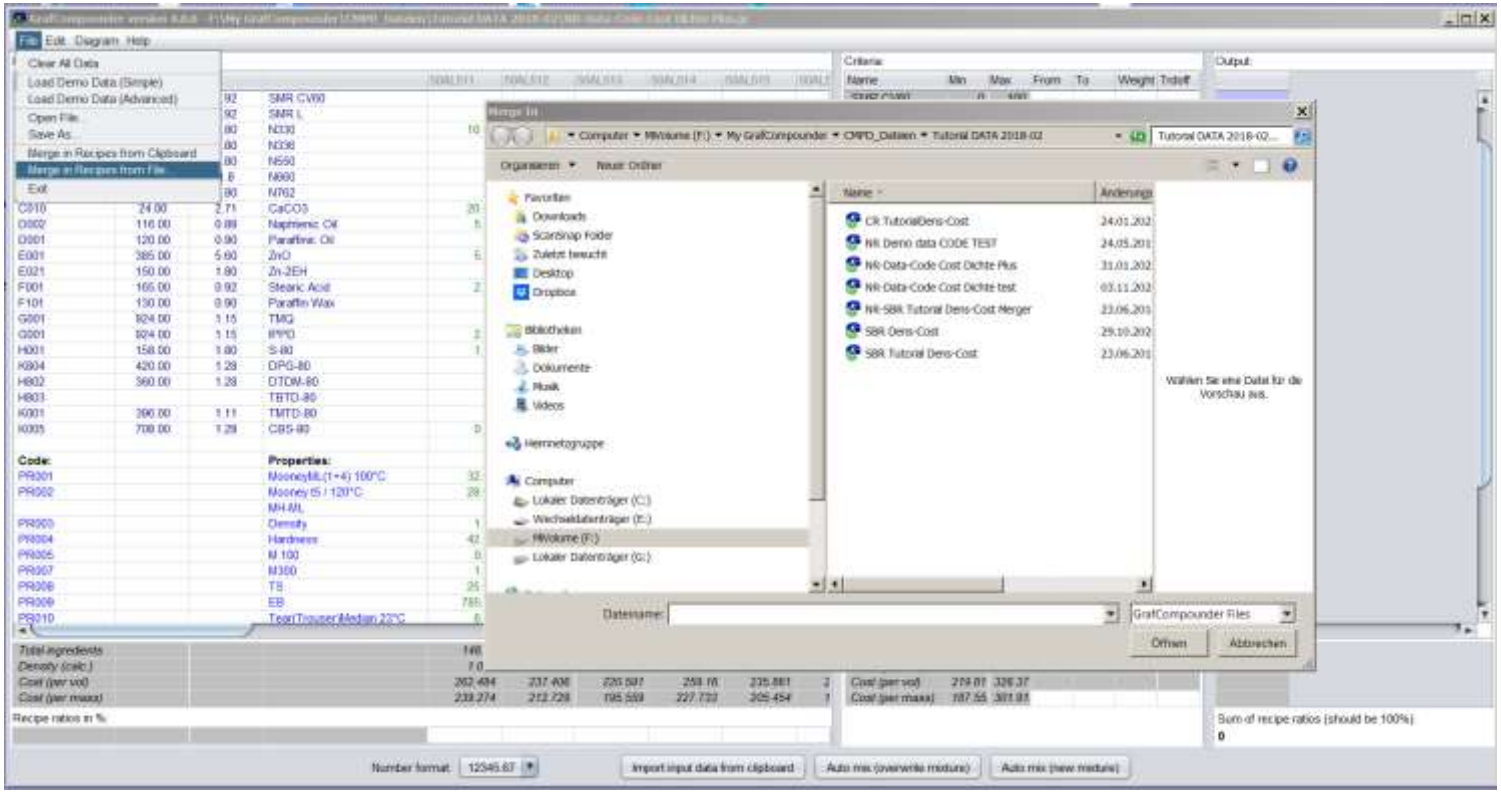
Clear criteria window



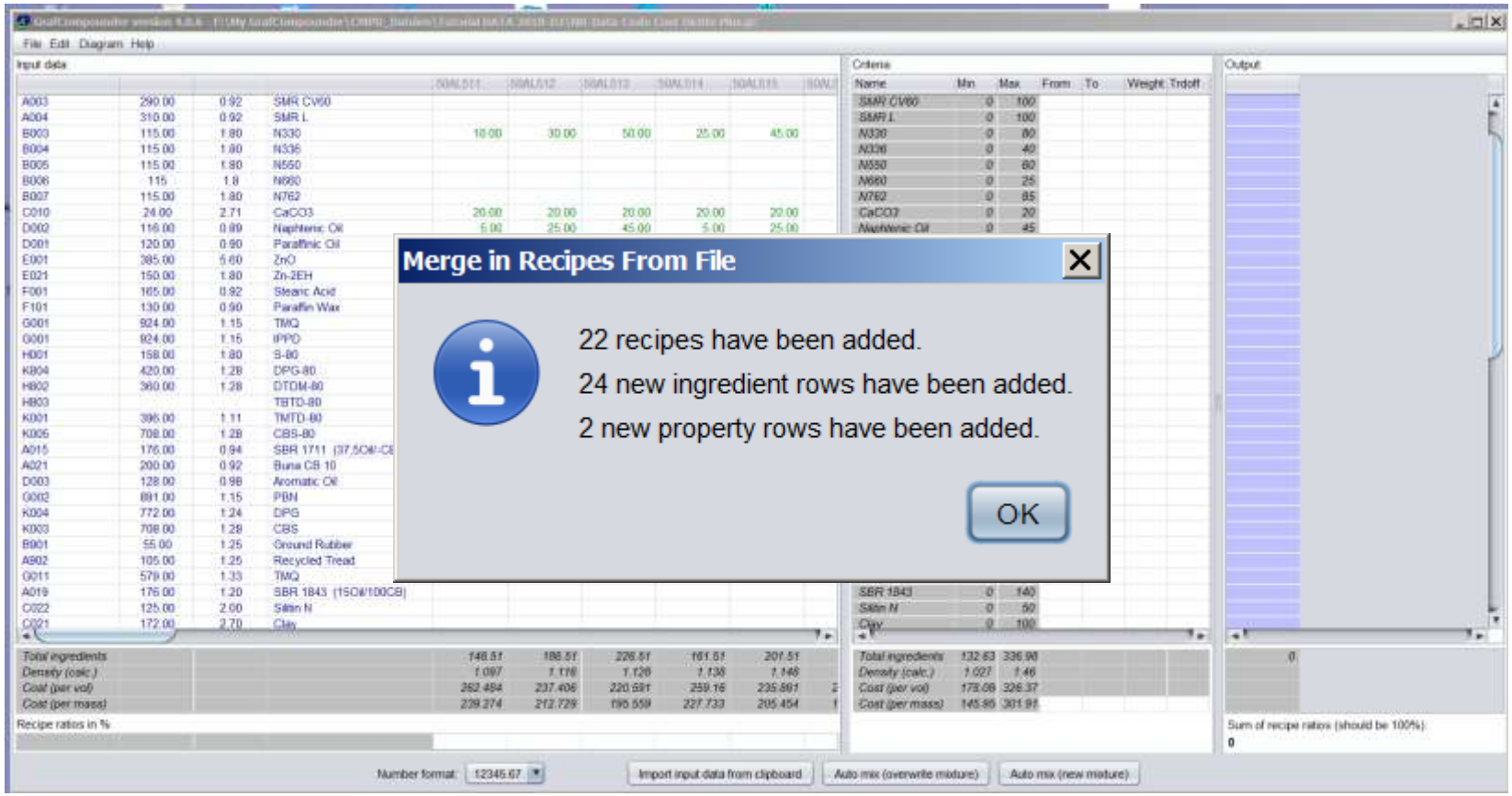
Clear output window

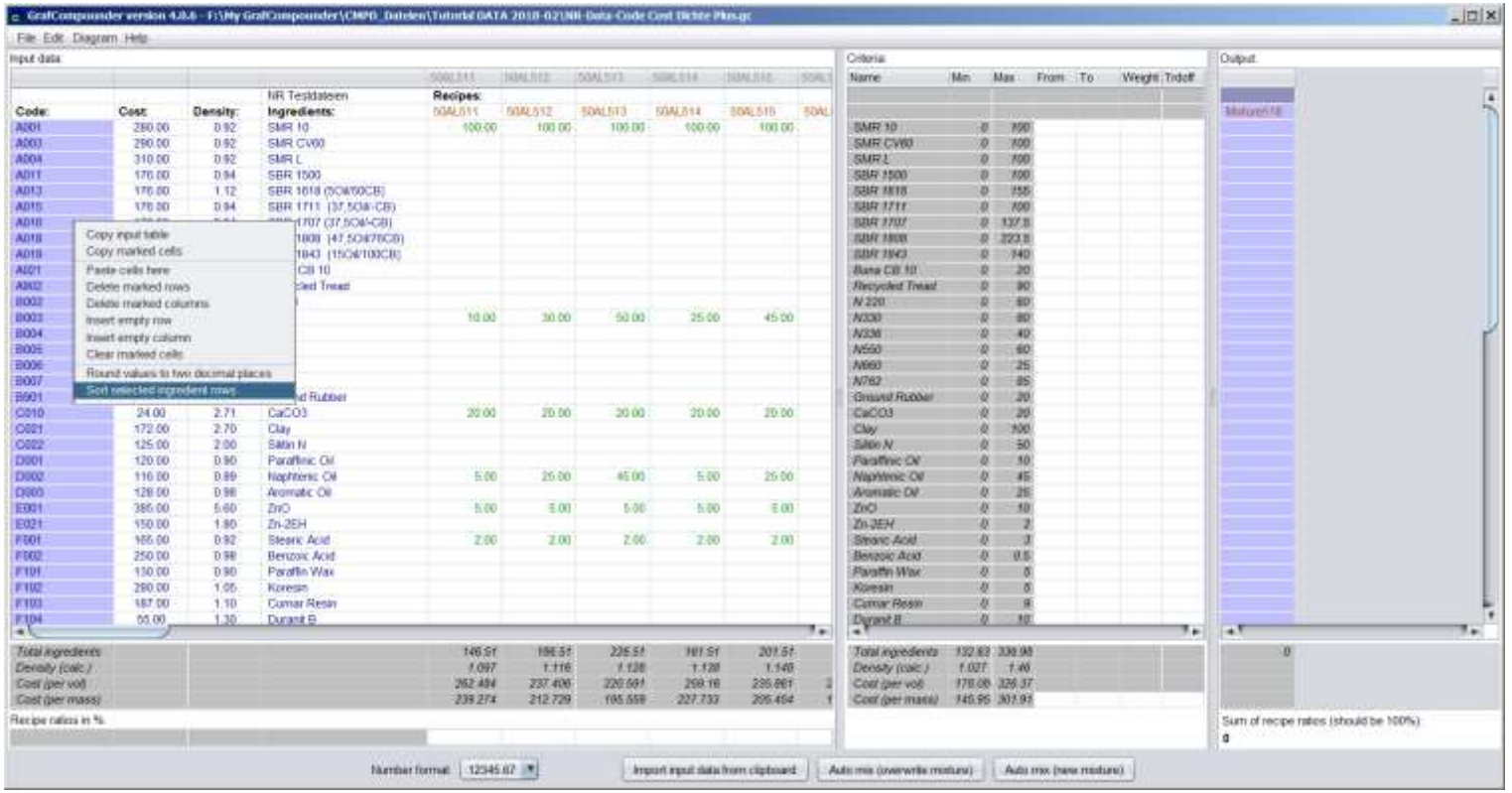


Pull down menu, select “Merge Recipes from file”

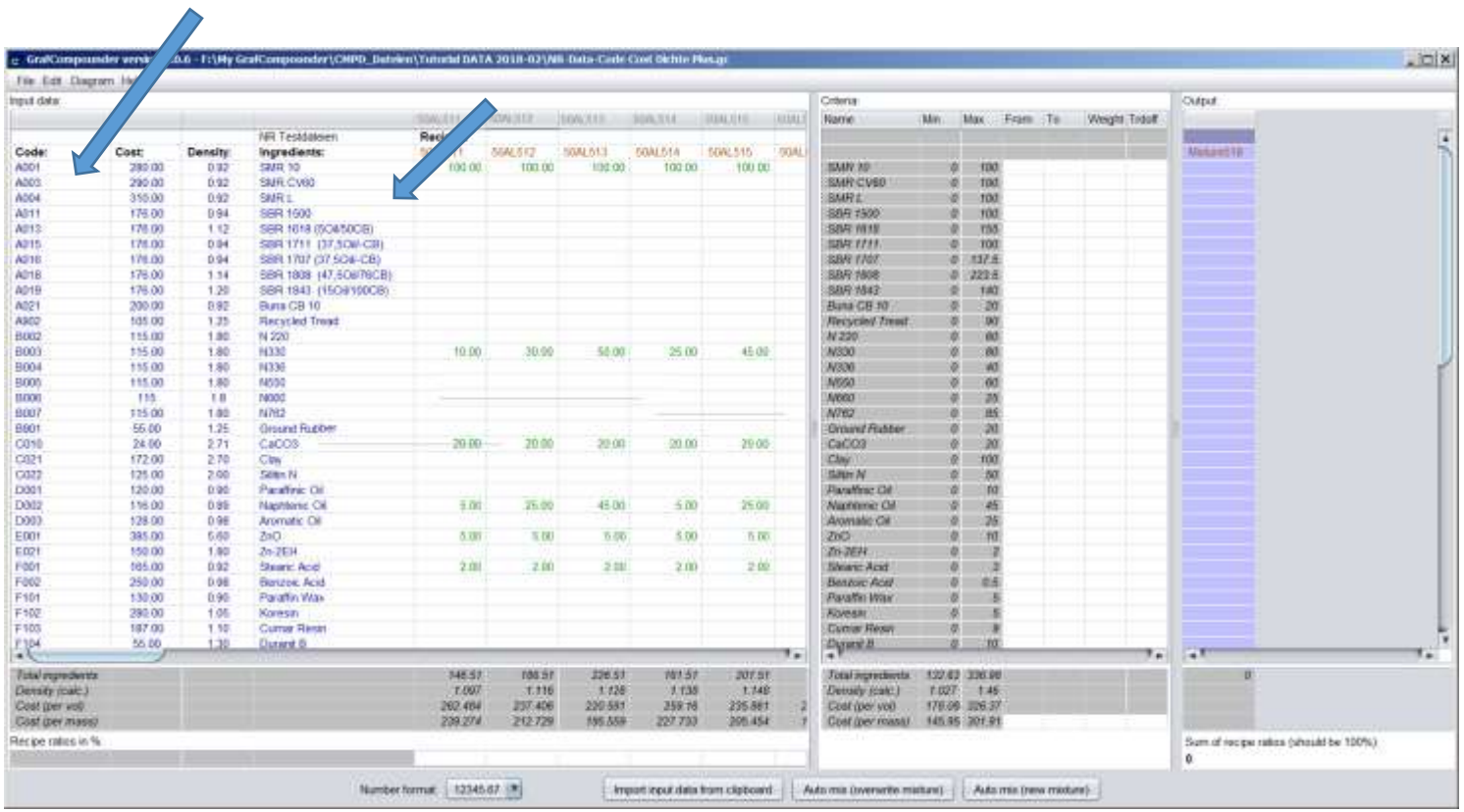


Select file for merger


Merge in Recipes From File
22 recipes have been added.
24 new ingredient rows have been added.
2 new property rows have been added.
OK



Highlight “Code Column” Select “Sort selected ingredient rows”



Evaluate Result

➢ Concluding Remarks

- ➢ NR Compound Database from Literature
  (*The Natural Rubber Formulary and Property Index*)
- ➢ SBR compounds from different sources
  - ➢ All compounds based on none polar polymers: NR or NR in blend
  - ➢ Compounds with a variety of Fillers at different Loadings
  - ➢ Different Accelerator Systems
- ➢ Database consists of 33 NR / 22 SBR compound datasets with Formula and Property Data

- Release of the „GrafCompounder“ Version 4.0 released June 2021
  - Upgrades from earlier versions available

Thank you for joining this presentation.

Questions, Remarks, Discussion ?

More information under: www.grafcompounder.com