



Tutorial

G^{raf}Compounder 5.0

Part III

Data Import
Merger from Clipboard
Merger from Table Calculation File
[Excel®, Libre Office®, others]

07. November 2023

H-JG Consulting
Dr. Hans-Joachim Graf
www.hans-joachim-graf.com
www.grafcompounder.com

Graf Compounder Tutorial Part III

Content:

Graf Compounder 5.0

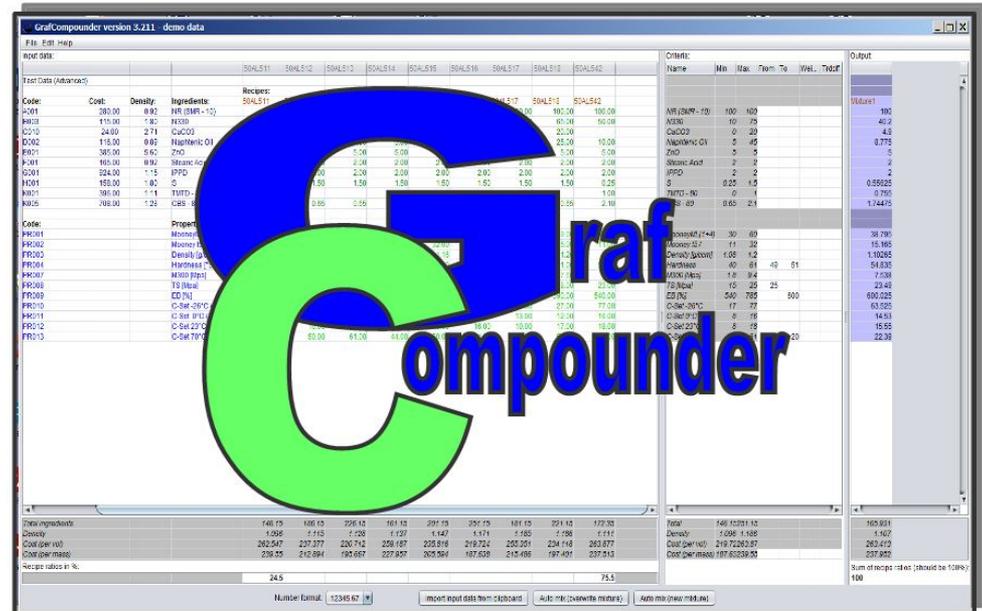
Step by Step with Screen Shots

Part III

• Merger

- Before you start
Organisation of data for merger
- Data from table calculation program
- Data from .gc files

Conclusion



Code	Cost	Density	Ingredients	Recipes
IC01	280.00	0.82	NR (SMV+12)	50AL511
IC02	110.00	1.80	NR09	50AL512
IC10	2440	2.71	CaCO3	50AL513
IC02	115.00	0.60	Naphthalen O1	50AL514
IC01	385.00	0.62	ZnO	50AL515
IC01	160.00	0.80	Wasserstoff	50AL516
IC01	524.00	1.15	PPD	50AL517
IC01	160.00	1.80	S	50AL518
IC01	385.00	1.11	TiO2	50AL519
IC05	788.00	1.23	CBS 188	50AL520

Code	Property	Value
PR001	Molgewicht	30
PR002	Molgewicht	11
PR003	Densität	1.08
PR004	Hardness	40
PR005	Wasserstoff	1.8
PR006	Ti-Alkal	15
PR007	CO2-Nr	240
PR008	C-Sat-SPEC	17
PR009	C-Sat-PR1	8
PR010	C-Sat-PR2	8
PR011	C-Sat-PR3	20
PR012	C-Sat-PR4	8
PR013	C-Sat-PR5	20

Item	Value	Total
Dichte	1.08	1.08
Dichte (vol)	202.347	202.347
Cost (per mass)	236.75	236.75
Recipe ratios in %	24.5	75.5

-
- **Preparation of Data for Merger**
 - **Import of Data from Table Calculation Program**
 - **Preparation of Data Table**
 - Adaption to GrafCompounder Data Format
 - **Introduction of Code: Raw Materials**
 - **Introduction of Code: Properties**
 - **Ambiguous coding, selected for demonstration purpose, requires the import of a file without coding, while the target file can be provided with a code.**
 - **The advantage is that the coding of the imported file can be carried out quickly and easily afterwards**
 - **Copy / Paste with Clipboard**

Graf Compounder Tutorial Part III

Tutorial G5.0 NR-DATA Plus GToolsLods - LibreOffice Calc

Libération Sans 10 pt

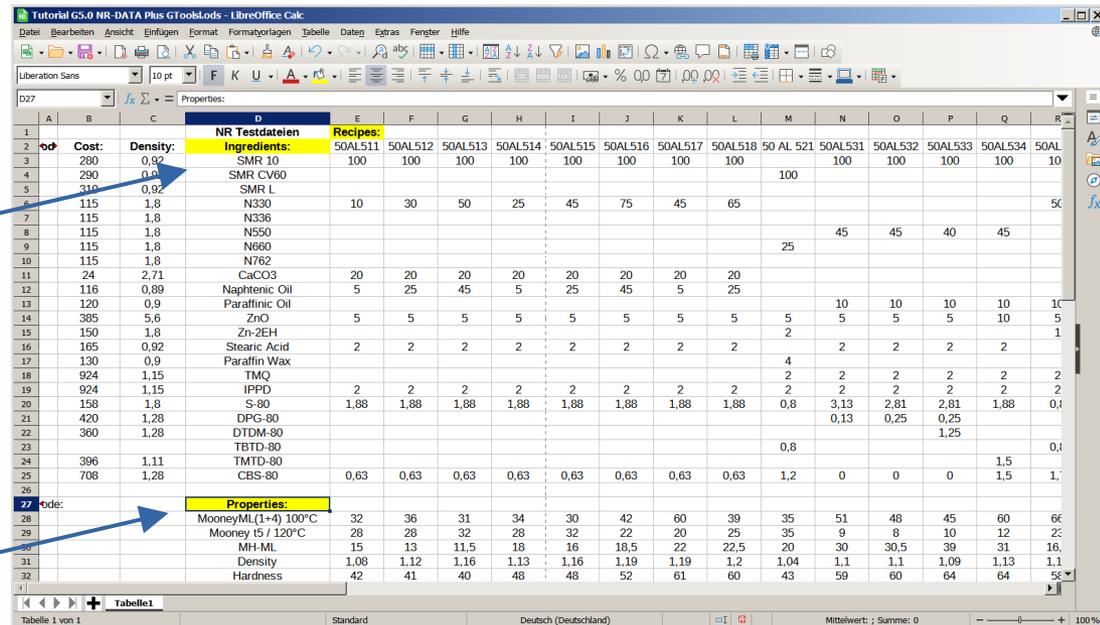
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1				NR Testdateien	Recipes:													
2	Cost:	Density:	Ingredients:	50AL511	50AL512	50AL513	50AL514	50AL515	50AL516	50AL517	50AL518	50 AL 521	50AL531	50AL532	50AL533	50AL534	50AL	
3	280	0,92	SMR 10	100	100	100	100	100	100	100	100							
4	290	0,92	SMR CV60									100						
5	310	0,92	SMR L															
6	115	1,8	N330	10	30	50	25	45	75	45	65							50
7	115	1,8	N336															
8	115	1,8	N550										25	45	45	40	45	
9	115	1,8	N660															
10	115	1,8	N762															
11	24	2,71	CaCO3	20	20	20	20	20	20	20	20							
12	116	0,89	Naphthenic Oil	5	25	45	5	25	45	5	25							
13	120	0,9	Paraffinic Oil											10	10	10	10	10
14	385	5,6	ZnO	5	5	5	5	5	5	5	5	5	5	5	5	5	10	5
15	150	1,8	Zn-2EH									2						
16	165	0,92	Stearic Acid	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
17	130	0,9	Paraffin Wax										4					
18	924	1,15	TMQ									2	2	2	2	2	2	2
19	924	1,15	IPPD	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
20	158	1,8	S-80	1,88	1,88	1,88	1,88	1,88	1,88	1,88	1,88	0,8	3,13	2,81	2,81	1,88	0,1	
21	420	1,28	DPG-80										0,13	0,25	0,25			
22	360	1,28	DTDM-80												1,25			
23			TBTD-80									0,8						0,1
24	396	1,11	TMTD-80														1,5	
25	708	1,28	CBS-80	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	1,2	0	0	0	1,5	1,1	
26																		
27	Code:		Properties:															
28			MooneyML(1+4) 100°C	32	36	31	34	30	42	60	39	35	51	48	45	60	60	60
29			Mooney t5 / 120°C	28	28	32	28	32	22	20	25	35	9	8	10	12	20	20
30			MH-ML	15	13	11,5	18	16	18,5	22	22,5	20	30	30,5	39	31	16,	16,
31			Density	1,08	1,12	1,16	1,13	1,16	1,19	1,19	1,2	1,04	1,1	1,1	1,09	1,13	1,1	1,1
32			Hardness	42	41	40	48	48	52	61	60	43	59	60	64	64	64	58

Tabelle 1 von 1 | Standard | Deutsch (Deutschland) | Mittelwert: ; Summe: 0 | 100%

Open file in data calculation Program

- Note: Density and arbitrary cost values put in.

Graf Compounder Tutorial Part III

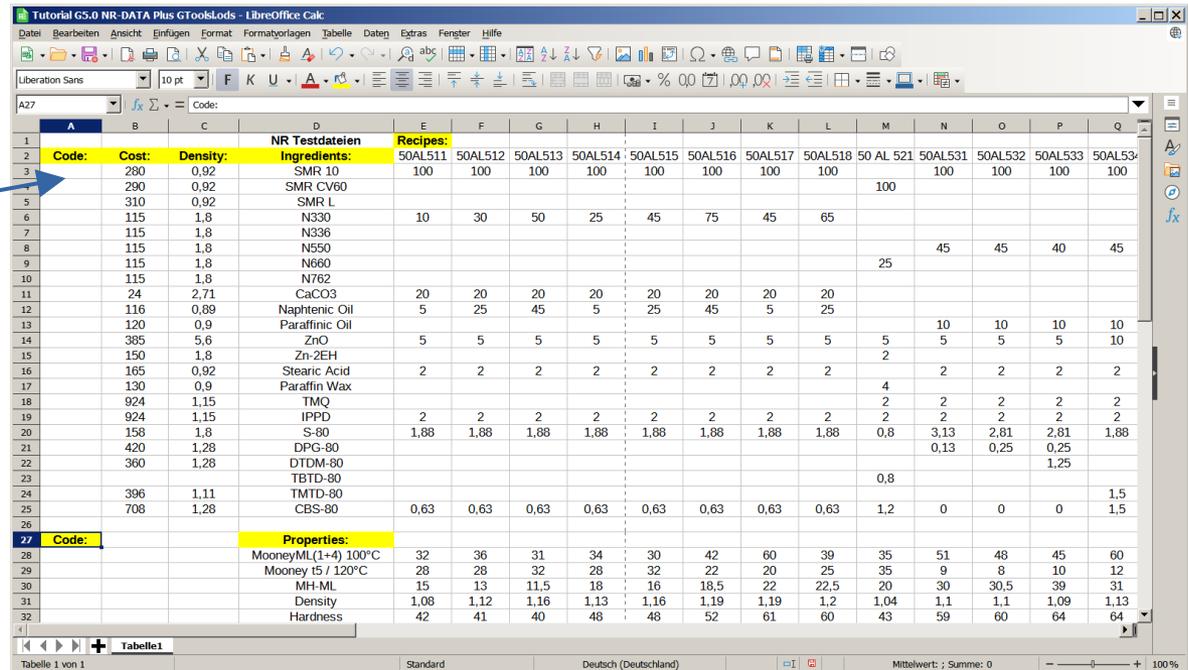


	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1				NR Testdateien	Recipes:													
2		Cost:	Density:	Ingredients:	50AL511	50AL512	50AL513	50AL514	50AL515	50AL516	50AL517	50AL518	50 AL 521	50AL531	50AL532	50AL533	50AL534	50AL
3		280	0,92	SMR 10	100	100	100	100	100	100	100	100	100	100	100	100	100	100
4		290	0,9	SMR CV60									100					
5		310	0,92	SMR L														
6		115	1,8	N330	10	30	50	25	45	75	45	65						50
7		115	1,8	N336														
8		115	1,8	N550										45	45	40	45	
9		115	1,8	N660									25					
10		115	1,8	N762														
11		24	2,71	CaCO3	20	20	20	20	20	20	20	20						
12		116	0,89	Naphtenic Oil	5	25	45	5	25	45	5	25						
13		120	0,9	Paraffinic Oil														
14		385	5,6	ZnO	5	5	5	5	5	5	5	5	5	5	5	5	10	5
15		150	1,8	Zn-2EH									2					1
16		165	0,92	Stearic Acid	2	2	2	2	2	2	2	2		2	2	2	2	1
17		130	0,9	Paraffin Wax									4					
18		924	1,15	TMQ									2	2	2	2	2	2
19		924	1,15	IPPD	2	2	2	2	2	2	2	2	2	2	2	2	2	2
20		158	1,8	S-90	1,88	1,88	1,88	1,88	1,88	1,88	1,88	1,88	0,8	3,13	2,81	2,81	1,88	0,1
21		420	1,28	DPG-80										0,13	0,25	0,25		
22		360	1,28	DTDM-80												1,25		
23				TBTD-80									0,8					0,4
24		396	1,11	TMTD-80														1,5
25		708	1,28	CBS-80	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	1,2	0	0	0	1,5	1,1
26																		
27		Code:		Properties:														
28				MooneyML(1+4) 100°C	32	36	31	34	30	42	60	39	35	51	48	45	60	66
29				Mooney t5 / 120°C	28	28	32	28	32	22	20	25	35	9	8	10	12	25
30				MH-ML	15	13	11,5	18	16	18,5	22	22,5	20	30	30,5	39	31	16
31				Density	1,08	1,12	1,16	1,13	1,16	1,19	1,19	1,2	1,04	1,1	1,1	1,09	1,13	1,1
32				Hardness	42	41	40	48	48	52	61	60	43	59	60	64	64	55

Make sure that Cell with “Recipes:” “Ingredients:”, “Properties:” in

- ◆ Position as shown
- ◆ Spelling exactly as shown
- ◆ No empty column or row between data neither joined cell.
- ✗ Empty row above „Properties:“ is allowed

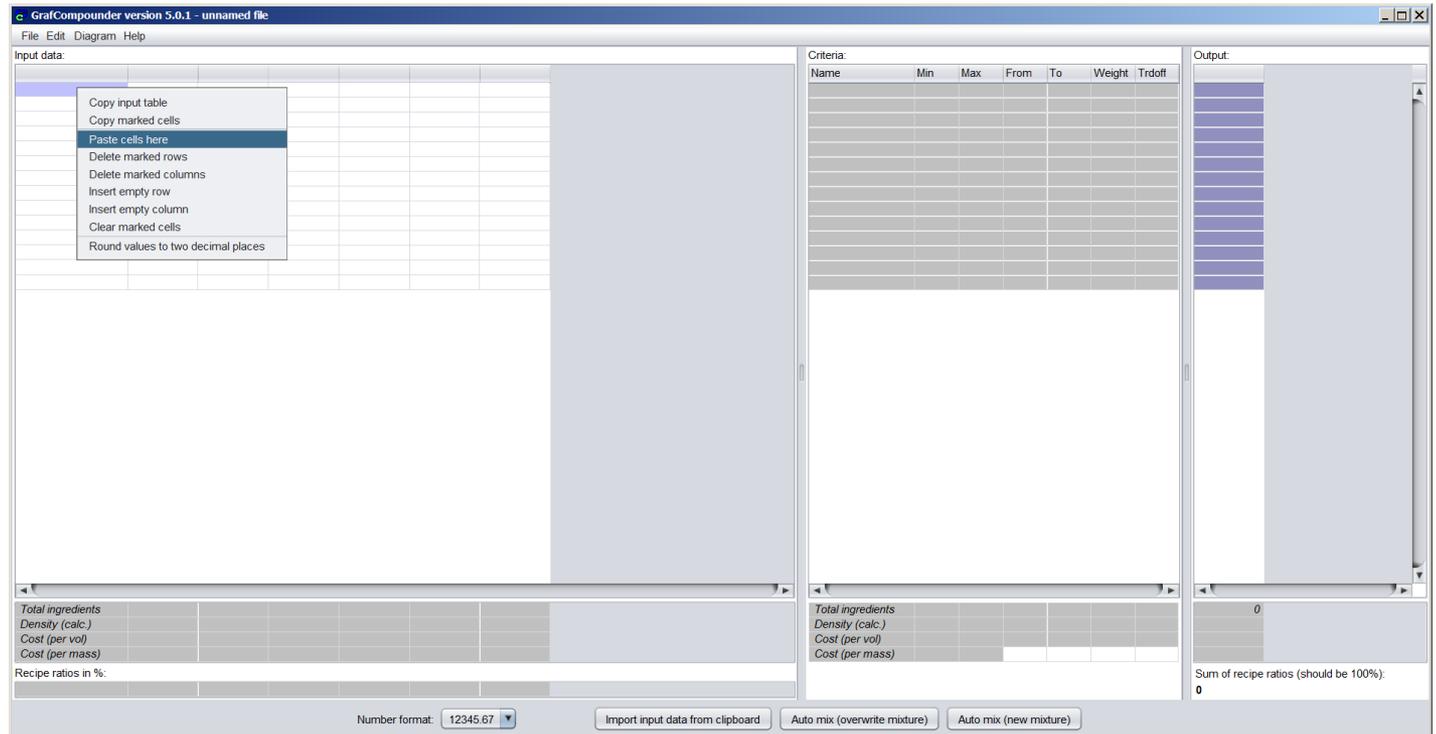
Graf Compounder Tutorial Part III



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1				NR Testdateien	Recipes:												
2	Code:	Cost:	Density:	Ingredients:	50AL511	50AL512	50AL513	50AL514	50AL515	50AL516	50AL517	50AL518	50 AL 521	50AL531	50AL532	50AL533	50AL534
3		280	0,92	SMR 10	100	100	100	100	100	100	100	100					
4		290	0,92	SMR CV60									100				
5		310	0,92	SMR L													
6		115	1,8	N330	10	30	50	25	45	75	45	65					
7		115	1,8	N336													
8		115	1,8	N550										45	45	40	45
9		115	1,8	N660									25				
10		115	1,8	N762													
11		24	2,71	CaCO3	20	20	20	20	20	20	20	20					
12		116	0,09	Naphtenic Oil	5	25	45	5	25	45	5	25					
13		120	0,9	Paraffinic Oil													
14		365	5,6	ZnO	5	5	5	5	5	5	5	5	5	5	5	5	5
15		150	1,8	Zn-2EH									2				
16		165	0,92	Stearic Acid	2	2	2	2	2	2	2	2		2	2	2	2
17		130	0,9	Paraffin Wax									4				
18		924	1,15	TMQ									2	2	2	2	2
19		924	1,15	IPPD	2	2	2	2	2	2	2	2	2	2	2	2	2
20		158	1,8	S-80	1,88	1,88	1,88	1,88	1,88	1,88	1,88	1,88	0,8	3,13	2,81	2,81	1,88
21		420	1,28	DPG-80										0,13	0,25	0,25	
22		360	1,28	DTDM-80												1,25	
23				TBTD-80									0,8				
24		396	1,11	TMTD-80													1,5
25		708	1,28	CBS-80	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	1,2	0	0	0	1,5
26																	
27	Code:			Properties:													
28				MooneyML(1+4) 100°C	32	36	31	34	30	42	60	39	35	51	48	45	60
29				Mooney 15 / 120°C	28	28	32	28	32	22	20	25	35	9	8	10	12
30				MH-ML	15	13	11,5	18	16	18,5	22	22,5	20	30	30,5	39	31
31				Density	1,08	1,12	1,16	1,13	1,16	1,19	1,19	1,2	1,04	1,1	1,1	1,09	1,13
32				Hardness	42	41	40	48	48	52	61	60	43	59	60	64	64

Make sure that Cell with “Recipes:” “Ingredients:”, “Properties:” in position.

- ◆ Same applies for „Cost:“, „Density:“ and „Code:“
 - ◆ All terms must have a double dot (:)
 - ◆ It’s possible to change the order of the columns or omit a column
 - × But „Density:“ and „Cost:“ needed for cost/volume calculations



Open G^{raf}Compounder
Right Mouse click in the upper left cell select „paste cells here“

GrafCompounder Tutorial Part III

The screenshot displays the GrafCompounder software interface with several overlapping windows. The primary window is 'Input data', which contains a table with columns for 'Code', 'Cost', 'Density', 'NR Teststa', 'Ingredient...', and 'Recipes:'. The 'Density' column is highlighted in yellow for several rows. Other windows include 'Code', 'Criteria', and 'Properties', each showing detailed data for specific components or recipes. A blue arrow points from the text below to the 'Density' column header in the 'Input data' window.

Open GrafCompounder

Right Mouse click in the upper left cell select „paste cells here“

X If yellow cells appear, change number format (most likely reason).

GrafCompounder Tutorial Part III

Polymers

The screenshot shows the GrafCompounder software interface. The main window displays a table of ingredients with columns for Code, Cost, Density, and various recipes (50AL511 to 50AL516). A callout box labeled 'Polymers' points to the first three rows of the table, which list ingredients like SMR 10, SMR CV60, and SMR L. The table also includes a 'Properties' section at the bottom with columns for MooneyML, MH-ML, Density, Hardness, M 100, and M300. The right side of the interface shows a 'Criteria' table and an 'Output' section with a list of ingredients and their weights.

Code:	Cost:	Density:	Ingredient	50AL511	50AL512	50AL513	50AL514	50AL515	50AL516
10	280	0,92	SMR 10	100	100	100	100	100	100
10	290	0,92	SMR CV60						
10	310	0,92	SMR L						
20	115	1,8	N330	10	30	50	25	45	75
20	115	1,8	N336						
20	115	1,8	N550						
20	115	1,8	N660						
20	115	1,8	N762						
30	24	2,71	CaCO3	20	20	20	20	20	20
40	116	0,89	Naphtenic ...	5	25	45	5	25	45
40	120	0,9	Paraffinic ...						
50	385	5,6	ZnO	5	5	5	5	5	5
50	150	1,8	Zn-2EH						
60	165	0,92	Stearic Acid	2	2	2	2	2	2
60	130	0,9	Paraffin W...						
70	924	1,15	TMQ	2	2	2	2	2	2
70	924	1,15	IPPD						
80	158	1,8	S-80	1,88	1,88	1,88	1,88	1,88	1,88
90	420	1,28	DPG-80						
90	360	1,28	DTDM-80						
90	320	1,3	TBTD-80						
90	396	1,11	TMTD-80						
90	708	1,28	CBS-80	0,63	0,63	0,63	0,63	0,63	0,63

Apply a code in column „Code:“ in sector „Ingredients:“

◆ Select anything which can be sorted as- / descending. An ambiguous code slected.

X As an example: single digit numbers applied for groups of ingredients

GrafCompounder Tutorial Part III

The screenshot displays the GrafCompounder software interface with the following data:

Input data:			50AL511	50AL512	50AL513	50AL514	50AL515	50AL516	50AL517
50	150	1,8							
60	165	0,92	2	2	2	2	2	2	2
60	130	0,9							
70	924	1,15							
70	924	1,15	2	2	2	2	2	2	2
80	158	1,8	1,88	1,88	1,88	1,88	1,88	1,88	1,88
90	420	1,28							
90	360	1,28							
90	320	1,3							
90	396	1,11							
90	708	1,28	0,63	0,63	0,63	0,63	0,63	0,63	0,63

Code:	Properties:	50AL511	50AL512	50AL513	50AL514	50AL515	50AL516	50AL517
100	MooneyML...	32	36	31	34	30	42	
100	Mooney t5 ...	28	28	32	28	32	22	
100	MH-ML	15	13	11,5	18	16	18,5	
200	Density	1,08	1,12	1,16	1,13	1,16	1,19	
200	Hardness	42	41	40	48	48	52	
200	M 100	0,6	0,7	0,7	1	0,9	1	
200	M300	1,8	3	3	4,4	4,6	5,3	
200	TS	25	21	15	25	20	15,3	
200	EB	785	725	690	715	705	615	
200	Tear(Trou...	6	7,1	8,6	16	25	30	
200	Tear(Trou...	2,4	28	5,9	28	32	7,2	
300	C-Set -28°...	22	28	30	17	19	35	
300	C-Set 0°...	10	14	14	8	12	16	
300	C-Set 23°...	8	10	14	9	13	16	
300	C-Set 70°...	39	50	61	44	50	54	
400	Aging Td7...							
400	Delta Hard...	4	4	9	2	7	8	
400	Delta M100	20	40	35	15	3	40	
400	Delta M300	20	40	40	30	35	40	
400	Delta TS	5	15	20	10	10	10	
400	Delta EB	-5	-5	-5	-5	-5	-10	

Criteria:	Name	Min	Max	From	To	Weight	Trdoff
	ZH-ZEH	0	2				
	Stearic Acid	0	2				
	Paraffin Wax	0	4				
	TMQ	0	2				
	IPPD	2	4				
	S-80	0,31	4,06				
	DPG-80	0	0,25				
	DTDM-80	0	1,25				
	TBTD-80	0	0,8				
	TMTD-80	0	1,5				
	CBS-80	0	2,63				
	MooneyML(1+4)	27	80				
	Mooney t5 / 120°C	8	39				
	MH-ML	11,5	39				
	Density	1,02	1,21				
	Hardness	40	71				
	M 100	0,6	2,8				
	M300	1,8	14,2				
	TS	15	30				
	EB	445	785				
	Tear(Trouser)Median	3,9	33				
	Tear(Trouser)Median	2,4	34				
	C-Set -28°C / 24h [%]	10	83				
	C-Set 0°C / 24h [%]	4	16				
	C-Set 23°C / 72h [%]	2	18				
	C-Set 70°C / 24h [%]	10	61				
	Aging Td70°C						
	Delta Hardness	0	9				
	Delta M100	0	55				
	Delta M300	0	40				
	Delta TS	-20	20				
	Delta EB	-20	0				

Total	146,51	186,51	226,51	161,51	201,51	251,51
Density	1,097	1,116	1,128	1,138	1,148	1,172
Cost (per	262,484	237,406	220,591	259,16	235,861	219,811
Cost (per	239,274	212,729	195,559	227,733	205,454	187,552

Total ingredients	132,63	251,51
Density (calc.)	1,027	1,214
Cost (per vol)	219,811	326,37
Cost (per mass)	187,552	301,915

Apply a code in column „Code:“ in sector „Properties:“

◆ Select anything which can be sorted as- / descending

✗ As an example: three digit numbers applied, but e code is ambiguous

Graf Compounder Tutorial Part III

Rheology

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
25	90	708	1,28	CBS-80	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	1,2	0	0	0	1,5
26																	
27		Code:		Properties:													
28	100			MooneyML(1+4) 100°C	32	36	31	34	30	42	60	39	35	51	48	45	60
29	100			Mooney t5 / 120°C	28	28	32	28	32	22	20	25	35	9	8	10	12
30	100			MH-ML	15	13	11,5	18	16	18,5	22	22,5	20	30	30,5	39	31
31	200			Density	1,08	1,12	1,16	1,13	1,16	1,19	1,19	1,2	1,04	1,1	1,1	1,09	1,13
32	200			Hardness	42	41	40	48	48	52	61	60	43	59	60	64	64
33	200			M 100	0,6	0,7	0,7	1	0,9	1	1,7	1,4	0,9	1,9	2,1	2,8	2
34	200			M300	1,8	3	3	4,4	4,6	5,3	8	7,6	4,1	9,6	10	13	13,5
35	200			TS	25	21	15	25	20	15,3	23	18	25	22	23	21	24
36	200			EB	785	725	690	715	705	615	560	590	655	540	535	450	475
37	200			Tear(Trouser)Median 23°C	6	7,1	8,6	16	25	30	29	33	7	12	9,2	7,2	10,5
38	200			Tear(Trouser)Median 100°C	2,4	28	5,9	28	32	7,2	17	34	6,8	6,8	8,1	4	4,4
39	300			C-Set -26°C /24h [%]	22	28	30	17	19	35	29	27		10	10	10	16
40	300			C-Set 0°C /24h [%]	10	14	14	8	12	16	13	12	15	10	8	7	6
41	300			C-Set 23°C /72h [%]	8	10	14	9	13	16	10	17	9	6	7	6	7
42	300			C-Set 70°C /24h [%]	39	50	61	44	50	54	44	50	20	27	24	20	26
43	400			Aging 7d/70°C													
44	400			Delta Hardness	4	4	9	2	7	8	3	7	0	4	5	2	4
45	400			Delta M100	20	40	35	15	3	40	15	30	20	55	50	20	50
46	400			Delta M300	20	40	40	30	35	40	10	20	25	40	30	20	12
47	400			Delta TS	5	15	20	10	10	10	5	-20	0	0	0	-10	-4
48	400			Delta EB	-5	-5	-5	-5	-5	-10	0	-5	-7	-10	-10	-20	-10
49																	
50																	
51																	
52																	
53																	
54																	
55																	
56																	

- Apply a code in column „Code:“ in sector „Properties:“
- ◆ Select anything which can be sorted as- / descending
 - ✗ As an example: three digit numbers applied

Graf Compounder Tutorial Part III

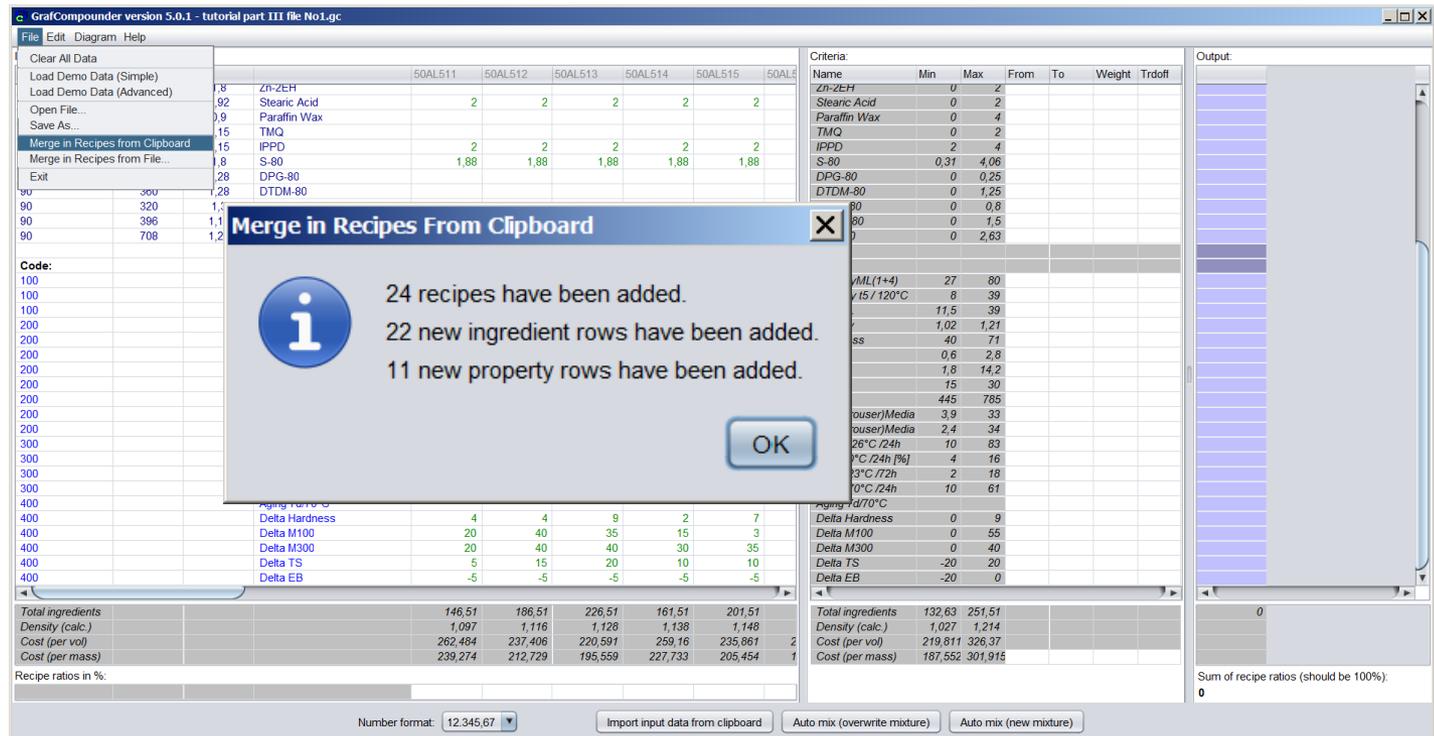
	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
1	Recipes:																												
2	Ingredients:	4-1111 A	111 F	111 D	4-1667 A	667 LL	667 UL	667 opt	4-1943	943 Contin	943 C	5-0328	328 B	328 C	328 E	328 F	GELS-0329			329 A	329 B	329 C	329 D	329 E	329 F	5-0561	GEL 5 0516	516E	516 C
3	IR 2300	100,00	100,00	100,00																									
4	SMR 10																												
5	SMR 20																												
6	SMR 50 CV																												
7	BR 1220																												
8	N 330																												
9	N 550																												
10	OIL NR	33,00	33,00	33,00	45,00	45,00	45,00	45,00	45,00	45,00	45,00	45,00	45,00	45,00	45,00	45,00	45,00	45,00	45,00	45,00	45,00	45,00	45,00	45,00	45,00	45,00	45,00	45,00	45,00
11	Spezial	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00
12	Stearic Acid				1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
13	Antlux 654	3,30	3,30	3,30																									
14	Aktilast PP	1,50	1,50	1,50																									
15	Rhenocyan IPPD-80	2,00	2,00	2,00																									
16	AFS/ILG																												
17	MB/MS																												
18	Vulkaner HS/ILG	0,80			1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
19	Vulkaner E			1,00																									
20	PEG 4000																												
21	S-80	1,25	1,25	1,25	2,25	1,00	2,00	2,00	2,25	2,25	2,00	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	1,25	1,25	1,25	1,25	1,25	1,25	1,25
22	(OTOS)	1,20																											
23	TETD-80																												
24	TMFD-80																												
25	Rhenocure SIG		1,80																										
26	Rhenocure SDT/S			4,70			2,00	5,00	5,00			6,00	4,00	4,00	5,80	5,80	5,80	4,00											
27	MBTS-80					0,50	1,50	1,40				1,20	1,00	1,00	1,00	0,50	1,00												
28	CBS-80									2,00																			
29	MBS-80																												
30	DCS-80																												
31	TBBS-80	0,80	2,00	2,00	1,90					1,90																			
32	Rhenocure ADT/G		1,00	1,00																									
33	Rhenocure ZDT/G			1,80																									
34	E-80													0,50	0,50														
35	Properties:																												
36	Mooney MI 1+4/ 100 °C	44,00	33,00	38,00																									
37	Vulcanometer 160 °C																												
38	t10 (min)	3,12	2,30	1,56	2,80	1,50	2,20	1,50	1,56	1,96	1,26	2,90	4,10	1,40	1,70	2,30	1,60	4,20	2,70	2,60	4,30	1,60	3,20	4,10	2,10	3,40	2,50	2,50	
39	t50 (min)	3,60	3,16	2,16	3,50				2,44	2,42	1,66	4,70	6,80	3,30	4,30	5,70	2,90	5,60	4,40	4,60	5,60	2,80	4,60	8,70	4,50	6,90	5,30	6,00	
40	t90 (min)	4,20	4,32	2,56	4,30	3,60	5,90	1,70	2,86	2,76	2,88	6,60	10,50	6,10	7,60	9,70	5,40	7,90	6,70	6,70	7,70	4,60	7,40	14,70	8,00	10,30	7,80	7,80	
41	Imax - Fmax (Nm)	0,49	0,42	0,48					0,38	0,59	0,56	0,47	0,39	0,44	0,34	0,36	0,38	0,32	0,53	0,56	0,58	0,58	0,49	0,51	0,47	0,63	0,52	0,63	
42	Vulcanization: 160 °C 5 min				0,34	0,22	0,36	0,31																					
43	Hardness (ShA)	47,00	48,00	48,00	44,00	36,00	46,00		44,00	49,00	48,00	51,00	52,00	49,00	50,00	48,00	46,00	56,00	60,00	55,00	53,00	50,00	49,00	57,00	61,00	56,00	60,00	60,00	
44	Elasticity (%)	73,00	69,00	75,00	20,00	9,00	30,00	23,00	71,00	72,00	72,00	56,00	57,00	56,00	56,00	56,00	56,00	59,00	60,00	60,00	57,00	56,00	53,00	54,00	64,00	63,00	67,00	67,00	
45	Modulus 100 (MPa)	1,70	1,80	1,90	1,10	0,70	1,40	1,30	1,50	1,50	1,40	1,77	1,72	1,55	1,53	1,79	1,29	2,00	2,80	2,50	2,00	1,50	1,50	2,00	3,80	3,30	3,60	3,60	
46	Modulus 300 (MPa)	7,70	8,10	8,80	5,00	3,10	7,00	6,10	6,30	7,10	6,20	9,50	9,50	8,60	8,90	9,80	7,80	10,80	11,40	11,20	9,40	8,50	7,40	10,25					
47	Modulus M 150				14,70	9,00	19,10	20,00	18,60	21,00	18,60																		
48	Tensile strength (MPa)	24	24	25	23	11,00	25,00	24,00	25,00	23,00	22,00	22,00	21,00	22,00	22,00	19,00	22,00	22,00	20,70	10,50	22,40	21,60	19,80	23,00	17,00	19,00	18,00		
49	Elongation (%)	460	470	495	600	545,00	630,00	545,00	570,00	545,00	510,00	505,00	515,00	510,00	500,00	500,00	490,00	490,00	490,00	435,00	510,00	515,00	540,00	505,00	300,00	350,00	305,00		
49	Tear Modulus								26,90	27,90	28,90	26,90	26,90	26,90	27,90	26,90	26,90	26,90	26,90	26,90	26,90	26,90	26,90	26,90	26,90	26,90	26,90		

1. Select another data file with different blocks of experiments

(in our example we stay with NR based compounds):

- ◆ Prepare as shown above in both sectors „Ingredients:“ „Properties:“
 - ✗ Check ingredient / property names
 - ✗ Example N550 and not CB550 or opposite.

GrafCompounder Tutorial Part III



The screenshot shows the GrafCompounder software interface. A blue arrow points to the 'Merge in Recipes from Clipboard' option in the File menu. A dialog box titled 'Merge in Recipes From Clipboard' is displayed in the center, containing the following information:

- 24 recipes have been added.
- 22 new ingredient rows have been added.
- 11 new property rows have been added.

The background interface includes a menu bar (File, Edit, Diagram, Help), a main data table with columns for recipe codes (50AL511-50AL515) and ingredients (Zn-ZEH, Stearic Acid, Paraffin Wax, etc.), a 'Criteria' table, and a summary table at the bottom.

	50AL511	50AL512	50AL513	50AL514	50AL515	50AL516
Zn-ZEH						
Stearic Acid	2	2	2	2	2	2
Paraffin Wax						
TMQ						
IPPD	2	2	2	2	2	2
S-80	1,88	1,88	1,88	1,88	1,88	1,88
DPG-80						
DTDM-80						

Name	Min	Max	From	To	Weight	Trdroff
Zn-ZEH	0	2				
Stearic Acid	0	2				
Paraffin Wax	0	4				
TMQ	0	2				
IPPD	2	4				
S-80	0,31	4,06				
DPG-80	0	0,25				
DTDM-80	0	1,25				
80	0	0,8				
80	0	1,5				
0	0	2,63				

Total ingredients	146,51	186,51	226,51	161,51	201,51	
Density (calc.)	1,097	1,116	1,128	1,138	1,148	
Cost (per vol)	262,484	237,406	220,591	259,16	235,961	2
Cost (per mass)	239,274	212,729	195,559	227,733	205,454	1

Paste selected data file with:

- ◆ Click select „Merger in Recipes from Clipboard“
- ◆ Message appears what amount of recipes, ingredients and properties added

GrafCompounder Tutorial Part III

GrafCompounder version 5.0.1 - tutorial part III file No1.gc

File Edit Diagram Help

Input data:

				50AL511	50AL512	50AL513	50AL514	50AL515	50AL516	50
70	924	1,15	IPPD		2	2	2	2	2	2
80	158	1,8	S-80		1,88	1,88	1,88	1,88	1,88	1,88
90	420	1,28	DPG-80							
90	360	1,28	DTDM-80							
90	320	1,3	TBTD-80							
90	396	1,11	TMTD-80							
90	708	1,28	CBS-80		0,63	0,63	0,63	0,63	0,63	0,63
10			IR 2200							
50			ZnO spezial							
60			Antilux 654							
60			Aktilast PP							
70			Rhenogran IPPD-80							
70			Vulkanox HS/LG							
90			(OTOS)							
90			TBBS-80							
90			Rhenocure S/G							
90			Rhenocure ADT/G							
90			Vulkalent E							
90			Rhenocure SDT/S							
90			Rhenocure ZDT/G							
10			SMR 50 CV							
40			OIL HAR							
90			MBTS-80							
70			AFS/LG							
70			MB/MG							
90			E-80							
90			MBS-80							
90			TETD-80							
10			BR 1220							
Code:			Properties:							
100			MooneyML(1+4) 100°C		32	36	31	34	30	42
100			Mooney I5 / 120°C		28	28	32	28	32	22
100			MH-ML		15	13	11,5	18	16	18,5
200			Density		1,08	1,12	1,16	1,13	1,16	1,19
Total					146,51	186,51	226,51	161,51	201,51	251,51
Density					1,097	1,116	1,128	1,138	1,148	1,172
Cost (per					262,484	237,406	220,591	259,16	235,861	219,811
Cost (per					239,274	212,729	195,559	227,733	205,454	187,552

Criteria:

Name	Min	Max	From	To	Weig...	Trdoff
I-PPD	0	4				
S-80	0,31	4,06				
DPG-80	0	0,25				
DTDM-80	0	1,25				
TBTD-80	0	0,8				
TMTD-80	0	2,8				
CBS-80	0	2,63				
IR 2200	0	100				
ZnO spezial	0	5				
Antilux 654	0	3,3				
Aktilast PP	0	1,5				
Rhenogran	0	2				
Vulkanox	0	2				
(OTOS)	0	1,2				
TBBS-80	0	3,8				
Rhenocure	0	1,8				
Rhenocure	0	1				
Vulkalent E	0	1				
Rhenocure	0	8				
Rhenocure	0	2,5				
SMR 50 CV	0	100				
OIL HAR	0	5				
MBTS-80	0	1,5				
AFSLG	0	2				
MB/MG	0	1				
E-80	0	1				
MBS-80	0	2				
TETD-80	0	2,5				
BR 1220	0	20				
MooneyML(1+4	27	80				
Mooney I5 /	8	39				
MH-ML	0,32	39				
Density	1,02	1,21				

Output:

Sum of recipe ratios (should be 100%)
0

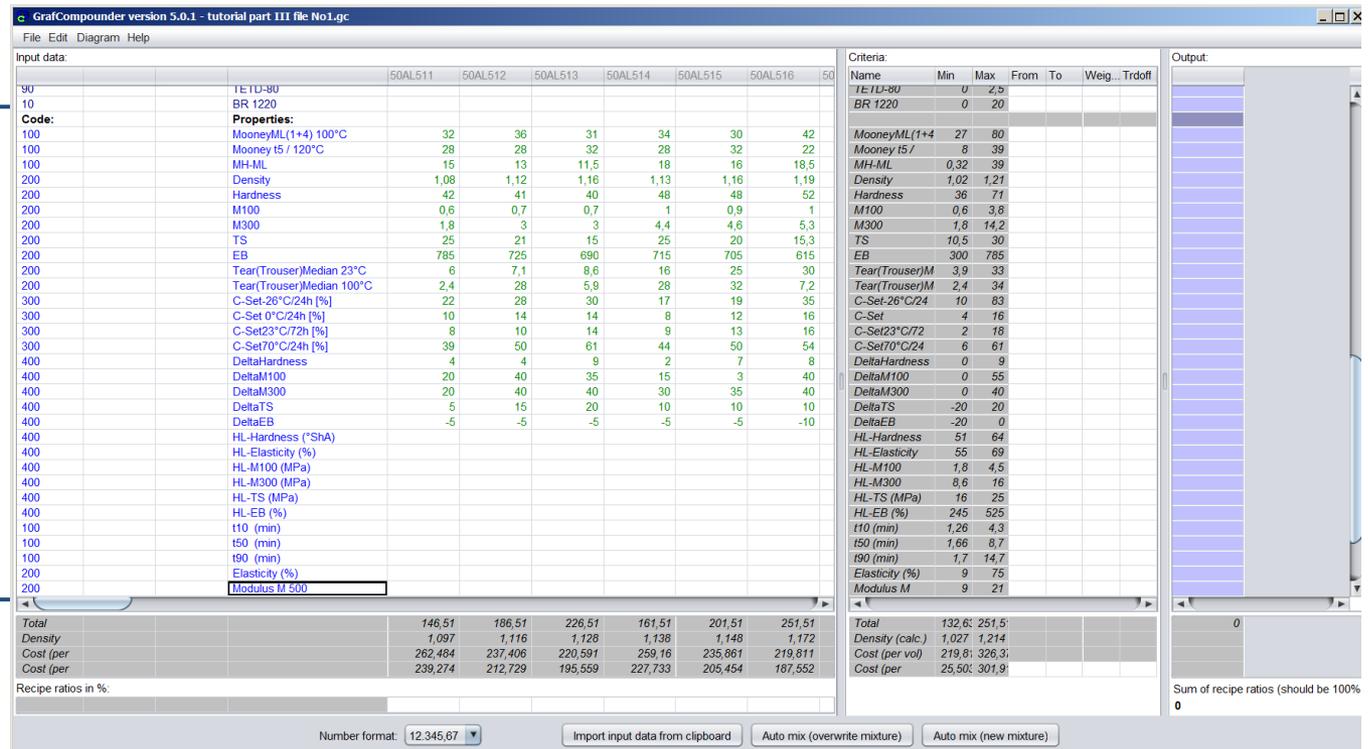
Number format: 12.345,67

Import input data from clipboard Auto mix (overwrite mixture) Auto mix (new mixture)

1. Review whole file after „Merger“

- ◆ Input „Code:“ for ingredients
- ◆ Input „Code:“ for properties

GrafCompounder Tutorial Part III



The screenshot shows the GrafCompounder software interface. The main window displays a table with columns for ingredients (50AL511 to 50AL516) and a 'Code' column. The 'Code' column contains various material codes and properties. A blue arrow points to the 'Code' column. The 'Criteria' table on the right lists various material properties and their values. The bottom of the window shows a summary table with columns for 'Total', 'Density', 'Cost (per vol)', and 'Cost (per)'. The 'Number format' is set to 12.345,67. The 'Sum of recipe ratios (should be 100%)' is 0.

Code	Properties	50AL511	50AL512	50AL513	50AL514	50AL515	50AL516
90	TE TD-80						
10	BR 1220						
100	MooneyML(1+4) 100°C	32	36	31	34	30	42
100	Mooney t5 / 120°C	28	28	32	28	32	22
100	MH-ML	15	13	11,5	18	16	18,5
200	Density	1,08	1,12	1,16	1,13	1,16	1,19
200	Hardness	42	41	40	48	48	52
200	M100	0,6	0,7	0,7	1	0,9	1
200	M300	1,8	3	3	4,4	4,6	5,3
200	TS	25	21	15	25	20	15,3
200	EB	785	725	690	715	705	615
200	Tear(Trouser)Median 23°C	6	7,1	8,6	16	25	30
200	Tear(Trouser)Median 100°C	2,4	28	5,9	28	32	7,2
300	C-Set-26°C/24h [%]	22	28	30	17	19	35
300	C-Set 0°C/24h [%]	10	14	14	8	12	16
300	C-Set23°C/72h [%]	8	10	14	9	13	16
300	C-Set70°C/24h [%]	39	50	61	44	50	54
400	DeltaHardness	4	4	9	2	7	8
400	DeltaM100	20	40	35	15	3	40
400	DeltaM300	20	40	40	30	35	40
400	DeltaTS	5	15	20	10	10	10
400	DeltaEB	-5	-5	-5	-5	-5	-10
400	HL-Hardness (*ShA)						
400	HL-Elasticity (%)						
400	HL-M100 (MPa)						
400	HL-M300 (MPa)						
400	HL-TS (MPa)						
400	HL-EB (%)						
100	t10 (min)						
100	t50 (min)						
100	t90 (min)						
200	Elasticity (%)						
200	Modulus M 500						

Name	Min	Max	From	To	Weig...	Trdff
TE TD-80	0	2,5				
BR 1220	0	20				
MooneyML(1+4)	27	80				
Mooney t5 /	8	39				
MH-ML	0,32	39				
Density	1,02	1,21				
Hardness	36	71				
M100	0,6	3,8				
M300	1,8	14,2				
TS	10,5	30				
EB	300	785				
Tear(Trouser)M	3,9	33				
Tear(Trouser)M	2,4	34				
C-Set-26°C/24	10	83				
C-Set	4	16				
C-Set23°C/72	2	18				
C-Set70°C/24	6	61				
DeltaHardness	0	9				
DeltaM100	0	55				
DeltaM300	0	40				
DeltaTS	-20	20				
DeltaEB	-20	0				
HL-Hardness	51	64				
HL-Elasticity	55	69				
HL-M100	1,8	4,5				
HL-M300	8,6	16				
HL-TS (MPa)	16	25				
HL-EB (%)	245	525				
t10 (min)	1,26	4,3				
t50 (min)	1,66	8,7				
t90 (min)	1,7	14,7				
Elasticity (%)	9	75				
Modulus M	9	21				

Total	146,51	186,51	226,51	161,51	201,51	251,51
Density	1,097	1,116	1,128	1,138	1,148	1,172
Cost (per vol)	262,484	237,406	220,591	259,16	235,861	219,811
Cost (per	239,274	212,729	195,559	227,733	205,454	187,552

Recipe ratios in %:

Number format: 12.345,67

Import input data from clipboard Auto mix (overwrite mixture) Auto mix (new mixture)

Sum of recipe ratios (should be 100%)
0

1. Review new file; repeat for „Properties:“

- ◆ Input „Code:“ for ingredients
- ◆ Input „Code:“ for properties

[review www.grafcompounder.de: FAQ for details)

The screenshot shows the GrafCompounder software interface. The main window displays a table with columns for material codes (50AL511 to 50AL516) and various material properties. A context menu is open over the table, with the option "Sort selected property rows" highlighted. The right side of the interface shows a "Criteria" table and an "Output" table. The bottom of the window displays summary statistics for the selected rows.

Code	50AL511	50AL512	50AL513	50AL514	50AL515	50AL516		
200	Density	1,08	1,12	1,16	1,13	1,16	1,19	
200	Hardness	42	41	40	48	48	52	
200	M100	0,6	0,7	0,7	1	0,9	1	
200	M300	1,8	3	3	4,4	4,6	5,3	
200	TS	25	21	15	25	20	15,3	
200	EB	785	725	690	715	705	615	
200	Tear(Trouser)Median 23°C	6	7,1	8,6	16	25	30	
200	Tear(Trouser)Median 100°C	2,4	28	5,9	28	32	7,2	
300	C-Set-26°C/24h [%]	22	28	30	17	19	35	
300	C-Set 0°C/24h [%]	10	14	14	8	12	16	
300	C-Set23°C/72h [%]	8	10	14	9	13	16	
300	C-Set70°C/24h [%]	39	50	61	44	50	54	
400	DeltaHardness	4	4	9	2	7	8	
400	DeltaM100	0	20	40	35	15	3	40
400	DeltaM300	0	20	40	40	30	35	40
400	DeltaTS	5	15	20	10	10	10	10
400	DeltaEB	-5	-5	-5	-5	-5	-10	-10
400	HL-Hardness	51	64	55	69	1,8	4,5	
400	HL-Elasticity	55	69	1,8	4,5	8,6	16	
400	HL-M100	1,8	4,5	8,6	16	16	25	
400	HL-M300	8,6	16	16	25	245	525	
400	HL-TS (MPa)	16	25	1,26	4,3	1,66	8,7	
400	HL-EB (%)	245	525	1,7	14,7	9	75	
400	t10 (min)	1,26	4,3	9	75	9	21	
400	t50 (min)	1,66	8,7	22	53	14	47	
400	t90 (min)	1,7	14,7	23	53	32	61	
400	Elasticity (%)	9	75	14	32	14	32	
400	Modulus M	9	21	22	53	27	57	
400	Tear N/mm	22	53	14	47	23	53	
400	C-Set24h90°	14	47	23	53	32	61	
400	C-Set24h100°C	23	53	32	61	14	32	
400	C-Set24h125°C	32	61	14	32	27	57	
400	C-Set24h125°C	32	61	14	32	27	57	
400	C-Set72h70°	14	32	27	57			
400	C-Set72h90°	27	57					

1. Highlight „Code:” column, right mouse click, select „Sort selected Property rows”
 - ◆ Review properties: on double items and consolidate

GrafCompounder Tutorial Part III

GrafCompounder version 5.0.1 - tutorial part III file No1.gc

File Edit Diagram Help

Input data:

				50AL511	50AL512	50AL513	50AL514	50AL515	50AL516	50
80	158	1,8	S-80							
90	420	1,28	DPG-80	1,88	1,88	1,88	1,88	1,88	1,88	
90	360	1,28	DTD-80							
90	320	1,3	TBTD-80							
90	396	1,11	TMTD-80							
90	708	1,28	CBS-80	0,63	0,63	0,63	0,63	0,63	0,63	
10			IR 2200							
50			ZnO spezial							
60			Antilux 654							
60			Aktilast PP							
70			Rhenogran IPPD-80							
70			Multigran HS/LG							
90)							
90			ure S/G							
90			ure ADT/G							
90			it E							
90			ure SDT/S							
90			ure ZDT/G							
40			R							
90			CV							
90)							
70			MB/IMG							
90			E-80							
90			MBS-80							
90			TETD-80							
10			BR 1220							

Code:

100	MooneyML(1+4) 100°C	32	36	31	34	30	42
100	Mooney I5 / 120°C	28	28	32	28	32	22
100	MH-ML	15	13	11,5	18	16	18,5
100	t10 (min)						
100	t50 (min)						

Properties:

Total		146,51	186,51	226,51	161,51	201,51	251,51
Density		1,097	1,116	1,128	1,138	1,148	1,174
Cost (per		262,484	237,406	220,591	259,16	235,861	219,811
Cost (per		239,274	212,729	195,559	227,733	205,454	187,552

Recipe ratios in %:

--	--	--	--	--	--	--	--

Criteria:

Name	Min	Max	From	To	Weig...	Trdofi
SS-80	0,31	4,08				
DPG-80	0	0,25				
DTD-80	0	1,25				
TBTD-80	0	0,8				
TMTD-80	0	2,8				
CBS-80	0	2,63				
IR 2200	0	100				
ZnO spezial	0	5				
Antilux 654	0	3,3				
Aktilast PP	0	1,5				
Rhenogran	0	2				
Vulkanox	0	1,2				
(OTOS)	0	3,8				
TBBS-80	0	3,8				
Rhenocure	0	1,8				
Rhenocure	0	1				
Vulkanent E	0	1				
Rhenocure	0	6				
Rhenocure	0	2,5				
SMR 50 CV	0	100				
OIL H4R	0	5				
MBTS-80	0	1,5				
AFSLG	0	2				
MB/IMG	0	1				
E-80	0	1				
MBS-80	0	2				
TETD-80	0	2,5				
BR 1220	0	20				
MooneyML(1+4)	27	80				
Mooney I5 /	8	39				
MH-ML	0,32	39				
t10 (min)	1,26	4,3				
t50 (min)	1,66	8,7				

Output:

--	--	--	--	--	--	--	--

Sum of recipe ratios (should be 100%)
0

Number format: 12,345,67

Import input data from clipboard Auto mix (overwrite mixture) Auto mix (new mixture)

Repeat procedure sorting the ingredients

GrafCompounder Tutorial Part III

GrafCompounder version 5.0.1 - tutorial part III meeger clipboard.gc

File Edit Diagram Help

Input data:

Code:	Cost:	Density:	Ingredients:	50AL511	50AL512	50AL513	50AL514	50AL515	50AL516
10	280	0,92	SMR 10	100	100	100	100	100	100
10	290	0,92	SMR CV60						
10	310	0,92	SMR L						
10			IR 2200						
10			SMR 50 CV						
10			BR 1220						
20	115	1,8	N330		0	50	25	45	75
20	115	1,8	N336						
20	115	1,8	N550						
20	115	1,8	N660						
20	115	1,8	N762						
30	24	2,71	CaCO3	0	20	20	20	20	20
40	116	0,89	Naphthenic Oil	5	45	5	25	45	45
40	120	0,9	Paraffinic Oil						
40			OIL HAR						
50	385	5,6	ZnO	5	5	5	5	5	5
50	150	1,8	Zn-2EH						
50			ZnO spezial						
60	165	0,92	Stearic Acid	2	2	2	2	2	2
60	130	0,9	Paraffin Wax						
60			Antilux 654						
60			Aktilast PP						
70	924	1,15	TMQ						
70	924	1,15	IPPD	2	2	2	2	2	2
70			Rhenogran IPPD-80						
70			Vulkanox HS/LG						
70			AFS/LG						
70			MB/MG						
80	158	1,8	S-80	1,88	1,88	1,88	1,88	1,88	1,88
90	420	1,28	DPG-80						
90	360	1,28	DTDM-80						
90	320	1,3	TBTD-80						

Criteria:

Name	Min	Max	From	To	Weig...	Trdrof
SMR 10	0	100				
SMR CV60	0	100				
SMR L	0	100				
IR 2200	0	100				
SMR 50 CV	0	100				
BR 1220	0	20				
N330	0	75				
N336	0	40				
N550	0	60				
N660	0	25				
N762	0	85				
CaCO3	0	20				
Naphthenic Oil	0	45				
Paraffinic Oil	0	10				
OIL HAR	0	5				
ZnO	0	10				
Zn-2EH	0	2				
ZnO spezial	0	5				
Stearic Acid	0	2				
Paraffin Wax	0	4				
Antilux 654	0	3,3				
Aktilast PP	0	1,5				
TMQ	0	2				
IPPD	0	4				
Rhenogran	0	2				
Vulkanox	0	2				
AFS/LG	0	2				
MB/MG	0	1				
S-80	0,31	4,06				
DPG-80	0	0,25				
DTDM-80	0	1,25				
TBTD-80	0	0,8				

Output:

Mixture1

Total	132,6	251,5
Density (calc.)	1,027	1,214
Cost (per vol)	219,8	326,3
Cost (per	25,50	301,9

Sum of recipe ratios (should be 100%)
0

Number format: 12.345.67

Import input data from clipboard Auto mix (overwrite mixture) Auto mix (new mixture)

Continue sorting selected ingredients in alphabetic order.

◆ Highlight ingredients; right mouse click; „sort selected ingredient rows.“

GrafCompounder Tutorial Part III

GrafCompounder version 5.0.1 - tutorial part III meeger clipboard.gc

File Edit Diagram Help

Input data:

Code:	Cost:	Density:	NR Testdateien	Ingredients:	50AL511	50AL512	50AL513	50AL514	50AL515	50AL516	50AL517
10			BR 1220								
10			IR 2200								
10	280	0,92	SMR 10		100	100	100	100	100	100	
10			SMR 50 CV								
10	290	0,92	SMR CV60								
10	310		SMR L								
20	115	1,8	N330		10	30	50	25	45	75	
20	115	1,8	N336								
20	115	1,8	N550								
20	115	1,8	N660								
20	115	1,8	N762								
30	24	2,71	CaCO3		20	20	20	20	20	20	
40	116	0,89	Naphtenic Oil		5	25	45	5	25	45	
40	120	0,9	Paraffinic Oil								
40			OIL HAR								
50	385	5,6	ZnO		5	5	5	5	5	5	
50	150	1,8	Zn-2EH								
50			ZnO spezial								
60	165	0,92	Stearic Acid		2	2	2	2	2	2	
60	130	0,9	Paraffin Wax								
60			Antlux 654								
60			Aktlast PP								
70	924	1,15	TMQ								
70	924	1,15	IPPD		2	2	2	2	2	2	
70			Rhenogran IPPD-80								
70			Vulkanox HS/LG								
70			AFS/LG								
70			MB/MG								
80	158	1,8	S-80		1,88	1,88	1,88	1,88	1,88	1,88	
90			(OTOS)								
90	708	1,28	CBS-80		0,63	0,63	0,63	0,63	0,63	0,63	
90	420	1,28	DPG-80								

Criteria:

Name	Min	Max	From	To	Weig...	Trdff
BR 1220	0	20				
IR 2200	0	100				
SMR 10	0	100				
SMR 50 CV	0	100				
SMR CV60	0	100				
SMR L	0	100				
N330	0	75				
N336	0	40				
N550	0	60				
N660	0	25				
N762	0	85				
CaCO3	0	20				
Naphtenic Oil	0	45				
Paraffinic Oil	0	10				
OIL HAR	0	5				
ZnO	0	10				
Zn-2EH	0	2				
ZnO spezial	0	5				
Stearic Acid	0	2				
Paraffin Wax	0	4				
Antlux 654	0	3,3				
Aktlast PP	0	1,5				
TMQ	0	2				
IPPD	0	4				
Rhenogran	0	2				
Vulkanox	0	2				
AFS/LG	0	2				
MB/MG	0	1				
S-80	0,31	4,06				
(OTOS)	0	1,2				
CBS-80	0	2,63				
DPG-80	0	0,25				

Output:

Mixture1

Sum of recipe ratios (should be 100%): 0

Number format: 12.345,67

Import input data from clipboard Auto mix (overwrite mixture) Auto mix (new mixture)

Continue with other ingredients / properties blocks.

- ◆ Put in missing density (at least) and cost values (if available) (for training put in arbitrary numbers)

GrafCompounder Tutorial Part III

GrafCompounder version 5.0.1 - tutorial part III meeger clipboard.gc

File Edit Diagram Help

Input data:

Code:	Cost:	Density:	Ingredients:	50AL511	50AL512	50AL513	50AL514	50AL515	50AL516	50AL517	
10		0,92	NR Testdateien								
10		0,95	BR 1220								
10		0,92	IR 2200								
10	280	0,92	SMR 10	100	100	100	100	100	100	100	
10		0,92	SMR 50 CV								
10	290	0,92	SMR CV60								
10	310	0,92	SMR L								
20	115	1,8	N330	10	30	50	25	45	75		
20	115	1,8	N336								
20	115	1,8	N550								
20	115	1,8	N660								
20	115	1,8	N762								
30	24	2,71	CaCO3	20	20	20	20	20	20	20	
40	116	0,89	Naphtenic Oil	5	25	45	5	25	45		
40	120	0,9	Paraffinic Oil								
40		0,9	OIL HAR								
50	385	5,6	ZnO	5	5	5	5	5	5	5	
50	156	1,8	Zn-2EH								
50		5,6	ZnO spezial								
60	165	0,92	Stearic Acid	2	2	2	2	2	2	2	
60	130	0,9	Paraffin Wax								
60		0,9	Antilux 654								
60		1,25	Aktilast PP								
70	924	1,15	TMQ								
70	924	1,15	IPPD	2	2	2	2	2	2	2	
70		1,3	Rhenogran IPPD-80								
70		1,2	Vulkanox HS/LG								
70		1,2	AFS/LG								
70		1,3	MB/MG								
80	158	1,8	S-80	1,88	1,88	1,88	1,88	1,88	1,88	1,88	
90		1,28	(OTOS)								
90	708	1,28	CBS-80	0,63	0,63	0,63	0,63	0,63	0,63	0,63	
90	420	1,28	DPG-80								
Total				146,51	186,51	226,51	161,51	201,51	251,51		
Density				1,097	1,116	1,128	1,138	1,148	1,172		
Cost (per				262,484	237,406	220,591	259,16	235,861	219,811		
Cost (per				239,274	212,729	195,559	227,733	205,454	187,552		

Criteria:

Name	Min	Max	From	To	Weig...	Trdff
BR 1220	0	20				
IR 2200	0	100				
SMR 10	0	100				
SMR 50 CV	0	100				
SMR CV60	0	100				
SMR L	0	100				
N330	0	75				
N336	0	40				
N550	0	60				
N660	0	25				
N762	0	85				
CaCO3	0	20				
Naphtenic Oil	0	45				
Paraffinic Oil	0	10				
OIL HAR	0	5				
ZnO	0	10				
Zn-2EH	0	2				
ZnO spezial	0	5				
Stearic Acid	0	2				
Paraffin Wax	0	4				
Antilux 654	0	3,3				
Aktilast PP	0	1,5				
TMQ	0	2				
IPPD	0	4				
Rhenogran	0	2				
Vulkanox	0	2				
AFS/LG	0	2				
MB/MG	0	1				
S-80	0,31	4,06				
(OTOS)	0	1,2				
CBS-80	0	2,63				
DPG-80	0	0,25				

Output:

Mixture1

Sum of recipe ratios (should be 100%):
0

Number format: 12.345,67

Import input data from clipboard Auto mix (overwrite mixture) Auto mix (new mixture)

Continue with other ingredients / properties blocks.

◆ Example: Accelerators; process aids, anti aging/ozonants, etc.

GrafCompounder Tutorial Part III

GrafCompounder version 5.0.1 - tutorial part III file No1.gc

File Edit Diagram Help

Input data:

Code:	Cost:	Density:	Ingredients:	50AL511	50AL512	50AL513	50AL514	50AL515	50AL516	50AL517
10	280	0,92	SMR 10	100	100	100	100	100	100	100
10	290	0,92	SMR CV60							
10	310	0,92	SMR L							
10			IR 2200							
10			SMR 50 CV							
10			BR 1220							
20	115	1,8	N330	10	30	50	25	45	75	
20	115	1,8	N336							
20	115	1,8	N550							
20	115	1,8	N860							
20	115	1,8	N762							
30	24	2,71	CaCO3	20	20	20	20	20	20	
40	116	0,89	Naphthenic Oil	5	25	45	5	25	45	
40	120	0,9	Paraffinic Oil							
40			OIL HAR							
50	385	5,6	ZnO	5	5	5	5	5	5	
50	150	1,8	Zn-2EH							
50			ZnO spezial							
60	165	0,92	Stearic Acid	2	2	2	2	2	2	
60	130	0,9	Paraffin Wax							
60			Antilux 654							
60			Aktliast PP							
70	924	1,15	TMQ							
70	924	1,15	IPPD	2	2	2	2	2	2	
70			Rhenogran IPPD-80							
70			Vulkanox HS/LG							
70			AFS/LG							
70			MB/MG							
80	158	1,8	S-80	1,88	1,88	1,88	1,88	1,88	1,88	
90	420	1,28	DPG-80							
90	360	1,28	DTDM-80							
90	320	1,3	TBTD-80							
Total				146,51	186,51	226,51	161,51	201,51	251,51	
Density				1,097	1,116	1,128	1,138	1,148	1,172	
Cost (per				262,484	237,406	220,591	259,16	235,861	219,811	
Cost (per				239,274	212,729	195,559	227,733	205,454	187,552	

Criteria:

Name	Min	Max	From	To	Weig...	Trdoff
SMR 10	0	100				
SMR CV60	0	100				
SMR L	0	100				
IR 2200	0	100				
SMR 50 CV	0	100				
BR 1220	0	20				
N330	0	75				
N336	0	40				
N550	0	60				
N860	0	25				
N762	0	85				
CaCO3	0	20				
Naphthenic Oil	0	45				
Paraffinic Oil	0	10				
OIL HAR	0	5				
ZnO	0	10				
Zn-2EH	0	2				
ZnO spezial	0	5				
Stearic Acid	0	2				
Paraffin Wax	0	4				
Antilux 654	0	3,3				
Aktliast PP	0	1,5				
TMQ	0	2				
IPPD	0	4				
Rhenogran	0	2				
Vulkanox	0	2				
AFS/LG	0	2				
MB/MG	0	1				
S-80	0,31	4,06				
DPG-80	0	0,25				
DTDM-80	0	1,25				
TBTD-80	0	0,8				
Total	132,6	251,5				
Density (calc.)	1,027	1,214				
Cost (per vol)	219,8	326,3				
Cost (per	25,50	301,9				

Output:

Mixture1

Sum of recipe ratios (should be 100%): 0

Number format: 12.345,67

Import input data from clipboard Auto mix (overwrite mixture) Auto mix (new mixture)

Save the file with new name.

- ◆ Suggestion: Chose a combination of the file names used for this merger
- ◆ File is now ready for use.

Merger of .gc Files

- **If there are more .gc files created**
 - **You want to combine two files?**
Procedure needs less preparation of the files
 - **Expanding your data base with more files:**
use procedure described below.

GrafCompounder version 5.0.1 - tutorial part III file No1.gc

File Edit Diagram Help

Input data:

Code:	Cost:	Density:	NR Testdateien	50AL511	50AL512	50AL513	50AL514	50AL515	50AL516
10	280	0,92	SMR 10	100	100	100	100	100	100
10	290	0,92	SMR CV60						
10	310	0,92	SMR L						
20	115	1,8	N330	10	30	50	25	45	
20	115	1,8	N336						
20	115	1,8	N550						
20	115	1,8	N660						
20	115	1,8	N762						
30	24	2,71	CaCO3	20	20	20	20	20	
40	116	0,89	Naphtenic Oil	5	25	45	5	25	
40	120	0,9	Paraffinic Oil						
50	385	5,6	ZnO	5	5	5	5	5	
50	150	1,8	Zn-2EH						
60	165	0,92	Stearic Acid	2	2	2	2	2	
60	130	0,9	Paraffin Wax						
70	924	1,15	TMQ						
70	924	1,15	IPPD	2	2	2	2	2	
80	158	1,8	S-80	1,88	1,88	1,88	1,88	1,88	
90	420	1,28	DPG-80						
90	360	1,28	DTDM-80						
90	320	1,3	TBTD-80						
90	396	1,11	TMTD-80						
90	708	1,28	CBS-80	0,63	0,63	0,63	0,63	0,63	

Criteria:

Name	Min	Max	From	To	Weight	Trdrof
SMR 10	0	100				
SMR CV60	0	100				
SMR L	0	100				
N330	0	75				
N336	0	40				
N550	0	60				
N660	0	25				
N762	0	85				
CaCO3	0	20				
Naphtenic Oil	0	45				
Paraffinic Oil	0	10				
ZnO	0	10				
Zn-2EH	0	2				
Stearic Acid	0	2				
Paraffin Wax	0	4				
TMQ	0	2				
IPPD	2	4				
S-80	0,31	4,06				
DPG-80	0	0,25				
DTDM-80	0	1,25				
TBTD-80	0	0,8				
TMTD-80	0	1,5				
CBS-80	0	2,63				
MooneyML(1+4)	27	80				
Mooney t5 / 120°C	8	39				
MH-ML	11,5	39				
Density	1,02	1,21				
Hardness	40	71				
M 100	0,6	2,8				
M300	1,8	14,2				

Output:

Mixture1

Total ingredients	146,51	186,51	226,51	161,51	201,51	
Density (calc.)	1,097	1,116	1,128	1,138	1,148	
Cost (per vol)	262,484	237,406	220,591	259,16	235,861	2
Cost (per mass)	239,274	212,729	195,559	227,733	205,454	1

Recipe ratios in %:

Number format: 12.345,67

Import input data from clipboard Auto mix (overwrite mixture) Auto mix (new mixture)

- Merger from .gc File
 - ◆ Open first file, you want to expand

Merge in Recipes From File

101 recipes have been added.
24 new ingredient rows have been added.
19 new property rows have been added.

OK

Code	Cost	Density	Ingredients
10	280	0,92	SMR 10
10	290	0,92	SMR CV60
10	310	0,92	SMR L
20	115	1,8	N330
20	115	1,8	N336
20	115	1,8	N550
20	115	1,8	N660
20	115	1,8	N762
30	24	2,71	CaCO3
40	116	0,89	Naphtenic Oil
40	120	0,9	Paraffinic Oil
50	385	5,6	ZnO
50	150	1,8	Zn-2EH
60	165	0,92	Stearic Acid
60	130	0,9	Paraffin Wax
70	924	1,15	TMO
70	924	1,15	IPPD
80	158	1,8	S-80
90	420	1,28	DPG-80
90	360	1,28	DTDM-80
90	320	1,3	TBTD-80
90	396	1,11	TMTD-80
90	708	1,28	CBS-80
300			IR 2200
300			ZnO spezial
400			Antilux 654
400			Aktilast PP
400			Rhenogran IPPD-80
400			Vulkanox HS/LG (OTOS)
400			TBBS-80
400			Rhenocure S/G

- **Merger from .GC File**

- ◆ Click „File“ in menu bar, select „Merger from File“
- ◆ Select File from folder, click „Enter“

GrafCompounder version 5.0.1 - tutorial part III file No1.gc

File Edit Diagram Help

Input data:

Code:	Cost:	Density:	Ingredients:	50AL511	50AL512	50AL513	50AL514	50AL515	50AL516
10	280	0,92	SMR 10	100	100	100	100	100	100
10	290	0,92	SMR CV60						
10	310	0,92	SMR L						
20	115	1,8	N330	10	30	50	25	45	7
20	115	1,8	N336						
20	115	1,8	N550						
20	115	1,8	N660						
20	115	1,8	N762						
30	24	2,71	CaCO3	20	20	20	20	20	2
40	116	0,89	Naphthenic Oil	5	25	45	5	25	4
40	120	0,9	Paraffinic Oil						
50	385	5,6	ZnO	5	5	5	5	5	0,6
60			ZnO spezial	2	2	2	2	2	
70			Wax						
70				2	2	2	2	2	1,8
90				0,63	0,63	0,63	0,63	0,63	0,6

Criteria:

Name	Min	Max	From	To	Weight	Trdoff
SMR 10	0	100				
SMR CV60	0	100				
SMR L	0	100				
N330	0	75				
N336	0	40				
N550	0	60				
N660	0	25				
N762	0	85				
CaCO3	0	20				
Naphthenic Oil	0	45				
Paraffinic Oil	0	10				
ZnO	0	10				
Zn-2EH	0	2				
Stearic Acid	0	2				
Paraffin Wax	0	4				
TMO	0	2				
IPPD	0	4				
S-80	0	4,06				
DPG-80	0	0,25				
DTDM-80	0	1,25				
TBTD-80	0	0,8				
TMTD-80	0	2,8				
CBS-80	0	2,63				
IR 2200	0	100				
ZnO spezial	0	5,5				
Antilux 654	0	3,3				
Aktilast PP	0	1,5				
Rhenogran	0	2				
Vulkanox HS/LG	0	2				
(OTOS)	0	2				
TBBS-80	0	3,8				
Rhenocure S/G	0	3				

Output:

Mixture1

Sum of recipe ratios (should be 100%): 0

Number format: 12,345,67

Import input data from clipboard Auto mix (overwrite mixture) Auto mix (new mixture)

- Merger from .GC File

- ◆ Put in Codes and Sort as described above

The screenshot displays the GrafCompounder software interface with the following sections:

- Input data:** A table with columns for Code, Cost, Density, Ingredients, and Recipes (50AL511 to 50AL515). It lists various materials like SMR 10, N330, and CaCO3 with their respective quantities.
- Criteria:** A table with columns for Name, Min, Max, From, To, Weight, and Trdoff. It lists the same materials as the input data, showing their minimum and maximum values.
- Output:** A section on the right side of the interface, currently showing 'Mixture1'.
- Summary:** A table at the bottom left showing Total, Density, Cost (per), and Recipe ratios in %.
- Footer:** Includes a 'Number format' dropdown set to '12.345,67' and buttons for 'Import input data from clipboard', 'Auto mix (overwrite mixture)', and 'Auto mix (new mixture)'.

- Merger from .gc file
 - ◆ Sort group of ingredients as described previously

GrafCompounder version 5.0.1 - tutorial part III file No1.gc

File Edit Diagram Help

Input data:

		50AL511	50AL512	50AL513	50AL514	50AL515
Code:	Properties:					
100	MooneyML(1+4) 100°C	32	36	31	34	
100	Mooney I5 / 120°C	28	28	32	28	
100	MH-ML	15	13	11,5	18	
100	t10 (min)					
100	t50 (min)					
100	t90 (min)					
200	Density	1,08	1,12	1,16	1,13	1
200	Hardness	42	41	40	48	
200	TS	25	21	15	25	
200	EB	785	725	690	715	7
200	Elasticity (%)					
200	M100	0,6	0,7	0,7	1	
200	M300	1,8	3	3	4,4	
200	M500					
200	Tear N/mm					
200	Tear(Trouser)Median 100°C	2,4	28	5,9	28	
200	Tear(Trouser)Median 23°C	6	7,1	8,6	16	
300	C-Set -26°C /24h [%]	22	28	30	17	
300	C-Set 0°C /24h [%]	10	14	14	8	
300	C-Set 23°C /72h [%]	8	10	14	9	
300	C-Set 70°C /24h [%]	39	50	61	44	
300	C-Set70°C/24h [%]					
300	C-Set24h/90°C (%)					
300	C-Set24h/100°C (%)					
300	C-Set24h/125°C (%)					
300	C-Set72h/70°C (%)					
300	C-Set72h/90°C (%)					
400	Aging 7d/70°C					
400	Delta Hardness	4	4	9	2	
400	Delta M100	20	40	35	15	
400	Delta M300	20	40	40	30	
	Total	146,51	186,51	226,51	161,51	201,51
	Density	1,097	1,116	1,128	1,138	1,1
	Cost (per	262,484	237,406	220,591	259,16	235,6
	Cost (per	239,274	212,729	195,559	227,733	205,4

Recipe ratios in %:

	50AL511	50AL512	50AL513	50AL514	50AL515
Total ingredients	132,63	251,51			
Density (calc.)	1,027	1,214			
Cost (per vol)	219,811	326,37			
Cost (per mass)	23,729	301,915			

Criteria:

Name	Min	Max	From	To	Weight	Trdoff
MooneyML(1+4)	27	80				
Mooney I5 / 120°C	8	39				
MH-ML	0,25	39				
t10 (min)	0,6	5,36				
t50 (min)	1,3	8,7				
t90 (min)	1,7	18,9				
Density	1,02	1,21				
Hardness	36	71				
TS	10	30				
EB	235	785				
Elasticity (%)	9	75				
M100	0,6	5,1				
M300	1,8	21,3				
M500	9	23,97				
Tear N/mm	9	84				
Tear(Trouser)Media	2,4	34				
Tear(Trouser)Media	3,9	33				
C-Set -26°C /24h	10	83				
C-Set 0°C /24h [%]	4	16				
C-Set 23°C /72h	2	18				
C-Set 70°C /24h	10	61				
C-Set70°C/24h [%]	6	25				
C-Set24h/90°C (%)	14	51				
C-Set24h/100°C	20	58				
C-Set24h/125°C	27	73				
C-Set72h/70°C (%)	14	32				
C-Set72h/90°C (%)	25	63				
Aging 7d/70°C						
Delta Hardness	0	9				
Delta M100	0	55				
Delta M300	0	40				

Output:

Sum of recipe ratios (should be 100%):
0

Number format: 12.345,67

Import input data from clipboard Auto mix (overwrite mixture) Auto mix (new mixture)

- Merger from .gc File
 - ◆ Repeat coding and sorting with properties, and subgroup of properties

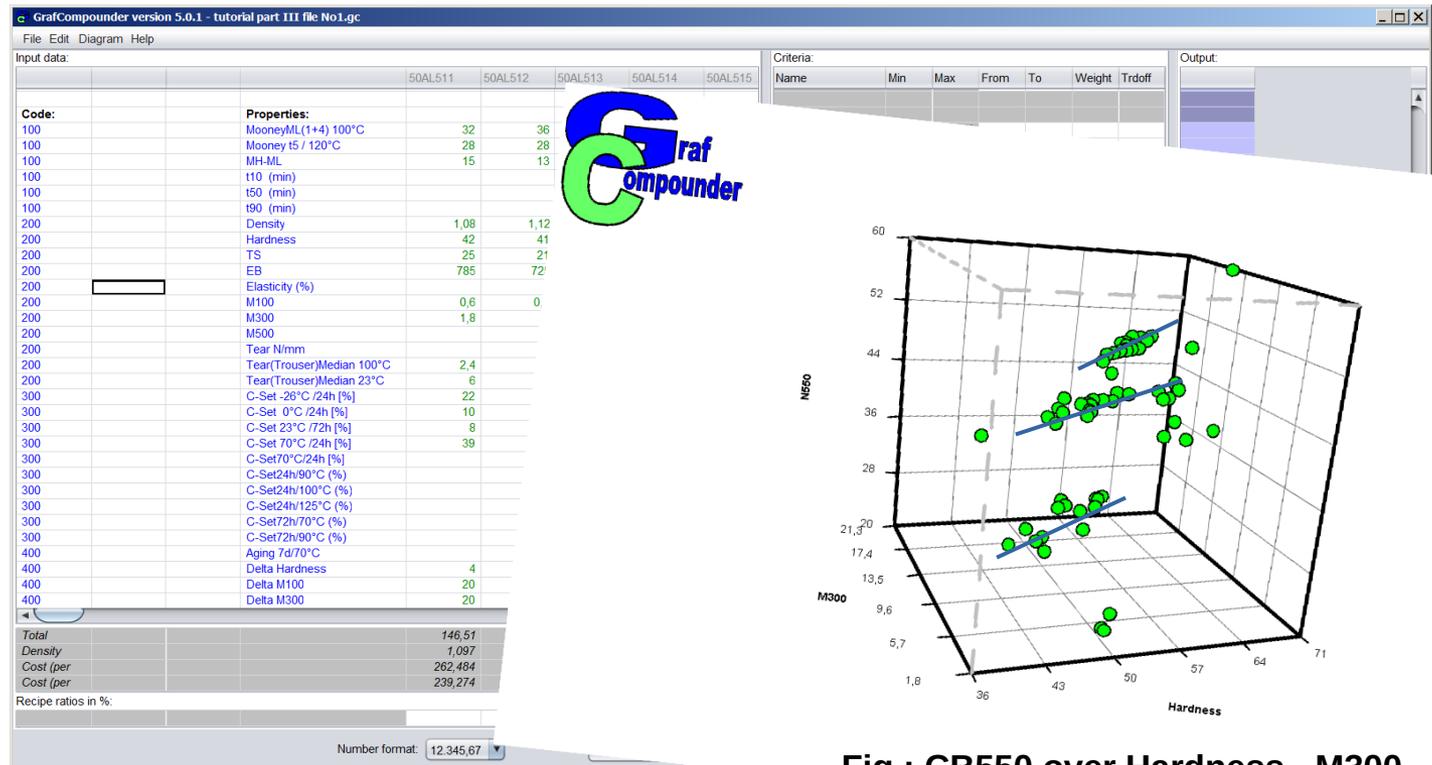


Fig.: CB550 over Hardness - M300

- Merger from .gc file
 - ◆ File ready for use.
[Analyze data with graphic tools]

-
- **Concluding Remarks**
 - ◆ In the example, ambiguous coding was selected. This requires the import of a file without coding.
 - ◆ This type of coding was chosen because it is very simple and quick to perform.
 - ◆ If unambiguous coding is preferred, this must be generated in an external process.
 - ◆ It can be done, for example, by copying the „Ingredient" and „Property" columns and exporting them into a table.

Summary

- Preparation of original data for loading into G^{raf}Compounder
- Import with copy-paste
- Prepare second file
 - × Requirements of input data field
 - × Same name for same ingredient
- After data import with „Merger“ sort data and consolidate
- Save file with new name





- ➔ **Release „G^{raf}Compounder“ Version 5.0
July 2023**
- ➔ **Upgrades from earlier versions upon request**

**Send us your:
Questions, Remarks, Discussion ?**

More information under: www.grafcompounder.com