

## Application Glass Industry

We offer ready to go **calibration packages** for x-ray fluorescence analysis.

Our team has developed **special calibration packages:**

- **Products: Glass and Raw Materials, e.g.** Calumite, Nepheline, Soda, Sand, Anhydrite, Limestone, etc.

We install the **complete analytical method**, within a few days, on the XRF instrument in your laboratory.



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 Finanzamt Kleve

Official agent

Z		A		Symbol		Element		Ox>Ei		Oxid		Els>Ox	
1	1.008	H											
2	4.002	He											
3	6.941	Li	4	9.012	Be								
5	10.811	B	6	12.011	C	7	14.007	8	15.999	9	18.998	10	20.180
11	22.990	Na	12	24.305	Mg								
13	26.982	Al	14	28.086	Si	15	30.974	16	32.066	17	35.453	18	39.948
19	39.098	K	20	40.078	Ca	21	44.956	22	47.88	23	50.942	24	51.996
25	54.938	Mn	26	55.847	Fe	27	58.933	28	58.933	29	63.546	30	65.39
31	69.723	Ga	32	72.61	Ge	33	72.61	34	78.96	35	79.904	36	83.80
37	85.468	Rb	38	87.62	Sr	39	88.905	40	91.224	41	92.906	42	95.94
43	98.906	Tc	44	101.07	Ru	45	101.07	46	106.42	47	107.868	48	112.411
49	114.82	In	50	118.71	Sn	51	127.3	52	127.60	53	126.904	54	131.29
55	132.905	Cs	56	137.327	Ba	57	138.905	58	140.908	59	140.908	60	144.24
61	146.915	Pm	62	150.36	Sm	63	151.965	64	157.25	65	158.925	66	162.50
67	162.50	Dy	68	167.26	Er	69	168.934	70	173.04	71	174.967		
73	178.49	Hf	74	183.85	Ta	75	186.207	76	190.2	77	192.22	78	195.08
79	196.967	Au	80	200.59	Hg	81	204.383	82	207.19	83	208.980	84	208.980
85	209.987	At	86	222.018	Rn								
87	223.02	Fr	88	226.025	Ra								
89	227.028	Ac	90	232.038	Th	91	231.036	92	238.029	93	237.048	94	244.064
95	243.061	Am	96	247.07	Cm	97	247.07	98	251.079	99	252.083	100	257.10
101	258.10	Lr	102	259.10	No	103	260.105						

## Advantages to developing your application with us:

1. **No development time** in your laboratory
2. **Cost saving**
3. Fast introduction of **new methods**
4. **Easy calculation** of costs
5. **Guarantee** on reproducibility and accuracy
6. Calibration with **highest quality**
7. Newcomers become **experts** quickly
8. Guaranteed **after sales support**

## Typical content of a package:

- Sample **preparation tools**: fusion machine, mill
- **Chemicals**: flux, oxidizer, additives
- 1 set of **calibration standards** ready for measurement
- 1 set of **drift correction samples**
- 1 set of **validation samples**
- Installation of **measuring program** on the XRF instrument in your laboratory
- **Calibrating on site**
- **Validation** with your own samples
- **Training** of your laboratory staff
- **Customer acceptance**
- **After sales support** from our team of XRF experts
- Contribution to our **round robin tests**
- **Cross check** of routine results with our application laboratory



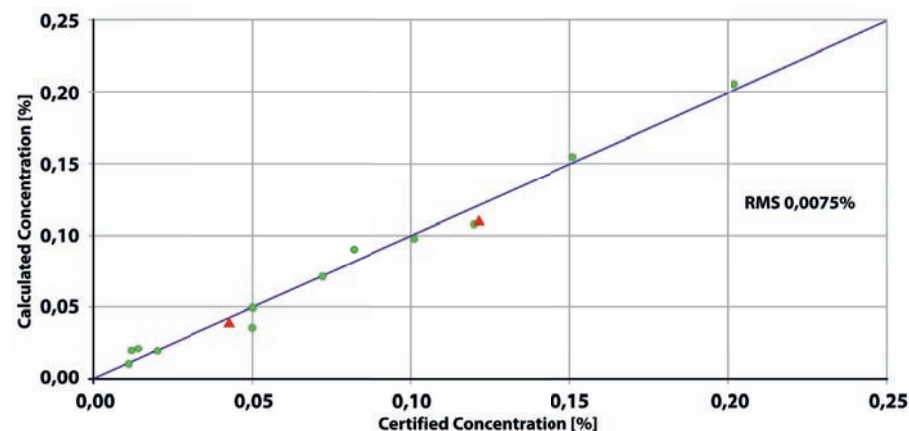
Vulcan 4MA



All standard calibrations are developed in our own application laboratory. We will be pleased to accept your test samples for evaluation in our laboratory and can work together with you to develop new methods to transfer to install in your laboratory.

Ask for a free presentation in our lab whenever you like.

## Fe calibration curve in glass and raw materials



## Concentration ranges for fusion programs

Component	Raw Materials		Component	Glass	
	Min %	Max %		Min %	Max %
Na <sub>2</sub> O	0	60,0	Na <sub>2</sub> O	8	12,0
MgO	0	35,0	MgO	2	6,0
Al <sub>2</sub> O <sub>3</sub>	0	25,0	Al <sub>2</sub> O <sub>3</sub>	0	1,0
SiO <sub>2</sub>	0	100,0	SiO <sub>2</sub>	50	70,0
SO <sub>3</sub>	0	50,0	SO <sub>3</sub>	0	0,4
K <sub>2</sub> O	0	9,0	K <sub>2</sub> O	0	1,0
CaO	0	100,0	CaO	6	9,0
TiO <sub>2</sub>	0	1,0	TiO <sub>2</sub>	0	0,12
Fe <sub>2</sub> O <sub>3</sub>	0	0,2	Fe <sub>2</sub> O <sub>3</sub>	0	0,2

## Validation examples

### Glass NIST 620

Component	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	CaO	MgO	K <sub>2</sub> O	Na <sub>2</sub> O	SO <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	TiO <sub>2</sub>	Sum
Cert. Values	72,08	1,80	7,11	3,69	0,41	14,39	0,28	0,043	0,018	99,82
Meas. Values	71,97	1,72	7,18	3,78	0,38	14,29	0,25	0,042	0,018	99,84
Diff	-0,11	-0,08	0,07	0,09	-0,03	-0,10	-0,03	-0,001	0,000	

### Sand IPT62

Component	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	CaO	MgO	K <sub>2</sub> O	Na <sub>2</sub> O	SO <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	TiO <sub>2</sub>	Sum
Cert. Values	99,62	0,11						0,072	0,036	99,27
Meas. Values	99,64	0,17	0,01	0,00	0,03	0,01	0,05	0,083	0,040	100,01
Diff	0,02	0,06	0,01	0,00	0,03	0,01	0,05	0,011	0,004	

### Gypsum GYP-C

Component	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	CaO	MgO	K <sub>2</sub> O	Na <sub>2</sub> O	SO <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	TiO <sub>2</sub>	Sum
Cert. Values	4,71	1,06	40,88	7,19	0,48	0,03	44,37	0,54		99,27
Meas. Values	4,71	1,06	40,69	7,19	0,47	0,14	44,76	0,63	0,050	99,70
Diff	0,00	0,00	-0,19	0,00	-0,01	0,11	0,39	0,09		

### Limestone BAS513

Component	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	CaO	MgO	K <sub>2</sub> O	Na <sub>2</sub> O	SO <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	TiO <sub>2</sub>	Sum
Cert. Values	0,41	0,19	98,90	0,32	0,03		0,04	0,049		99,94
Meas. Values	0,44	0,23	98,38	0,28	0,02	0,02	0,07	0,041	0,020	99,49
Diff	0,03	0,04	-0,52	-0,05	-0,01	0,02	0,03	-0,008	0,020	

### Nepheline sample

Component	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	CaO	MgO	K <sub>2</sub> O	Na <sub>2</sub> O	SO <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	TiO <sub>2</sub>	Sum
Specification	56,00	23,70	1,40	0,00	8,90	7,90	0,00	0,100	0,100	98,10
Meas. Values	54,79	24,08	1,33	0,06	8,76	7,75	0,06	0,099	0,087	97,00
Diff	-1,21	0,38	-0,07	0,06	-0,14	-0,15	0,06	-0,001	-0,013	

## Application packages

FLUXANA and HD Elektronik Kleve have developed applications for the following products. We will be pleased to help you set up your own high precision method. Ready to go application packages:

Part No.:	Application
CS- 0016	Glass
CS- 0022	Raw Materials for Glass