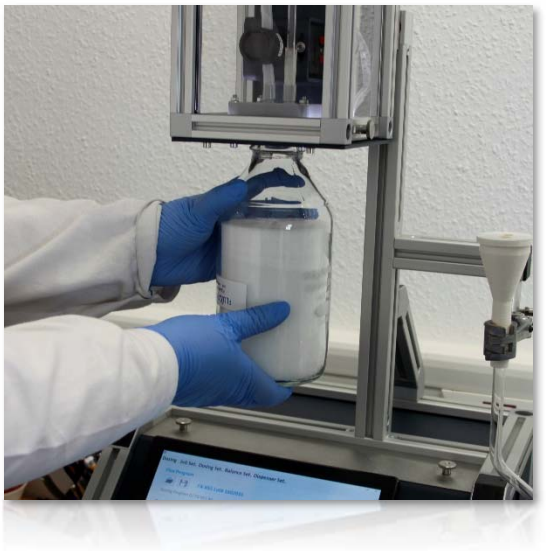
Test of the BORAMAT® “Catch-Weight” Function

- **Objective:**

It is to be shown that weighing with the Boramat’s Catch-Weight function achieves the same results as when weighing by hand.

- **Procedure:**

An internal sample and flux were weighed six times manually and six times with the Boramat. The Boramat independently specifies the weights for the dilution. FX-X100P (special flux for the Boramat) was used.



FX-X100P

When weighing manually, each of the following were weighed two times to cover extreme cases:

- 0.9000 g Sample + 7.2000 g FX-X100
- 1.0000 g Sample + 8.0000 g FX-X100 and
- 1.1000 g Sample + 8.8000 g FX-X100

All samples were fused using P0 and measured with the accepted RAW method.
The results for both approaches were compared with a reference value and a precision table.

If the precision and the accuracy of the results are comparable, then the “Catch-Weight” function can be used for all comparable applications.

Results:

Weights and Dilutions:

Preparation number	Weight Boramat		
	Weight Flux (g)	Weight Sample (g)	Dilution
SA2476	7.5664	0.9460	7.9983
SA2477	7.4021	0.9254	7.9988
SA2478	7.3740	0.9218	7.9996
SA2479	7.6338	0.9541	8.0010
SA2480	8.0029	1.0006	7.9981
SA2481	8.0963	1.0121	7.9995

Preparation number	Manual Weight		
	Weight Flux (g)	Weight Sample (g)	Dilution
SA2482	7.1999	0.8999	8.0008
SA2483	7.2003	0.8999	8.0012
SA2484	7.9999	1.0000	7.9999
SA2485	8.0004	1.0002	7.9988
SA2486	8.8001	1.1002	7.9986
SA2487	8.8001	1.0998	8.0015

In all cases, the dilution factor is between 7.998 und 8.002, thus, the Boramat weighing is comparable with manual weighing.

The measurement results were examined in the next point. The sample is an internal control sample with the following intervention limits.

- **Reference values:**

Weight%	Al2O3	CaO	Fe2O3	K2O	MgO	Na2O	P2O5	SiO2	SO3
+3σ	5.590	64.910	2.661	0.858	1.541	0.300	0.171	21.081	3.096
Control Sample	**5.540**	**64.446**	**2.623**	**0.841**	**1.458**	**0.224**	**0.158**	**20.921**	**2.982**
-3σ	5.491	63.982	2.585	0.823	1.375	0.149	0.146	20.761	2.867

- **Measurement results (in Weight%):**

Weighing with BORAMAT®:

Preparation number	Al2O3	CaO	Fe2O3	K2O	MgO	Na2O	P2O5	SiO2	SO3
Double Determ. 1*	5.538	64.440	2.621	0.844	1.452	0.242	0.157	20.867	2.958
Double Determ. 2*	5.566	64.613	2.618	0.847	1.461	0.249	0.160	21.002	2.941
Double Determ. 3*	5.569	64.562	2.623	0.846	1.465	0.212	0.158	21.009	2.976

Manual weighing:

Preparation number	Al2O3	CaO	Fe2O3	K2O	MgO	Na2O	P2O5	SiO2	SO3
Double Determ. 1*	5.564	64.552	2.623	0.842	1.463	0.231	0.158	21.010	2.915
Double Determ. 2*	5.577	64.572	2.627	0.849	1.455	0.228	0.156	20.972	2.968
Double Determ. 3*	5.562	64.563	2.626	0.849	1.466	0.235	0.158	20.971	2.989

*double determination = mean value of two single determinations

- **Results:**

All measured values that were based on the Boramat's weighing are within the intervention limits (+/- 3σ) for the control sample and display no significant deviation from the manual weighing.

For weighing with the BORAMAT®, the spherical flux FX-X100P and for the manual weighing the usual granulated, powdery flux FX-X100 was used. The investigation shows that the choice of flux has no effect on the results.