



Density Reference Standard Beads (DRSB)

Version 64

Content version: December 2023

Beads for one-point density calibration

Cat. No. 06 422 659 001

Batch A

Store Beads at +2 to +8°C

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1. Introduction

The Cedex HiRes Analyzer measures the cell density, also known as concentration, of a cellular suspension, along with its viability status and cell characteristics such as diameter and compactness. In order to check the correct calibration with regard to the density, use the Density Reference Standard Beads instead of an ordinary cell sample.

This product is traceable in the following aspects:

- Particle Size: NIST, USA
- Particle Concentration: Physikalisch-Technische Bundesanstalt, Berlin, Germany

The Density Reference Standard Beads are made to mimic cell behavior in flow dynamics. Due to their size and optical properties, they will appear as dead cells in the Cedex Software.

Contents

Content	Volume	Cat. No.
Beads for one-point density calibration	10 ml	06 422 659 001

Storage and Stability

Store Beads at +2 to +8°C.

The product is stable until the expiry date printed on the label, when handled as described in these Instructions for Use.

2. How to Use this Product

There is no general advice with regard to how often or how many counts should be done in order to ensure that your analyzer is working correctly. Roche Diagnostics has had good results using the DRSB on a monthly basis, carrying out 10 samples per run with the Cedex HiRes Analyzer.

Two factors influence the acceptance range for calibration with Density Reference Standard Beads in connection with the Cedex HiRes Analyzer.

- **Sample preparation:** Mixing, pipette operation, and pipette quality (precision, accuracy, service state) have been shown in the field to add approximately 1.5 – 2% to the variability in density measurements.
- **Measurement precision is based on the statistical nature of the measurement process.** It depends on the density of the DRSB used, Cell Type parameter settings, and the level of precision used for the measurement.

Sampling quality is essential for the evaluation of the status of the instrument. Special care should be taken to ascertain, for example, that among other factors:

- Beads were not frozen, but stored properly at +2 to +8°C.
- Beads were allowed to acclimate to a temperature of +23 to +27°C prior to use.
- Weight of the unopened bottle is correct (see label on the bottle).
- Ultrasonic bath is used for mixing.
- Bottle is rocked gently, including rocking upside down.
- No more than 2 samples are drawn from the bottle without intermediate remixing.
- Only calibrated pipettes are used.
- Only trained staff are performing the sample preparation.

3. Protocol

3.1 Preparation of the DRSB solution

- Verify that the beads have been stored correctly at temperatures of +2 to +8°C (BEADS CANNOT BE FROZEN).
 - Verify that the bottle was securely closed before use (check the weight of the unopened bottle; the correct value is given on the bottle).
 - Allow the beads to acclimate to a temperature of +23 to +27°C prior to use.
 - Use an ultrasonic bath at a temperature of +23 to +27°C and at the highest available intensity for 5 minutes (with cap slightly loosened but secured against falling over) to shake the beads.
 - Ensure that no beads are sticking to the base or side of the bottle before use.
- 🕒 The DRSB solution contains SDS, which may show signs of some coagulation or crystallization at low temperatures. Crystals and/or signs of coagulation can be removed by allowing the beads to acclimate, with occasional mixing, at +25°C until the coagulation disappears. Alternatively, the DRSB bottle can be gently rolled between the palms of the hands until the coagulation has disappeared. Note that as long as the DRSB solution has been allowed to acclimate to +23 to +27°C, and all steps in this Instructions for Use have been carried out, any remaining coagulation or crystallization will have no effect on the performance or quality of the DRSB solution when used in a Cedex HiRes Analyzer.

3.2 Checking the FlowFactor (FF) (see Figure 2)

- ① Pipet 1 sample of 0.3 ml DRSB into a Cedex Sample cup, and run the sample with factory settings for default Cell Type Std. Size immediately. Select the maximum possible setting for “precision”.
- ② Mix the DRSB thoroughly, then pipet the next sample of 0.3 ml into a Cedex Sample cup, and run the sample immediately.
- ③ Repeat this procedure until 10 samples are processed.
- ④ Calculate the mean value of the Total Cell Density (TCD) of the 10 samples used.
- ⑤ Calculate the relative standard deviation of the TCD values of the 10 samples used, and verify that the relative standard deviation is less than or equal to 5%. Otherwise, the Cedex HiRes Analyzer, the beads, or the handling have to be checked and the calibration must be repeated.
- ⑥ Calculate the deviation of the mean TCD value of the 10 samples used from the actual value (given as Particle number/ml on the bottle of beads).
- ⑦ Verify that the deviation of the mean TCD value is less than or equal to 5%, or as specified by your requirements, from the actual value given on the bottle for the beads. If the value falls outside of the acceptable range, skip to Step 9.
- ⑧ Close bottle tightly and store beads at +2 to +8°C (BEADS CANNOT BE FROZEN). The current FF is correct and no change is necessary.
- ⑨ If the mean value falls out of range, repeat Steps 1 to 5 using a second/different LOT (batch) of Density Reference Standard Beads. Continue with Step 10.
- ⑩ Calculate the FlowFactor (FF) of each measurement series (see 5.1, “How to Calculate and Change the FlowFactor”), and the mean value of the two FFs.
- ⑪ Verify that the deviation of the two FFs from the mean value of the FFs, are less than or equal to 5%. Otherwise, the Cedex HiRes Analyzer, the beads, or the handling have to be checked and the calibration must be repeated.
- ⑫ Calculate the new FF (mean value of the FFs); (see 5.1, “How to Calculate and Change the FlowFactor”), or follow your company’s requirements.

4. Lot Specific Data

Cat. No. 06 422 659 001, Batch A

Valid for Lot. No. 57130102

In this chapter, you will find lot specific data about your product. The table below provides the following information for each bottle produced for this lot.

Column 1: Bottle No. for the bottle.

Column 2: Actual concentration expressed in particle number/ml for the bottle.

Column 3: Total weight of bottle, including bottle, contents, and label.

Column 4: Check Box for marking which bottle was received.

④ Use this table as follows:

- ① Print out the table.
- ② Find the bottle number on the bottle label as shown in Figure 1.
- ③ Place a check mark in the "Bottle Received" column to mark the specific bottle received for future reference.

④ This product is traceable in the following aspects:

- Particle Size: NIST, USA
- Particle Concentration: Physikalisch-Technische Bundesanstalt, Berlin, Germany

LOT 57130102 / **A30**



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Density Reference Standard Beads Batch A

06 422 659 001

Particle diameter 10 µm +/- 0,2

10 ml

Particle number/ml 10.05 x 10⁵

Store at +2 to +8°C

Total weight 29.960 g

Roche Diagnostics GmbH
Mannheim, Germany +49 621 759 0

Roche Diagnostics
Indianapolis, IN, USA 001 (800) 428 5433



Fig. 1: Example of how to find the bottle number on the bottle label. The bottle number is circled.

Lot Specific Data

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A1	10.15	29.420	
A2	10.04	29.669	
A3	10.03	29.535	
A4	10.01	29.617	
A5	10.04	29.782	
A6	9.98	29.561	
A7	9.98	29.592	
A8	10.15	29.123	
A9	10.09	29.546	
A10	10.15	29.611	
A11	10.07	29.593	
A12	10.09	29.495	
A13	10.06	29.646	
A14	10.01	29.599	
A15	10.16	29.620	
A16	10.13	29.536	
A17	10.15	29.680	
A18	10.14	29.626	
A19	10.16	29.619	
A20	10.18	29.763	
A21	10.16	29.413	
A22	10.02	29.821	
A23	10.12	29.573	
A24	10.07	29.549	
A25	10.20	29.721	
A26	10.13	29.648	
A27	10.02	29.757	
A28	10.04	29.713	
A29	10.13	29.493	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A30	10.18	29.482	
A31	10.19	29.644	
A32	10.09	29.641	
A33	10.25	29.496	
A34	10.22	29.694	
A35	10.03	29.675	
A36	10.22	29.442	
A37	10.12	29.672	
A38	10.12	29.678	
A39	10.07	29.527	
A40	10.23	29.564	
A41	10.25	29.577	
A42	10.05	29.504	
A43	10.02	29.640	
A44	10.09	29.519	
A45	10.02	29.677	
A46	10.18	29.654	
A47	10.19	29.381	
A48	10.10	29.732	
A49	10.04	29.368	
A50	10.01	29.897	
A51	10.18	29.856	
A52	10.17	29.488	
A53	10.20	29.334	
A54	10.18	29.691	
A55	10.18	29.765	
A56	10.17	29.840	
A57	10.07	29.923	
A58	10.13	29.425	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A59	10.19	29.716	
A60	10.22	29.499	
A61	10.18	29.564	
A62	10.13	29.603	
A63	10.21	29.666	
A64	10.11	29.822	
A65	10.07	29.730	
A66	10.08	29.636	
A67	10.10	29.552	
A68	10.17	29.648	
A69	10.20	29.757	
A70	10.11	29.794	
A71	10.07	29.545	
A72	10.14	29.556	
A73	10.12	29.644	
A74	10.18	29.617	
A75	10.13	29.675	
A76	10.00	29.614	
A77	10.10	29.698	
A78	10.11	29.702	
A79	10.08	29.713	
A80	10.16	29.778	
A81	10.03	29.669	
A82	10.04	29.688	
A83	10.02	29.691	
A84	10.20	29.763	
A85	10.14	29.514	
A86	10.06	29.583	
A87	10.05	29.727	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A88	10.02	29.635	
A89	10.12	29.448	
A90	9.99	29.874	
A91	10.19	29.685	
A92	10.06	29.921	
A93	10.08	29.500	
A94	10.19	29.305	
A95	10.14	29.327	
A96	10.21	29.680	
A97	10.10	29.415	
A98	10.10	29.707	
A99	10.16	29.313	
A100	10.21	29.701	
A101	10.16	29.563	
A102	10.10	29.554	
A103	10.14	29.673	
A104	10.14	29.671	
A105	10.12	29.536	
A106	10.11	29.752	
A107	9.98	29.768	
A108	9.99	29.775	
A109	10.01	29.355	
A110	10.10	29.637	
A111	10.04	29.439	
A112	10.15	29.664	
A113	10.19	29.660	
A114	10.12	29.554	
A115	10.04	29.750	
A116	10.16	29.530	

Lot Specific Data

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A117	10.03	29.675	
A118	10.06	29.697	
A119	10.06	29.560	
A120	10.04	29.680	
A121	10.08	29.656	
A122	9.94	29.550	
A123	10.04	29.614	
A124	10.14	29.498	
A125	10.14	29.572	
A126	10.22	29.393	
A127	10.09	29.390	
A128	10.11	29.522	
A129	10.09	29.448	
A130	10.00	29.642	
A131	10.13	29.536	
A132	10.09	29.653	
A133	10.13	29.737	
A134	10.12	29.271	
A135	10.17	29.457	
A136	10.19	29.618	
A137	9.97	29.669	
A138	10.17	29.580	
A139	10.05	29.634	
A140	10.03	29.664	
A141	10.19	29.443	
A142	10.05	29.682	
A143	10.07	29.797	
A144	10.12	29.567	
A145	10.05	29.621	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A146	10.13	29.733	
A147	10.11	29.677	
A148	10.15	29.647	
A149	10.05	29.461	
A150	10.07	29.589	
A151	10.08	29.453	
A152	10.17	29.656	
A153	10.18	29.687	
A154	10.12	29.537	
A155	10.00	29.462	
A156	10.09	29.592	
A157	10.11	29.673	
A158	10.15	29.681	
A159	10.08	29.618	
A160	10.08	29.693	
A161	10.00	29.871	
A162	10.14	29.505	
A163	10.09	29.616	
A164	10.10	29.639	
A165	10.09	29.643	
A166	10.19	29.383	
A167	10.15	29.631	
A168	10.05	29.384	
A169	10.00	29.618	
A170	10.03	29.618	
A171	10.17	29.684	
A172	10.24	29.690	
A173	10.10	29.692	
A174	10.16	29.686	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A175	10.09	29.363	
A176	10.09	29.656	
A177	10.17	29.506	
A178	10.17	29.548	
A179	10.19	30.685	
A180	10.09	29.289	
A181	10.18	29.514	
A182	10.06	29.689	
A183	10.19	29.598	
A184	10.05	29.680	
A185	10.11	29.565	
A186	10.07	29.695	
A187	10.05	29.636	
A188	10.06	29.675	
A189	10.02	29.332	
A190	10.16	29.764	
A191	10.12	29.406	
A192	10.19	29.602	
A193	10.07	29.565	
A194	10.15	29.667	
A195	10.24	29.640	
A196	10.13	29.171	
A197	10.11	29.524	
A198	10.11	29.303	
A199	10.13	29.303	
A200	10.02	29.734	
A201	10.14	29.625	
A202	10.10	29.525	
A203	10.19	29.825	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A204	10.11	29.672	
A205	10.20	29.766	
A206	10.18	29.656	
A207	10.12	29.380	
A208	10.19	29.405	
A209	10.17	29.620	
A210	10.09	29.685	
A211	10.18	29.820	
A212	10.21	29.686	
A213	10.11	29.765	
A214	10.22	29.530	
A215	10.10	29.287	
A216	10.20	29.625	
A217	10.11	29.255	
A218	10.09	29.350	
A219	10.17	29.778	
A220	10.10	29.673	
A221	10.14	29.390	
A222	10.10	29.577	
A223	10.17	29.690	
A224	10.16	29.645	
A225	10.24	29.888	
A226	10.08	29.313	
A227	10.12	29.242	
A228	10.03	29.676	
A229	10.16	29.966	
A230	10.03	29.797	
A231	10.20	29.371	
A232	10.14	29.284	

Lot Specific Data

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A233	10.02	29.353	
A234	10.16	29.486	
A235	10.15	29.347	
A236	10.19	29.707	
A237	10.14	29.803	
A238	10.17	29.804	
A239	10.10	29.844	
A240	10.07	29.707	
A241	10.09	29.294	
A242	10.17	29.413	
A243	10.11	29.389	
A244	10.08	29.196	
A245	10.12	29.212	
A246	10.01	29.348	
A247	10.20	29.379	
A248	10.08	29.342	
A249	10.07	29.441	
A250	10.11	29.441	
A251	10.22	29.412	
A252	10.12	29.296	
A253	10.07	29.310	
A254	10.05	29.224	
A255	10.19	29.474	
A256	10.15	29.344	
A257	10.19	29.216	
A258	10.19	29.342	
A259	10.13	29.282	
A260	10.15	29.413	
A261	10.14	29.280	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A262	10.07	29.447	
A263	10.13	29.211	
A264	10.09	29.388	
A265	10.14	29.440	
A266	10.06	29.280	
A267	9.99	29.519	
A268	10.04	29.482	
A269	10.02	29.251	
A270	10.10	29.560	
A271	10.06	29.219	
A272	10.06	29.367	
A273	10.11	29.193	
A274	9.96	29.332	
A275	10.16	29.459	
A276	10.14	29.321	
A277	10.18	29.260	
A278	10.07	29.307	
A279	10.01	29.481	
A280	10.16	29.377	
A281	10.04	29.394	
A282	9.98	29.642	
A283	10.03	29.331	
A284	10.02	29.429	
A285	9.99	29.406	
A286	10.03	29.268	
A287	10.08	29.531	
A288	10.09	29.360	
A289	10.04	29.132	
A290	10.19	29.425	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A291	10.15	29.211	
A292	10.01	29.422	
A293	10.06	29.411	
A294	10.01	29.328	
A295	10.02	29.342	
A296	9.97	29.732	
A297	10.16	29.470	
A298	10.14	29.530	
A299	10.07	29.402	
A300	10.14	29.427	
A301	10.15	29.444	
A302	10.03	29.644	
A303	10.12	29.324	
A304	10.07	29.658	
A305	10.13	29.555	
A306	10.08	29.601	
A307	10.09	29.459	
A308	10.04	29.442	
A309	10.09	29.407	
A310	10.12	29.459	
A311	10.18	29.361	
A312	10.19	29.336	
A313	10.03	28.629	
A314	10.04	29.485	
A315	10.13	29.813	
A316	10.17	29.698	
A317	10.02	29.441	
A318	10.00	29.413	
A319	9.97	29.387	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A320	10.10	29.497	
A321	10.23	29.359	
A322	10.18	29.540	
A323	10.17	29.605	
A324	10.06	29.367	
A325	10.16	29.318	
A326	10.00	29.238	
A327	10.00	29.664	
A328	9.95	29.276	
A329	10.07	29.781	
A330	10.02	29.291	
A331	10.03	29.699	
A332	10.01	29.187	
A333	10.07	29.707	
A334	10.02	29.447	
A335	10.04	29.196	
A336	10.12	29.756	
A337	10.02	29.424	
A338	10.05	29.386	
A339	10.11	29.523	
A340	10.11	29.758	
A341	10.03	29.269	
A342	10.12	29.306	
A343	10.09	29.678	
A344	10.08	29.342	
A345	9.97	29.506	
A346	9.98	29.428	
A347	10.04	29.437	
A348	10.06	29.515	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A349	10.21	29.104	
A350	10.21	29.553	
A351	10.00	29.364	
A352	10.17	29.524	
A353	10.13	29.478	
A354	10.13	29.701	
A355	10.19	29.566	
A356	10.20	29.382	
A357	10.20	29.317	
A358	10.27	29.375	
A359	10.13	29.524	
A360	10.19	29.374	
A361	10.09	29.296	
A362	10.14	29.660	
A363	10.00	29.802	
A364	10.11	29.307	
A365	10.20	29.516	
A366	10.13	29.402	
A367	10.13	29.432	
A368	10.24	29.351	
A369	10.13	29.532	
A370	10.10	29.386	
A371	10.05	29.348	
A372	9.96	29.795	
A373	10.04	29.785	
A374	10.10	29.738	
A375	10.01	29.676	
A376	10.13	29.565	
A377	10.04	29.409	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A378	9.99	29.802	
A379	10.00	29.787	
A380	10.13	29.727	
A381	10.05	29.422	
A382	10.10	29.596	
A383	10.14	29.408	
A384	10.05	29.225	
A385	10.20	29.291	
A386	10.01	29.240	
A387	10.13	29.793	
A388	10.07	29.690	
A389	10.10	29.758	
A390	10.07	29.628	
A391	10.09	29.686	
A392	10.09	29.270	
A393	10.03	29.363	
A394	10.11	29.765	
A395	10.05	29.655	
A396	10.11	29.796	
A397	10.06	29.689	
A398	10.17	29.801	
A399	10.13	29.539	
A400	10.04	29.624	
A401	10.16	29.647	
A402	10.10	29.598	
A403	10.09	29.644	
A404	10.18	29.524	
A405	10.06	29.521	
A406	10.20	29.561	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A407	10.15	29.552	
A408	10.15	29.536	
A409	10.15	29.510	
A410	10.20	29.470	
A411	10.15	29.459	
A412	10.11	29.680	
A413	10.11	29.631	
A414	10.16	29.434	
A415	10.08	29.538	
A416	10.17	29.642	
A417	10.09	29.557	
A418	10.21	29.323	
A419	10.13	29.334	
A420	10.03	29.339	
A421	10.19	29.575	
A422	10.04	29.300	
A423	10.11	29.614	
A424	10.10	29.469	
A425	10.08	29.362	
A426	10.20	29.624	
A427	10.18	29.343	
A428	10.13	29.544	
A429	10.09	29.600	
A430	10.12	29.615	
A431	10.10	29.446	
A432	10.23	29.255	
A433	10.10	29.447	
A434	10.21	29.606	
A435	10.06	29.481	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A436	10.26	29.293	
A437	10.24	29.588	
A438	10.18	29.159	
A439	10.20	29.219	
A440	10.08	29.377	
A441	10.14	29.281	
A442	10.05	29.326	
A443	10.12	29.494	
A444	10.21	29.546	
A445	10.10	29.405	
A446	10.12	29.293	
A447	10.11	29.368	
A448	10.10	29.496	
A449	10.07	29.255	
A450	10.13	29.389	
A451	10.10	29.466	
A452	10.19	29.596	
A453	10.16	29.311	
A454	10.21	29.345	
A455	10.10	29.263	
A456	10.03	29.076	
A457	10.12	29.504	
A458	10.12	29.327	
A459	10.12	29.517	
A460	10.12	29.251	
A461	10.16	29.452	
A462	10.24	29.275	
A463	10.13	29.632	
A464	10.08	29.394	

Lot Specific Data

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A465	10.13	29.241	
A466	10.09	29.212	
A467	10.11	29.443	
A468	10.21	29.609	
A469	10.14	29.344	
A470	10.11	29.536	
A471	10.14	29.203	
A472	10.19	29.513	
A473	10.17	29.483	
A474	10.26	29.377	
A475	10.13	29.652	
A476	10.06	29.536	
A477	10.22	30.204	
A478	10.12	29.536	
A479	10.00	29.216	
A480	10.08	29.316	
A481	10.06	29.556	
A482	10.11	29.500	
A483	10.13	29.524	
A484	10.07	29.625	
A485	10.11	29.502	
A486	10.11	29.451	
A487	10.15	29.292	
A488	10.19	29.384	
A489	10.16	29.181	
A490	10.08	29.618	
A491	10.21	29.528	
A492	10.09	29.425	
A493	10.10	29.508	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A494	10.10	29.257	
A495	10.10	29.549	
A496	10.04	29.700	
A497	10.14	29.628	
A498	10.03	29.391	
A499	10.03	29.505	
A500	10.10	29.560	
A501	10.06	29.774	
A502	9.93	29.575	
A503	10.08	29.397	
A504	10.22	29.461	
A505	10.11	29.357	
A506	10.05	29.795	
A507	10.00	29.823	
A508	10.09	29.687	
A509	10.01	29.669	
A510	10.12	29.411	
A511	10.02	29.737	
A512	10.06	29.809	
A513	10.03	29.540	
A514	10.09	29.824	
A515	9.99	29.491	
A516	10.13	29.822	
A517	9.97	29.744	
A518	10.02	29.333	
A519	10.08	29.568	
A520	10.15	29.552	
A521	10.13	29.593	
A522	10.12	29.827	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A523	10.11	29.768	
A524	10.26	29.262	
A525	10.21	29.755	
A526	10.05	29.654	
A527	10.05	29.452	
A528	10.12	29.501	
A529	10.19	29.630	
A530	10.10	29.826	
A531	10.15	29.670	
A532	10.03	29.592	
A533	10.03	29.692	
A534	10.12	29.750	
A535	10.05	29.820	
A536	10.17	29.530	
A537	10.06	29.761	
A538	10.21	29.585	
A539	10.08	29.651	
A540	10.02	29.872	
A541	10.12	29.220	
A542	10.03	29.685	
A543	9.97	29.789	
A544	10.10	29.682	
A545	10.06	29.222	
A546	10.12	29.537	
A547	9.95	28.572	
A548	10.03	29.607	
A549	10.19	29.612	
A550	10.13	29.563	
A551	10.12	29.451	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A552	10.09	29.271	
A553	10.14	29.718	
A554	10.07	29.481	
A555	10.06	29.376	
A556	10.08	29.438	
A557	10.17	29.144	
A558	10.17	29.393	
A559	10.15	29.730	
A560	10.06	29.723	
A561	10.03	29.234	
A562	10.08	29.576	
A563	9.93	29.566	
A564	10.04	29.508	
A565	10.12	29.510	
A566	10.14	29.565	
A567	10.17	29.494	
A568	10.12	29.404	
A569	10.20	29.656	
A570	10.11	29.738	
A571	10.07	29.331	
A572	10.04	29.630	
A573	10.08	29.499	
A574	10.17	29.315	
A575	10.02	29.448	
A576	10.03	29.570	
A577	10.03	29.273	
A578	10.12	29.268	
A579	10.02	29.502	
A580	10.01	29.303	

Lot Specific Data

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A581	10.09	29.497	
A582	10.02	29.239	
A583	10.05	29.331	
A584	10.16	29.377	
A585	10.16	29.174	
A586	10.14	29.358	
A587	10.18	29.298	
A588	10.15	29.456	
A589	10.15	29.478	
A590	10.03	29.400	
A591	10.12	29.242	
A592	9.97	29.253	
A593	10.24	29.348	
A594	10.17	29.385	
A595	10.03	29.217	
A596	10.28	29.404	
A597	10.03	29.199	
A598	10.14	29.307	
A599	10.16	29.195	
A600	10.00	29.425	
A601	10.18	29.810	
A602	10.26	29.582	
A603	10.17	29.702	
A604	10.11	29.281	
A605	10.09	29.397	
A606	10.00	29.339	
A607	10.11	29.446	
A608	10.10	29.434	
A609	10.10	29.403	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A610	10.20	29.269	
A611	10.09	29.507	
A612	10.11	29.631	
A613	10.23	29.636	
A614	10.12	29.590	
A615	10.19	29.328	
A616	10.23	29.615	
A617	10.01	29.275	
A618	10.04	29.242	
A619	10.16	29.754	
A620	10.11	29.491	
A621	10.21	29.296	
A622	10.08	29.405	
A623	10.12	29.603	
A624	10.14	29.800	
A625	10.08	29.876	
A626	10.01	29.566	
A627	10.08	29.452	
A628	10.06	29.513	
A629	10.00	29.324	
A630	10.08	29.478	
A631	10.04	29.262	
A632	10.12	29.315	
A633	10.04	29.288	
A634	10.06	29.574	
A635	10.03	29.287	
A636	10.06	29.313	
A637	10.12	29.316	
A638	10.08	29.271	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A639	10.13	29.204	
A640	10.10	29.422	
A641	10.06	29.191	
A642	10.20	29.144	
A643	9.97	29.268	
A644	10.01	29.254	
A645	10.05	29.385	
A646	10.08	29.257	
A647	10.07	29.099	
A648	10.00	29.287	
A649	10.07	29.199	
A650	10.02	29.205	
A651	10.06	29.282	
A652	9.98	29.502	
A653	10.04	29.542	
A654	9.97	29.529	
A655	10.07	29.222	
A656	10.00	29.334	
A657	10.07	29.193	
A658	10.02	29.234	
A659	10.05	29.309	
A660	10.04	29.357	
A661	10.02	29.393	
A662	10.09	29.314	
A663	10.05	29.254	
A664	10.06	29.312	
A665	10.06	29.277	
A666	10.04	29.363	
A667	10.00	29.239	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A668	9.99	29.244	
A669	10.08	29.269	
A670	10.19	29.334	
A671	10.02	29.044	
A672	10.02	29.343	
A673	9.98	29.374	
A674	10.25	29.243	
A675	10.02	29.257	
A676	9.97	29.164	
A677	10.05	29.313	
A678	10.09	29.642	
A679	10.21	29.268	
A680	9.97	29.295	
A681	10.00	29.268	
A682	9.93	29.402	
A683	10.08	29.351	
A684	9.99	29.220	
A685	10.11	29.244	
A686	10.03	29.284	
A687	10.02	29.654	
A688	10.00	30.643	
A689	9.99	30.683	
A690	10.18	29.287	
A691	10.13	29.543	
A692	10.09	30.659	
A693	10.15	29.267	
A694	10.07	29.650	
A695	10.15	29.329	
A696	10.14	29.583	

Lot Specific Data

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A697	10.13	29.732	
A698	10.11	29.666	
A699	10.18	29.418	
A700	10.04	30.916	
A701	10.14	29.442	
A702	10.05	29.566	
A703	10.10	29.615	
A704	9.97	29.745	
A705	10.02	29.725	
A706	10.16	29.547	
A707	10.02	30.222	
A708	10.01	29.726	
A709	9.98	31.057	
A710	9.99	29.740	
A711	10.07	29.485	
A712	10.06	29.662	
A713	10.03	30.024	
A714	10.04	30.840	
A715	10.12	30.915	
A716	10.03	29.935	
A717	10.03	30.841	
A718	9.99	30.999	
A719	10.04	29.576	
A720	10.07	29.870	
A721	10.03	29.260	
A722	9.95	29.633	
A723	10.10	29.710	
A724	10.02	29.383	
A725	10.02	29.535	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A726	9.95	29.471	
A727	10.02	29.620	
A728	10.09	29.613	
A729	10.02	29.580	
A730	10.05	29.626	
A731	9.98	29.590	
A732	10.02	29.626	
A733	10.04	29.726	
A734	10.13	29.767	
A735	10.02	29.798	
A736	10.03	29.698	
A737	10.00	29.779	
A738	10.04	29.691	
A739	10.06	29.698	
A740	10.00	29.911	
A741	10.00	29.348	
A742	10.03	29.551	
A743	10.06	29.581	
A744	10.01	29.686	
A745	10.06	29.513	
A746	9.98	29.512	
A747	10.00	29.463	
A748	10.05	29.596	
A749	9.97	29.640	
A750	10.00	29.672	
A751	10.08	29.614	
A752	10.05	29.605	
A753	10.01	29.828	
A754	9.99	29.559	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A755	10.10	29.673	
A756	10.08	29.329	
A757	10.09	29.786	
A758	10.16	29.709	
A759	9.99	29.631	
A760	10.01	29.650	
A761	9.99	29.526	
A762	9.97	29.852	
A763	9.99	29.795	
A764	10.07	29.715	
A765	9.99	29.553	
A766	9.94	29.703	
A767	10.02	29.807	
A768	10.07	29.691	
A769	10.04	29.759	
A770	9.97	29.951	
A771	10.19	29.593	
A772	10.14	29.778	
A773	10.11	29.739	
A774	10.16	29.681	
A775	10.12	29.712	
A776	10.06	29.680	
A777	10.14	29.914	
A778	10.10	29.956	
A779	10.03	29.821	
A780	10.10	29.812	
A781	10.12	29.650	
A782	10.13	29.449	
A783	10.01	29.728	

ID-Nr. LOT 57130102	Concentration Particle number/mL (x 10 ⁵)	weight (g)	Bottle received
A784	10.09	29.821	
A785	10.01	29.682	
A786	10.16	29.762	
A787	10.12	29.815	
A788	10.13	29.860	
A789	10.07	29.796	
A790	10.04	29.638	
A791	10.21	29.640	
A792	10.04	29.625	
A793	10.00	29.740	
A794	10.07	29.759	
A795	10.04	29.824	
A796	10.07	29.622	
A797	10.10	29.838	
A798	10.01	29.820	
A799	10.06	29.631	
A800	10.20	29.241	
A801	10.07	29.660	
A802	9.99	29.640	
A803	10.04	29.659	
A804	10.11	29.604	
A805	10.05	29.369	
A806	10.20	29.473	

5. Adjusting the FlowFactor

The FlowFactor (FF) is analyzer specific and part of the conversion factor that relates the number of objects detected in the Cedex HiRes Analyzer to the actual density in the analyzed sample.

The conversion factor is linearly dependent on the FlowFactor, thus allowing for the possibility to compute the appropriate setting for this parameter via the comparison of Cedex HiRes Analyzer results versus a known density of a sample (*e.g.*, Density Reference Standard Beads).

Refer to the relevant Cedex HiRes Operator's Manual for the location of the current FlowFactor. The location depends on the installed Software version.

5.1 How to Calculate and Change the FlowFactor

- ① Write down the current FlowFactor (FFold) and calculate a new FlowFactor as follows:

$$\text{FF (new } _1) = \frac{\text{actual density (according to bottle label)}}{\text{mean value TCD of measurement series 1}} \times \text{FF (old)}$$

$$\text{FF (new } _2) = \frac{\text{actual density (according to bottle label)}}{\text{mean value TCD of measurement series 2}} \times \text{FF (old)}$$

("actual density" is specified as Particle number/ml on the label of the bottle of beads used for the calibration.)

$$\text{FF (new)} = \frac{\text{FF (new } _1) + \text{FF (new } _2)}{2}$$

- ② Refer to the relevant Cedex HiRes Operator's Manual for information about the location of the FlowFactor. Update the FlowFactor in that location based on the result calculated in Step 1.

5.2 FlowFactor Calibration

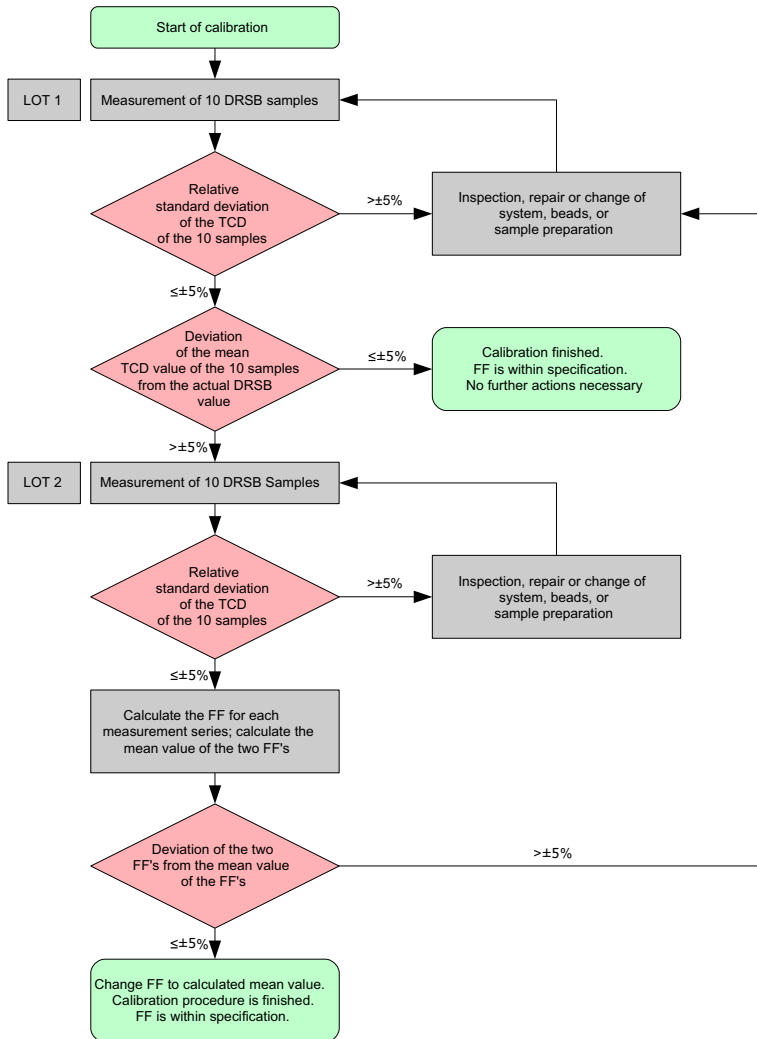


Fig. 2: Calibration Cedex HiRes Analyzer

6. Supplementary Information

6.1 Conventions

6.1.1 Text Conventions

To make information consistent and easier to read, the following text conventions are used in this document:

Text Convention	Usage
Numbered stages labeled ①, ②, etc.	Stages in a process that usually occur in the order listed.
Numbered instructions labeled ❶, ❷, etc.	Steps in a procedure that must be performed in the order listed.
Asterisk *	Denotes a product available from Roche Diagnostics.

6.1.2 Symbols

In this document, the following symbols are used to highlight important information:

Symbol	Description
ⓘ	Information Note: Additional information about the current topic or procedure.
⚠	Important Note: Information critical to the success of the procedure or use of the product.

6.2 Changes to Previous Version

- Updated to include lot-specific data for new lot.

6.3 Trademarks

CEDEX is a trademark of Roche.

Other brands or product names are trademarks of their respective holders.

6.4 Regulatory Disclaimer

For use in quality control/manufacturing process only.

6.5 Contact Support

For additional documentation such as certificates and safety data sheets, please visit documentation.roche.com.

Published by

Roche Diagnostics GmbH
Sandhofer Straße 116
68305 Mannheim
Germany

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06279244001  1223

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Your Roche CustomBiotech Customer Service**Europe, Middle East, Africa,
and Latin America**

Phone +49 621 759 8580
Fax +49 621 759 6385
mannheim.custombiotech@roche.com

United States

Phone +1 800 428 5433 (toll-free)
Fax +1 317 521 4065
custombiotech.ussales@roche.com

Canada

Phone +1 450 686 7050
Fax +1 450 686 7012
custombiotech.can@roche.com

Japan

Phone +81 3 6634 1046
Fax +81 3 5479 0585
japan.custombiotech@roche.com

Asia Pacific

Phone +65 6371 6638
Fax +65 6371 6601
apac.custombiotech@roche.com