

**FACTORES PARA EL CALCULO DE LOS LIMITES DE CONTROL
DE LOS GRAFICOS DE CONTROL POR VARIABLES**

Tamaño muestral	Graficos de la media			Grafico de la desviacion estandar						Grafico de la amplitud					
	Limites de control			Linea media		Limites de control				Linea media		Limites de control			
	A	A1	A2	c2	c4	B1	B2	B3	B4	d2	d3	D1	D2	D3	D4
2	2.121	3.760	1.880	0.5642	0.7979	0.000	1.843	0.000	3.266	1.128	0.853	0.000	3.687	0.000	3.268
3	1.732	2.394	1.023	0.7236	0.8862	0.000	1.858	0.000	2.568	1.693	0.888	0.000	4.357	0.000	2.574
4	1.500	1.880	0.729	0.7979	0.9213	0.000	1.808	0.000	2.266	2.059	0.880	0.000	4.699	0.000	2.282
5	1.342	1.596	0.577	0.8408	0.9400	0.000	1.756	0.000	2.089	2.326	0.864	0.000	4.918	0.000	2.114
6	1.225	1.410	0.483	0.8686	0.9515	0.026	1.711	0.030	1.970	2.534	0.848	0.000	5.078	0.000	2.004
7	1.134	1.277	0.419	0.8880	0.9594	0.104	1.672	0.117	1.883	2.704	0.833	0.205	5.203	0.076	1.924
8	1.061	1.175	0.373	0.9027	0.965	0.167	1.639	0.185	1.815	2.847	0.820	0.387	5.307	0.136	1.864
9	1.000	1.094	0.337	0.9139	0.9693	0.218	1.609	0.239	1.761	2.970	0.808	0.546	5.394	0.184	1.816
10	0.949	1.028	0.308	0.9227	0.9727	0.262	1.584	0.284	1.716	3.078	0.797	0.687	5.469	0.223	1.777
11	0.905	0.973	0.285	0.9300	0.9754	0.299	1.561	0.322	1.678	3.173	0.787	0.812	5.534	0.256	1.744
12	0.866	0.925	0.266	0.9359	0.9776	0.331	1.541	0.353	1.647	3.258	0.778	0.924	5.592	0.284	1.716
13	0.832	0.884	0.249	0.9410	0.9794	0.359	1.523	0.381	1.619	3.336	0.770	1.026	5.646	0.308	1.692
14	0.802	0.848	0.235	0.9453	0.981	0.384	1.506	0.407	1.593	3.407	0.762	1.121	5.693	0.329	1.671
15	0.775	0.816	0.223	0.9490	0.9823	0.406	1.492	0.428	1.572	3.472	0.755	1.207	5.737	0.348	1.652
16	0.750	0.788	0.212	0.9523	0.9835	0.427	1.478	0.448	1.552	3.532	0.749	1.285	5.779	0.364	1.636
17	0.728	0.762	0.203	0.9551	0.9845	0.445	1.466	0.466	1.534	3.588	0.743	1.359	5.817	0.379	1.621
18	0.707	0.738	0.194	0.9576	0.9854	0.461	1.454	0.482	1.518	3.640	0.738	1.426	5.854	0.392	1.608
19	0.688	0.717	0.187	0.9599	0.9862	0.476	1.443	0.496	1.504	3.689	0.733	1.490	5.888	0.404	1.596
20	0.671	0.697	0.180	0.9619	0.9869	0.490	1.434	0.510	1.490	3.735	0.729	1.548	5.922	0.414	1.586
21	0.655	0.679	0.173	0.9638	0.9876	0.504	1.423	0.523	1.477	3.778	0.724	1.606	5.950	0.425	1.575
22	0.640	0.662	0.167	0.9655	0.9882	0.517	1.414	0.535	1.465	3.819	0.720	1.659	5.979	0.434	1.566
23	0.626	0.647	0.162	0.9670	0.9887	0.527	1.407	0.545	1.455	3.858	0.716	1.710	6.006	0.443	1.557
24	0.612	0.632	0.157	0.9684	0.9892	0.538	1.399	0.555	1.445	3.895	0.712	1.759	6.031	0.452	1.548
25	0.600	0.619	0.153	0.9696	0.9896	0.547	1.392	0.564	1.436	3.931	0.709	1.804	6.058	0.459	1.541

Tabla elaborada por Johnny Mercado R. en base a formulas utilizadas por Vicente Carot Alonso en su libro "Control Estadístico de Calidad" Edit. Alfaomega, Universidad Politecnica de Valencia

* Por efectos de redondeo, en algunos datos existira diferencia en el ultimo dígito, por el tipo de calculo realizado

FORMULAS UTILIZADAS EN EL CALCULO DE LA TABLA

$$c_2 = c_4 * \sqrt{\frac{n-1}{n}} \quad c_3 = c_5 * \sqrt{\frac{n-1}{n}} \quad c_5 = \sqrt{1-c_4^2}$$

$$A = \frac{3}{\sqrt{n}} \quad A_1 = \frac{3}{c_{2,n} * \sqrt{n}} \quad A_2 = \frac{3}{d_{2,n} * \sqrt{n}}$$

$$B_{1,n} = c_{2,n} - 3c_{3,n} \quad B_{2,n} = c_{2,n} + 3c_{3,n} \quad B_{3,n} = \frac{c_{2,n} - 3c_{3,n}}{c_{2,n}} \quad B_{4,n} = \frac{c_{2,n} + 3c_{3,n}}{c_{2,n}}$$

$$D_{1,n} = d_{2,n} - 3d_{3,n} \quad D_{2,n} = d_{2,n} + 3d_{3,n} \quad D_{3,n} = \frac{d_{2,n} - 3d_{3,n}}{d_{2,n}} \quad D_{4,n} = \frac{d_{2,n} + 3d_{3,n}}{d_{2,n}}$$