

# MATERIAL DECLARATION SHEET



Material Number	EMS22 – Dual Ball Bearing			
Product Line	Magnetic Encoder			
Compliance Date	Since inception			
RoHS Compliant	Yes	MSL	N/A	

No.	Construction Element (subpart)	Homogeneous Material	Material weight [g]	Homogeneous Material/ Substances	CASRN if applicable	Materials Mass %	Material Mass % of total unit wt.	Subpart mass of total wt. (%)
1	C-Clip	Stainless Steel	0.01	Carbon	7440-44-0	0.15	0.0001626	0.108
				Manganese	7439-96-5	1.00	0.0010837	
				Silicon	7440-21-3	1.00	0.0010837	
				Chromium	7440-47-3	13.00	0.0140879	
				Iron	7439-89-6	84.85	0.0919504	
2	Washer	Stainless Steel	0.002	Iron	7439-89-6	72.82	0.0157827	0.022
				Carbon	7440-44-0	0.15	0.0000325	
				Chromium	7440-47-3	18.00	0.0039013	
				Manganese	7439-96-3	0.02	0.0000043	
				Nickel	7440-02-0	9.00	0.0019506	
				Silicon	7440-21-3	0.01	0.0000022	
3	Bearing	Stainless Steel	0.267	Iron	7439-89-6	84.73	2.4514592	2.893
				Carbon	7440-44-0	0.68	0.0195307	
				Silicon	7440-21-3	1.00	0.0289343	
				Manganese	7439-96-5	1.00	0.0289343	
				Phosphorus	7723-14-0	0.03	0.0008680	
				Sulfur	7704-34-9	0.02	0.0005787	
				Chromium	7440-47-3	12.25	0.3544453	
				Molybdenum	7439-98-7	0.30	0.0086803	

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4	Cover	PBT	0.4825	Poly (Butylene Tetrphthalate)	30965-26-5	64.00	3.3464098	5.229
				Glass	65997-17-3	30.00	1.5686296	
				Antimony Oxide	1309-64-4	2.50	0.1307191	
				Antimony Compound	7440-36-0	2.50	0.1307191	
				Carbon Black	1333-86-4	0.50	0.0261438	
				Tetrahydrofuran	109-99-9	0.50	0.0261438	
5	Housing	PBT	2.7795	Poly (Butylene Tetrphthalate)	30965-26-5	94.00	28.3136826	30.121
				Antimony Oxide	1309-64-4	2.50	0.7530235	
				Antimony Compound	7440-36-0	2.50	0.7530235	
				Carbon Black	1333-86-4	0.50	0.1506047	
				Tetrahydrofuran	109-99-9	0.50	0.1506047	
6	Bushing	Aluminum	1.7082	Silicon	7440-21-3	0.70	0.1295802	18.511
				Iron	7439-89-6	0.34	0.0629389	
				Copper	7440-50-8	0.34	0.0629389	
				Manganese	7439-96-3	0.09	0.0166603	
				Magnesium	7439-98-5	0.90	0.1666031	
				Chromium	7440-47-3	0.09	0.0166603	
				Zinc	7440-66-6	0.05	0.0092557	
				Titanium	7440-32-6	0.02	0.0037023	
				Aluminum	7429-90-5	97.47	18.0431147	
7	Shaft	Stainless Steel	1.6323	Nickel	7440-02-0	9.00	1.5920046	17.689
				Chromium	7440-47-3	18.00	3.1840092	
				Iron	7439-89-6	69.85	12.3557245	
				Silicon	7440-21-3	1.00	0.1768894	
				Manganese	7439-96-5	2.00	0.3537788	
				Carbon	7440-44-0	0.15	0.0265334	
8	Magnet	Neodymium-Iron-Boron	0.53	Neodymium	7440-00-8	30.00	1.7230542	5.744

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				Iron	7439-89-6	64.00	3.6758491	
				Dysprosium	7429-91-6	2.00	0.1148703	
				Copper	7440-50-8	0.50	0.0287176	
				Aluminum	7429-90-5	0.50	0.0287176	
				Boron	7440-42-8	1.00	0.0574351	
				Cobalt	7440-48-4	1.00	0.0574351	
				Nickel	7440-02-0	1.00	0.0574351	
9	Holder	Aluminum	0.3053	Silicon	7440-21-3	0.70	0.0231594	3.308
				Iron	7439-89-6	0.34	0.0112488	
				Copper	7440-50-8	0.34	0.0112488	
				Manganese	7439-96-3	0.09	0.0029776	
				Magnesium	7439-98-5	0.90	0.0297763	
				Chromium	7440-47-3	0.09	0.0029776	
				Zinc	7440-66-6	0.05	0.0016542	
				Titanium	7440-32-6	0.02	0.0006617	
				Aluminum	7429-90-5	97.47	3.2247763	
10	Epoxy	Epoxy	0.5	Silver	7440-22-4	75.00	4.0638072	5.418
				Epoxy Resin		25.00	1.3546024	
11	PCB Panel		0.29	Glass	65997-17-3	93.02	2.9231930	3.143
				Copper	7440-50-8	4.61	0.1447517	
				Solder Mask		1.85	0.0579824	
				Component Mark		0.05	0.0014393	
				Lead	7439-92-1	0.23	0.0071025	
				Tin	7440-31-5	0.26	0.0081710	
12	ASIC	Molding Compound	0.082	Resin	112945-52-5	14.00	0.1244067	1.561
				Silicon Dioxide Filler	7440-50-8	86.00	0.7642125	
		Lead Frame	0.044	Copper	7440-48-4	97.50	0.4648995	
				Iron	7440-22-4	2.50	0.0119205	
		Frame Plating	0.001	Silver	7440-21-3	100.00	0.0108368	

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		Die	0.011	Silicon	7440-21-3	100.00	0.1192050	
		Die Attach	0.003	Silver	7440-22-4	100.00	0.0325105	
		Wire	0.001	Gold	7440-57-5	100.00	0.0108368	
		External Plating	0.002	Tin	7440-31-5	100.00	0.0216736	
13	Capacitor 1	Ceramic body & Dielectric	0.0178	Barium	7440-39-3	50.32	0.0970650	0.205
				Oxygen	7782-44-7	21.10	0.0407009	
				Titanium	7440-32-6	17.50	0.0337567	
				Nickel	7440-02-0	9.73	0.0187687	
				Miscellaneous		1.35	0.0026041	
		Termination	0.0011	Nickel	7440-02-0	7.02	0.0008368	
				Copper	7440-50-8	68.42	0.0081560	
Tin	7440-31-5			24.56	0.0029277			
14	Capacitor 2	Pellet	0.0085	Tantalum	7440-25-7	100.00	0.0921130	0.334
		Cathode Layer	0.00138	Manganese	7439-96-5	100.00	0.0149548	
		Outer Cathode Layer	0.00019	Silver	7440-22-4	100.00	0.0020590	
		Lead Frame	0.00519	Nickel	7440-02-0	43.00	0.0241845	
				Iron	7439-89-6	54.95	0.0309056	
				Manganese	7439-96-5	0.80	0.0004499	
				Silicon	7440-21-3	0.30	0.0001687	
				Carbon	7440-44-0	0.05	0.0000281	
				Aluminum	7429-90-5	0.10	0.0000562	
				Cobalt	7440-48-4	0.50	0.0002812	
				Chromium	7440-47-3	0.25	0.0001406	
				Phosphorus	7723-14-0	0.03	0.0000141	
				Sulfur	7704-34-9	0.03	0.0000141	
		Lead Frame Solder Layer	0.00071	Tin	7440-31-5	99.85	0.0076825	
Copper	7440-50-8			0.00	0.0000001			
Iron	7439-89-6			0.02	0.0000015			

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				Zinc	7440-66-6	0.01	0.0000008	
				Aluminum	7429-90-5	0.01	0.0000008	
				Proprietary Ingredients		0.11	0.0000085	
		Adhesive	0.00071	Silver	7440-22-4	73.00	0.0056167	
				gamma-Butyrolactone	96-48-0	27.00	0.0020774	
		Encapsulation	0.01412	Silica, vitreous	60676-86-0	67.80	0.1037448	
				Epoxy Resin		30.00	0.0459048	
				Brominated epoxy resin		1.30	0.0019892	
				Antimonytrioxide		1309-64-4	0.90	0.0013771
15	Solder Paste	Solder	0.18	Tin	7440-31-5	96.50	1.8823555	1.951
				Silver	7440-22-4	3.00	0.0585188	
				Copper	7440-50-8	0.50	0.0097531	
16	Terminal X 6	Phosphor Bronze	0.1649	Copper	7440-50-8	94.80	1.6940679	1.813
				Tin	7440-31-5	5.00	0.0893496	
				Phosphorus	7723-14-0	0.20	0.0035740	
		Plating	0.0024	Tin	7440-31-5	100	0.0260084	
17	Solder	Solder	0.18	Tin	7440-31-5	96.50	1.8823555	1.951
				Silver	7440-22-4	3.00	0.0585188	
				Copper	7440-50-8	0.50	0.0097531	
		Total weight	9.2278					

**This Document was updated on:** Aug 10, 2007

**Important remarks:**

1. It is the responsibility of the user to verify they are accessing the latest version.
2. Per [Product Update Memo SC2436](#), this MDS is under revision. The updated version will be posted soon.