

Material Composition for EN09 Encoder (with & without Switch)

Part No.	Description	Sub-component	Mass (g)	Material	Chemical Name	% of Total Mass	CAS #	Special Classification
EN09...S....	Encoder with Switch Option	Shaft	0.4	Aluminum alloy	Al	97.39%	7429-90-5	
					Si	0.1%	7440-21-3	
					Fe	0.2%	7439-89-6	
					Cu	0.02%	7440-50-8	
					Mn	0.02%	7439-96-5	
					Mg	2.25%	7439-95-4	
					Zn	0.02%	7440-66-6	
		Lubricant	0.04	lubricating oil	BASIC OIL	75-80%	25189-70-2	
					VISCOUS	10-15%	9003-27-4	
					ADDITIVE	3-5%	25038-59-9	
		Bushing	1.68	Zinc alloy	Zn	95%	7440-66-6	
					Al	3.9%	7429-90-5	
					Mg	0.5%	7439-95-4	
					Fe	0.6%	7439-89-6	
		Stop plate	1.68	Zinc alloy	Zn	95%	7440-66-6	
					Al	3.9%	7429-90-5	
					Mg	0.5%	7439-95-4	
					Fe	0.6%	7439-89-6	
		Wiper	0.05	Phosphor bronze	Cu	Margin	7440-50-8	
					Sn	7-9%	7440-31-5	
					Ni	≤0.2%	7440-02-0	
					P	0.1-0.25%	7723-14-0	
					Fe	≤0.5%	7439-89-6	
					Pb	≤0.02%	7439-92-1	RoHS Exempt 6(c)
					PA66 resin	50%	32131-17-2	
		Coded disk	0.07	PA66+30%GF	Fiberglas	30%	65997-17-3	
					BPS	15%	88497-56-7	
					Antimony trioxide	5%	1309-64-4	
					Cu	Margin	7440-50-8	
		Contact plate	0.38	Phosphor bronze	Sn	7-9%	7440-31-5	
					Ni	≤0.2%	7440-02-0	
					P	0.1-0.25%	7723-14-0	
					Fe	≤0.5%	7439-89-6	
					Pb	≤0.02%	7439-92-1	RoHS Exempt 6(c)
					Cu	Margin	7440-50-8	
					Sn	7-9%	7440-31-5	
		Switch terminals	0.2	Phosphor bronze	Ni	≤0.2%	7440-02-0	
					P	0.1-0.25%	7723-14-0	
					Fe	≤0.5%	7439-89-6	
					Pb	≤0.02%	7439-92-1	RoHS Exempt 6(c)
					Cu	Margin	7440-50-8	
					Sn	7-9%	7440-31-5	
					Ni	≤0.2%	7440-02-0	
		Switch body	1.04	PBT+15%GF	PBT	55-75%	26062-94-2	
					Flame retardant	6-16%	68928-70-1	
					Antimony trioxide	1-6%	1309-64-4	
					Glass fiber	12-18%	65997-17-3	
					Additives	1-10%	N/A	
					Fe	70.845	7439-89-6	
					Cr	18	7440-47-3	
		Metal dome	0.04	Stainless steel	Ni	8	7440-02-0	
					Mn	2	7439-96-5	
					P	0.045	7723-14-0	
					S	0.03	7704-34-9	
					Si	1	7440-21-3	
					C	0.08	7440-44-0	
					Cu	Margin	7440-50-8	
					Sn	7-9%	7440-31-5	
					Ni	≤0.2%	7440-02-0	
					P	0.1-0.25%	7723-14-0	
		Terminal	0.15	Phosphor bronze	Fe	≤0.5%	7439-89-6	
					Pb	≤0.02%	7439-92-1	RoHS Exempt 6(c)
					1,3,5-trioxan trioxymethylene	98.00%	110-88-3	
					1,3-Dioxolane	2.00%	646-06-0	
					PBT	55-75%	26062-94-2	
		Encoder body	1.04	PBT+15%GF	Flame retardant	6-16%	68928-70-1	
					Antimony trioxide	1-6%	1309-64-4	
					Glass fiber	12-18%	65997-17-3	
					Additives	1-10%	N/A	
					Cu	Margin	7440-50-8	
		Metal spacer	0.04	Phosphor bronze	Sn	7-9%	7440-31-5	
					Ni	≤0.2%	7440-02-0	
					P	0.1-0.25%	7723-14-0	
					Fe	≤0.5%	7439-89-6	
					Pb	≤0.02%	7439-92-1	RoHS Exempt 6(c)
					Cu	Margin	7440-50-8	
					Sn	7-9%	7440-31-5	
		Click plate	0.2	Phosphor bronze	Ni	≤0.2%	7440-02-0	
					P	0.1-0.25%	7723-14-0	
					Fe	≤0.5%	7439-89-6	
					Pb	≤0.02%	7439-92-1	RoHS Exempt 6(c)
					Fe	70.85%	7439-89-6	
		O-ring	0.01	Stainless steel	Cr	18%	7440-47-3	
					Ni	8%	7440-02-0	
					Mn	2%	7439-96-5	
					P	0.05%	7723-14-0	
					S	0.03%	7704-34-9	
					Si	1%	7440-21-3	
					C	0.08%	7440-44-0	

Total	7.15
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Part No.	Description	Sub-component	Mass (g)	Material	Chemical Name	% of Total Mass	CAS #	Special Classification
EN09....N....	Encoder without Switch Option	Shaft	0.99	Aluminum alloy	Al	97.39%	7429-90-5	
					Si	0.1%	7440-21-3	
					Fe	0.2%	7439-89-6	
					Cu	0.02%	7440-50-8	
					Mn	0.02%	7439-96-5	
					Mg	2.25%	7439-95-4	
					Zn	0.02%	7440-66-6	
		Lubricant	0.04	lubricating oil	BASIC OIL	75-80%	25189-70-2	
					VISCOUS	10-15%	9003-27-4	
					ADDITIVE	3-5%	25038-59-9	
		Bushing	1.68	Zinc alloy	Zn	95%	7440-66-6	
					Al	3.9%	7429-90-5	
					Mg	0.5%	7439-95-4	
					Fe	0.6%	7439-89-6	
		Stop plate	1.68	Zinc alloy	Zn	95%	7440-66-6	
					Al	3.9%	7429-90-5	
					Mg	0.5%	7439-95-4	
					Fe	0.6%	7439-89-6	
		Wiper	0.05	Phosphor bronze	Cu	Margin	7440-50-8	
					Sn	7-9%	7440-31-5	
					Ni	≤0.2%	7440-02-0	
					P	0.1-0.25%	7723-14-0	
					Fe	≤0.5%	7439-89-6	
					Pb	≤0.02%	7439-92-1	RoHS Exempt 6(c)
		Contact plate	0.38	Phosphor bronze	Cu	Margin	7440-50-8	
					Sn	7-9%	7440-31-5	
					Ni	≤0.2%	7440-02-0	
					P	0.1-0.25%	7723-14-0	
					Fe	≤0.5%	7439-89-6	
					Pb	≤0.02%	7439-92-1	RoHS Exempt 6(c)
		Encoder body	0.8	PBT+15%GF	PBT	55-75%	26062-94-2	
					Flame retardant	6-16%	68928-70-1	
					Antimony trioxide	1-6%	1309-64-4	
					Glass fiber	12-18%	65997-17-3	
		Rear cover	1.04	PBT+15%GF	Additives	1-10%	N/A	
					PBT	55-75%	26062-94-2	
					Flame retardant	6-16%	68928-70-1	
					Antimony trioxide	1-6%	1309-64-4	
		Coded disk	0.07	PA66+30%GF	Glass fiber	12-18%	65997-17-3	
					Additives	1-10%	N/A	
					PA66 resin	50%	32131-17-2	
					Fiberglas	30%	65997-17-3	
		Terminal	0.15	Phosphor bronze	BPS	15%	88497-56-7	
					Antimony trioxide	5%	1309-64-4	
					Cu	Margin	7440-50-8	
					Sn	7-9%	7440-31-5	
		Metal spacer	0.2	Phosphor bronze	Ni	≤0.2%	7440-02-0	
					P	0.1-0.25%	7723-14-0	
					Fe	≤0.5%	7439-89-6	
					Pb	≤0.02%	7439-92-1	RoHS Exempt 6(c)
Cu	Margin				7440-50-8			
Sn	7-9%				7440-31-5			
Click plate	0.17	Phosphor bronze	Ni	≤0.2%	7440-02-0			
			P	0.1-0.25%	7723-14-0			
			Fe	≤0.5%	7439-89-6			
			Pb	≤0.02%	7439-92-1	RoHS Exempt 6(c)		
O-ring	0.01	Stainless steel	Fe	70.85%	7439-89-6			
			Cr	18%	7440-47-3			
			Ni	8%	7440-02-0			
			Mn	2%	7439-96-5			
			P	0.05%	7723-14-0			
			S	0.03%	7704-34-9			
			Si	1%	7440-21-3			
			C	0.08%	7440-44-0			

Total	7.26
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