SAE ALLOY STEEL COMPOSITIONS

SAE No.	COMPOSITION, *%								CORRESPONDING AISI No.
	C	Mn	P	S	Si	Ni	Cr	Other	
1330	0.28-0.33	1.60-1.90	0.035	0.040	0.20-0.35	-	-	-	1330
1335	0.33-0.38	1.60-1.90	0.035	0.040	0.20-0.35	-	-	-	1335
1340	0.38-0.43	1.60-1.90	0.035	0.040	0.20-0.35	-	-	-	1340
1345	0.43-0.48	1.60-1.90	0.035	0.040	0.20-0.35	-	-	Mo	1345
4012	0.09-0.14	0.75-1.00	0.035	0.040	0.20-0.35	-	-	0.15-0.25	4012
4023	0.20-0.25	0.70-0.90	0.035	0.040	0.20-0.35	-	-	0.20-0.30	4023
4024	0.20-0.25	0.70-0.90	0.035	0.035-0.050	0.20-0.35	-	-	0.20-0.30	4024
4027	0.25-0.30	0.70-0.90	0.035	0.040	0.20-0.35	-	-	0.20-0.30	4027
4028	0.25-0.30	0.70-0.90	0.035	0.035-0.050	0.20-0.35	-	-	0.20-0.30	4028
4032	0.30-0.35	0.70-0.90	0.035	0.040	0.20-0.35	-	-	0.20-0.30	-
4037	0.35-0.40	0.70-0.90	0.035	0.040	0.20-0.35	-	-	0.20-0.30	4037
4042	0.40-0.45	0.70-0.90	0.035	0.040	0.20-0.35	-	-	0.20-0.30	-
4047	0.45-0.50	0.70-0.90	0.035	0.040	0.20-0.35	-	-	0.20-0.30	4047
4118	0.18-0.23	0.70-0.90	0.035	0.040	0.20-0.35	-	0.40-0.60	0.08-0.15	4118
4130	0.28-0.33	0.40-0.60	0.035	0.040	0.20-0.35	-	0.80-1.10	0.15-0.25	4130
4135	0.33-0.38	0.70-0.90	0.035	0.040	0.20-0.35	-	0.80-1.10	0.15-0.25	-
4137	0.35-0.40	0.70-0.90	0.035	0.040	0.20-0.35	-	0.80-1.10	0.15-0.25	4137
4140	0.38-0.43	0.75-1.00	0.035	0.040	0.20-0.35	-	0.80-1.10	0.15-0.25	4140
4142	0.40-0.45	0.75-1.00	0.035	0.040	0.20-0.35	-	0.80-1.10	0.15-0.25	4142
4145	0.43-0.48	0.75-1.00	0.035	0.040	0.20-0.35	-	0.80-1.10	0.15-0.25	4145
4147	0.45-0.50	0.75-1.00	0.035	0.040	0.20-0.35	-	0.80-1.10	0.15-0.25	4147
4150	0.48-0.53	0.75-1.00	0.035	0.040	0.20-0.35	-	0.80-1.10	0.15-0.25	4150
4161	0.56-0.64	0.75-1.00	0.035	0.040	0.20-0.35	-	0.70-0.90	0.25-0.35	4161
4320	0.17-0.22	0.45-0.65	0.035	0.040	0.20-0.35	1.65-2.00	0.40-0.60	0.20-0.30	4320
4340	0.38-0.43	0.60-0.80	0.035	0.040	0.20-0.35	1.65-2.00	0.70-0.90	0.20-0.30	4340
E4340[1]	0.38-0.43	0.65-0.85	0.025	0.025	0.20-0.35	1.65-2.00	0.70-0.90	0.20-0.30	E4340
4419	0.18-0.23	0.45-0.65	0.035	0.040	0.20-0.35	-	-	0.45-0.60	4419
4422	0.20-0.25	0.70-0.90	0.035	0.040	0.20-0.35	-	-	0.35-0.45	-
4427	0.24-0.29	0.70-0.90	0.035	0.040	0.20-0.35	-	-	0.35-0.45	-

* Small quantities of certain elements are present which are not specified or required. Considered as incidental, they are acceptable to the following amounts: 0.35 Cu, 0.25 Ni, 0.20 Cr, and 0.06 Mo. [1]Electric furnace steel.

Tungsten Electrode and Gas Selector Chart

BASE METAL TYPE	THICKNESS RANGE	DESIRED RESULTS	WELDING CURRENT	ELECTRODE TYPE	SHIELD GAS	TUNGSTEN PERFORMANCE CHARACTERISTICS
ALUMINUM ALLOYS AND MAGNESIUM ALLOYS	All	General Purpose	ACHF	Pure (EW-P)	Argon	Balls easily, low cost, tends to spit at higher currents, used for non-critical welds only.
				Zirconiated (EW-Zr)	Argon	Balls well, takes higher current, with less spitting and with better arc starts and arc stability than pure tungsten.
				2% Thoriated (EW-Th2)	75 Argon 25 Helium	Higher current range and stability, better arc starts, with lower tendency to spit, medium erosion.
	Only thin sections	Control penetration	DCRP	2% Ceriated (EW-Ce2)	Argon Helium	Lowest erosion rate, widest current range, AC or DC, no spitting, best arc starts and stability.
	Only thick sections	Increase penetration or travel speed	DCSP	2% Thoriated (EW-Th2)	75 Argon 25 Helium	Best stability at medium currents, good arc starts, medium tendency to spit, medium erosion rate.
				2% Ceriated (EW-Ce2)	Helium	Low erosion rate, wide current range, AC or DC, no spitting, consistent arc starts, good stability.
COPPER ALLOYS, Cu-NI ALLOYS AND NICKEL ALLOYS	All	General Purpose	DCSP	2% Thoriated (EW-Th2)	75 Argon 25 Helium	Best stability at medium currents, good arc starts, medium tendency to spit, medium erosion rate.
				2% Ceriated (EW-Ce2)	75 Argon 25 Helium	Low erosion rate, wide current range, AC or DC, no spitting, consistent arc starts, good stability.
	Only thin sections	Control penetration	ACHF	Zirconiated (EW-Zr)	Argon	Use on lower currents only, spitting on starts, rapid erosion rates at higher currents.
	Only thick sections	Increase penetration or travel speed	DCSP	2% Ceriated (EW-Ce2)	75 Argon 25 Helium	Low erosion rate, wide current range, AC or DC, no spitting, consistent arc starts, good stability.
MILD STEELS, CARBON STEELS ALLOY STEELS STAINLESS STEELS AND TITANIUM ALLOYS	All	General Purpose	DCSP	2% Thoriated (EW-Th2)	75 Argon 25 Helium	Best stability at medium currents, good arc starts, medium tendency to spit, medium erosion rate.
				2% Ceriated (EW-Ce2)	75 Argon 25 Helium	Low erosion rate, wide current range, AC or DC, no spitting, consistent arc starts, good stability.
				2% Lanthanated (EWG-La2)	75 Argon 25 Helium	Lowest erosion rate, widest current range on DC, no spitting, best DC arc starts and stability.
	Only thin sections	Control penetration	ACHF	Zirconiated (EW-Zr)	Argon	Use on lower currents only, spitting on starts, rapid erosion rates at higher currents
	Only thick sections	Increase penetration or travel speed	DCSP	2% Ceriated (EW-Ce2)	75 Argon 25 Helium	Low erosion rate, wide current range, no spitting, consistent arc starts, good stability.
				2% Lanthanated (EWG-La2)	Helium	Lowest erosion rate, highest current range, no spitting, best DC arc starts and stability.