TABLE 46-O

EXPLOSION CHARACTERISTICS OF VARIOUS DUSTS

Type of dust	Ignition temp of dust cloud (deg C)	Min spark energy required for ignition of dust cloud (milli joules)	Min explosion concentration (oz per 1 000 cu ft)	Max explosion pressure (psi)	Rates of pressure rise (psi per sec)		Limiting oxygen percentage to prevent ignition of dust clouds by electric sparks
					Ave.	Max	
Metal powders							
Aluminum atomized	640	15	40	90	3 500	10 000+	7
Aluminum milled	550		45	70	2 000	4 250	
Aluminum stamped	550	10	35	100	10 000	10 000+	4
Boron (85% B 8% Mg)	470	60	135	90	900	2 500	
Iron carbonyl	320	20	105	50	1 500	7 000	10
Iron electrolytic	320	240	200	45	500	1 000	13
Iron hydrogen reduced	315	80	120	45	800	1 750	13
Magnesium atomized	600	120	10	80	2 000	5 250	3
Magnesium milled	520	40	20	95	3 000	10 000+	†
Magnesium stamped	520	20	20	80	3 400	10 000+	†
Manganese	450	80	125	50	1 300	2 750	15
Silicon	775	80	100	105	2 000	10 000	13
Thorium	270	5	75	50	1 400	3 250	†
Thorium hydride	260	3	80	60	2 100	6 750	6
Tin	630	160	190	35	500	1 250	16
Titanium	330	10	45	80	3 400	10 000+	†
Titanium hydride	440	60	70	95	3 800	10 000+	13
Uranium	*	45	60	55	1 600	3 500	†
Uranium hydride	*	5	60	45	2 900	6 250	0 5
Vanadium	500	60	220	35‡	200	300	13
Zinc	600	650	480	50	600	1 750	10
Zirconium	*	5	40	65	800	8 750	†
Zirconium hydride	350	60	85	60	2 400	8 750	11
Aluminum-cobalt alloy (60-40)	950	100	100	80	2 500	8 500	
Aluminum-copper alloy (50-50)	950	100	100	70	800	2 500	
Aluminum-nickel alloy (60-40)	960	80	190	80	2 600	10 000+	
Calcium-silicon alloy	540	220	600	75	400	10 000+	
Dowmetal	430	80	20	85	3 600	10 000+	†
Ferromanganese (1 4% C)	450	80	130	45	1 400	4 250	
Ferrosilicon (80% Si)	860	280	400	90	1 500	3 600	19
Ferrotitanium low-carbon	370	80	140	55	2 200	9 500	13
Magnesium-aluminum alloy (50-50)	535	80	50	90	4 000	10 000+	†
Plastics							
Allyl alcohol resin	500	20	35	105	2 800	10 000+	
Butadiene-styrene resin	440	60	25	80	1 400	4 000	
Cellulose acetates	320	10	25	110	2 800	6 750	11
Cellulose propionate	460	45	25	105	1 600	4 750	
Coumarone-indene resin	520	10	15	85	2 800	8 500	14
Dimethyl terephthalate	570	20	30	90	3 100	10 000	
Gums (arabic copal etc)	360	30	30	95	1 500	5 000	14
Lignin resin	450	20	40	80	1 700	4 750	17
Methyl cellulose	360	20	30	100	1 900	6 000	
Methyl methacrylate	440	15	20	100	500	1 750	14
Phenolic resins	460	10	25	80	1 700	6 000	14
Pine-rosin base resin	440		55	80	1 900	7 500	
Polyacrylonitrile	500	20	25	90	2 000	5 000	
Polyamide	500	20	30	90	1 800	7 000	
Polyster resin-glass fiber mixture (65–35)	440	50	45	85	2 200	6 000	
Polyether alcohol resin	460	160	45	65	500	1 000	
Polyethylene resin	410	30	20	80	1 500	3 500	13
Polyethylene terephthalate	500	35	40	90	1 600	7 500	13
Polystyrene	490	15	15	90	2 400	7 000	14
Polyvinyl acetate resin	520	120	35	75	1 200	3 000	
Rubber synthetic hard	320	30	30	95	1 100	3 000	15
Shellac	400	10	20	75	1 400	3 500	14
Styrene-maleic anhydride copolymer	470	20	30	80	2 300	9 500	