



477 Chemicals are Listed here. Bi-Polar Ionization Disassembles all but 30 ["X"].
This Equates to Quick and Effective Odor Control of 93.71% of the Total

Chemical Name	(eV)	
A		
Acetaldehyde	10.21	
Acetamide	9.77	
Acetic acid	10.69	
Acetic anhydride	10.00	
Acetone	9.69	
Acetonitrile	12.20	X
Acetophenone	9.27	
Acetyl bromide	10.55	
Acetyl chloride	11.02	
Acetylene	11.41	
Acrolein	10.10	
Acrylamide	9.50	
Acrylonitrile	10.91	
Allyl alcohol	9.67	
Allyl chloride	9.90	
2- Amino pyridine	8.00	
Ammonia	10.20	
Amylacetate	<9.9	
Aniline	7.70	
Anisidine	7.44	
Anisole	8.22	
Arsine	9.89	
B		
Benzaldehyde	9.53	
Benzene	9.25	
Benzenethiol	8.33	
Benzonitrile	9.71	
Benzotrifluoride	9.68	
Biphenyl	8.27	
Boron oxide	13.50	X
Boron trifluoride	15.56	X
Bromine	10.54	
1- Bromo-2-chloroethane	10.63	
1- Bromo-2-methylpropane	10.09	
2- Bromo-2-methylpropane	9.89	
1- Bromo-4-fluorobenzene	8.99	
Bromobenzene	8.98	
1- Bromobutane	10.13	
2- Bromobutane	9.98	
Bromochloromethane	10.77	
Bromofom	10.48	
Bromomethane	-	
1- Bromopentane	10.10	
1- Bromopropane	10.18	
2- Bromopropane	10.08	
1- Bromopropene	9.30	
3- Bromopropene	9.70	
2- Bromothiophene	8.63	
m- Bromotoluene	8.81	
o- Bromotoluene	8.79	
p- Bromotoluene	8.67	
1,3- Butadiene (butadiene)	9.07	
2,3- Butadiene	9.23	
Butane	10.63	
1- Butanethiol	9.14	
2- Butanone (MEK)	9.54	
1- Butene	9.58	

Chemical Name	(eV)	
cis-2- Butene	9.13	
trans-2- Butene	9.13	
3- Butene nitrile	10.39	
n- Butyl acetate	10.01	
sec- Butyl acetate	9.91	
n- Butyl alcohol	10.04	
tert- Butyl alcohol	10.04	
n- Butyl amine	8.71	
s- Butyl amine	8.70	
t- Butyl amine	8.64	
n- Butyl benzene	8.69	
s- Butyl benzene	8.68	
t- Butyl benzene	8.68	
n- Butyl formate	10.50	
Butyl mercaptan	9.15	
tert- Butyl mercaptan	9.15	
tert- Butylamine	8.71	
p- tert- Butyltoluene	8.28	
1- Butyne	10.18	
n- Butyraldehyde	9.86	
n- Butyric acid	10.16	
n- Butyronitrile	11.67	
C		
Camphor	8.76	
Carbon dioxide	13.79	X
Carbon disulfide	10.07	
Carbon monoxide	14.01	X
Carbon tetrachloride	11.47	
Chlorine	11.48	
Chlorine dioxide	10.36	
Chlorine trifluoride	12.65	
1- Chloro-2-methylpropane	10.66	
2- Chloro-2-methylpropane	10.61	
1- Chloro-3-fluorobenzene	9.21	
Chloroacetaldehyde	10.61	
a - Chloroacetophenone	9.44	
Chlorobenzene	9.07	
Chlorobromomethane	10.77	
1- Chlorobutane	10.67	
2- Chlorobutane	10.65	
Chlorofluoromethane (Freon 22)	12.45	X
Chloroform	11.37	
1- Chloropropane	10.82	
2- Chloropropane	10.78	
3- Chloropropene	10.04	
2- Chlorothiophene	8.68	
m- Chlorotoluene	8.83	
o- Chlorotoluene	8.83	
p- Chlorotoluene	8.70	
Chlorotrifluoromethane (Freon 13)	12.91	X
Chrysene	7.59	
Cresol	8.14	
Crotonaldehyde	9.73	
Cumene (isopropyl benzene)	8.75	
Cyanogen	13.80	X

Chemical Name	(eV)	
Cyclohexane	9.80	
Cyclohexanol	9.75	
Cyclohexanone	9.14	
Cyclohexene	8.95	
Cyclo-octatetraene	7.99	
Cyclopentadiene	8.56	
Cyclopentane	10.53	
Cyclopentanone	9.26	
Cyclopentene	9.01	
Cyclopropane	10.06	
D		
Decaborane	9.88	
Decane	9.65	
Diazomethane	9.00	
Diborane	12.00	X
Dibromochloromethane	10.59	
Dibromodifluoromethane	11.07	
1,1- Dibromoethane	10.19	
1,2- Dibromoethene	9.45	
Dibromomethane	10.49	
1,3- Dibromopropane	10.07	
Dibutylamine	7.69	
1,2- Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	12.20	X
m- Dichlorobenzene	9.12	
o- Dichlorobenzene	9.06	
p- Dichlorobenzene	8.95	
Dichlorodifluoromethane (Freon 12)	12.31	X
1,1- Dichloroethane	11.12	
1,2- Dichloroethane	11.12	
cis- Dichloroethene	9.65	
trans- Dichloroethene	9.66	
trans- Dichloroethene 1,2-	9.66	
Dichlorofluoromethane	12.39	X
Dichloromethane	11.35	
1,2- Dichloropropane	10.87	
1,3- Dichloropropane	10.85	
2,3- Dichloropropene	9.82	
Diesel fuel #1	-	
Diesel fuel #2	-	
Diethoxymethane	9.70	
N,N- Diethyl acetamide	8.60	
Diethyl amine	8.01	
Diethyl ether	9.53	
N,N- Diethyl formamide	8.89	
Diethyl ketone	9.32	
Diethyl sulfide	8.43	
Diethyl sulfite	9.68	
Diethylamine	8.01	
Difluorodibromomethane	11.07	
Dihydropyran	8.34	
Diiodomethane	9.34	
Diisopropylamine	7.73	
1,1- Dimethoxyethane	9.65	

It's Relevance to Bi-Polar Ionization

The "Ionization Potentials for Common Industrial Gases" Chart lists the Chemical Name of many industrial gases. Each common industrial gas has a corresponding Electron Volt Potential which is the energy given to an electron by accelerating it through 1 volt of electric potential difference. If an electron starts from rest at the negative plate, then the electric field will do work (eV) on it, giving it that amount of kinetic energy when it strikes the positive plate. The work done on the charge is given by the charge times the voltage difference. What this does is measure any given gas (compound suspended in the air) susceptibility (in real time) to change when a particular gas is exposed to bi-polar ionization.



Chemical Name	(eV)
Dimethoxymethane (methylal)	10.00
N,N- Dimethyl acetamide	8.81
Dimethyl amine	8.24
2,2- Dimethyl butane	10.06
2,3- Dimethyl butane	10.02
3,3- Dimethyl butanone	9.17
Dimethyl disulfide	-
Dimethyl ether	10.00
N,N- Dimethyl formamide	9.12
2,2- Dimethyl propane	10.35
Dimethyl sulfide	8.69
n,n- Dimethylacetamide	8.81
Dimethylaniline	7.13
Dimethylformamide	9.18
n,n- Dimethylformamide	9.18
1,1- Dimethylhydrazine	7.28
Dimethylphthalate	9.64
Dinitrobenzene	10.71
Dioxane	9.19
p- Dioxane	9.13
Diphenyl	7.95
Dipropyl amine	7.84
Dipropyl sulfide	8.30
Durene	8.03
E	
Epichlorhydrin	-
Epichlorohydrin	10.20
Ethane	11.65
Ethanethiol (ethyl mercaptan)	9.29
Ethanol	10.47
Ethanolamine	8.96
Ethene	10.52
Ethyl acetate	10.11
Ethyl acetoacetate	<10
Ethyl acrylate	<10.3
Ethyl alcohol	10.48
Ethyl amine	8.86
Ethyl benzene	8.76
Ethyl bromide	10.29
Ethyl chloride (chloroethane)	10.98
Ethyl disulfide	8.27
Ethyl ether	9.51
Ethyl ether (diethyl ether)	9.51
Ethyl formate	10.61
Ethyl iodide	9.33
Ethyl isothiocyanate	9.14
Ethyl mercaptan	9.29
Ethyl mercaptan	-
Ethyl methyl sulfide	8.55
Ethyl nitrate	11.22
Ethyl propionate	10.00
Ethyl thiocyanate	9.89
Ethylbenzene	8.77
Ethylene	-
Ethylene chlorohydrin	10.52
Ethylene diamine	8.60
Ethylene dibromide	10.37
Ethylene dichloride	11.05
Ethylene glycol	10.16
Ethylene oxide	10.57
Ethylene oxide	10.57
Ethylenimine	9.20

Chemical Name	(eV)	
Ethynylbenzene	8.82	
F		
Fluorine	15.70	X
Fluorobenzene	9.20	
o- Fluorophenol	8.66	
m- Fluorotoluene	8.92	
o- Fluorotoluene	8.92	
p- Fluorotoluene	8.79	
Formaldehyde	10.87	
Formamide	10.25	
Formic acid	11.05	
Freon 11 (trichlorofluoromethane)	11.77	
Freon 112 (1,1,2,2-tetrachloro-1,2-difluoroethane)	11.30	
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	11.78	
Freon 114 (1,2-dichloro-1,1,2,2-tetrafluoroethane)	12.20	X
Freon 12 (dichlorodifluoromethane)	12.31	X
Freon 13 (chlorotrifluoromethane)	12.91	X
Freon 22 (chlorofluoromethane)	12.45	X
2- Furaldehyde	9.21	
Furan	8.89	
Furfural	9.21	
G		
Gasoline	-	
H		
Heptane	10.08	
2- Heptanone	9.33	
Hexachloroethane	11.10	
Hexane	10.18	
n- Hexane	10.13	
2- Hexanone	9.35	
1- Hexene	9.46	
Hydrazine	8.1	
Hydrazine	8.10	
Hydrogen	15.43	X
Hydrogen bromide	11.62	
Hydrogen chloride	12.74	X
Hydrogen cyanide	13.91	X
Hydrogen fluoride	15.77	X
Hydrogen iodide	10.38	
Hydrogen selenide	9.88	
Hydrogen sulfide	10.46	
Hydrogen telluride	9.14	
Hydroquinone	7.95	
I		
Iodine	9.28	
1- Iodo-2-methylpropane	9.18	
Iodobenzene	8.73	
1- Iodobutane	9.21	
2- Iodobutane	9.09	
1- Iodopentane	9.19	
1- Iodopropane	9.26	
2- Iodopropane	9.17	
m- Iodotoluene	8.61	
o- Iodotoluene	8.62	
p- Iodotoluene	8.50	
Isoamyl acetate	<10	
Isobutane (Isobutylene)	9.4	

Chemical Name	(eV)	
Isobutanol	10.02	
Isobutyl acetate	9.97	
Isobutyl alcohol	10.12	
Isobutyl amine	8.70	
Isobutyl formate	10.46	
Isobutylene	-	
Isobutyraldehyde	9.74	
Isobutyric acid	10.02	
Isooctane	9.86	
Isopentane	10.32	
Isophorone	9.07	
Isoprene	8.85	
Isoprene (2-methyl-1,3-butadiene)	8.85	
Isopropanol	10.12	
Isopropyl acetate	9.99	
Isopropyl alcohol	10.16	
Isopropyl amine	8.72	
Isopropyl benzene	8.69	
Isopropyl ether	9.20	
Isopropylamine	-	
Isovaleraldehyde	9.71	
J		
Jet A fuel	-	
JP-5 fuel	-	
JP-8 fuel	-	
K		
Ketene	9.61	
L		
2,3- Lutidine	8.85	
2,4- Lutidine	8.85	
2,6- Lutidine	8.85	
M		
Maleic anhydride	10.80	
Mesityl oxide	9.08	
Mesitylene	8.40	
Methane	12.98	X
Methanethiol (methyl mercaptan)	9.44	
Methanol	10.85	
n- Methyl acetamide	8.90	
Methyl acetate	10.27	
Methyl acetoacetate	-	
Methyl acetylene	10.37	
Methyl acrylate	9.90	
Methyl alcohol	10.85	
Methyl amine	8.97	
Methyl benzoate	-	
Methyl bromide	10.54	
Methyl butyl ketone	9.34	
Methyl butyrate	10.07	
Methyl cellosolve	9.60	
Methyl chloride	11.28	
Methyl chloroform (1,1,1-trichloroethane)	11.00	
Methyl disulfide	8.46	
Methyl ethyl ketone	9.53	
Methyl formate	10.82	
2- Methyl furan	8.39	
Methyl iodide	9.54	
Methyl isobutyl ketone	9.30	
Methyl isobutyrate	9.98	
Methyl isocyanate	10.67	
Methyl isopropyl ketone	9.32	
Methyl isothiocyanate	9.25	
Methyl mercaptan	9.44	



Chemical Name	(eV)	
Methyl methacrylate	9.70	
1- Methyl naphthalene	7.96	
2- Methyl naphthalene	7.96	
2- Methyl propene	9.23	
Methyl propionate	10.15	
Methyl propyl ketone	9.39	
a - Methyl styrene	8.35	
Methyl tert-butyl ether	-	
Methyl thiocyanate	10.07	
2- Methyl-1-butene	9.12	
3- Methyl-1-butene	9.51	
3- Methyl-2-butene	8.67	
Methylal (dimethoxymethane)	10.00	
Methylamine	-	
Methylbenzil alcohol	-	
Methylcyclohexane	9.85	
4- Methylcyclohexene	8.91	
Methylene chloride	11.32	
Methyl-n-amyl ketone	9.30	
2- Methylpentane	10.12	
3- Methylpentane	10.08	
Monomethyl aniline	7.32	
Monomethyl hydrazine	7.67	
Morpholine	8.20	
N		
Naphtalene	8.13	
Naphthalene	8.12	
Nickel carbonyl	8.27	
Nitric oxide, (NO)	9.25	
Nitrobenzene	9.92	
p- Nitrochloro benzene	9.96	
Nitroethane	10.88	
Nitrogen	15.58	X
Nitrogen dioxide (11.7 lamp recommended)	9.75	
Nitrogen trifluoride	12.97	X
Nitromethane	11.08	
1- Nitropropane	10.88	
2- Nitropropane	10.71	
Nitrotoluene	9.45	
n- Nonane	9.72	
O		
Octane	9.82	
Oxygen	12.08	X
Ozone	12.08	X
P		
Pentaborane	10.40	
Pentane	10.35	
n- Pentane	10.35	
2,4- Pentanedione	8.87	
2- Pentanone	9.38	
1- Pentene	9.50	
Perchloroethylene	9.32	
Pheneloic	8.18	

Chemical Name	(eV)	
Phenol	8.50	
Phenyl ether (diphenyl oxide)	8.82	
Phenyl hydrazine	7.64	
Phenyl isocyanate	8.77	
Phenyl isothiocyanate	8.52	
Phenylene diamine	6.89	
Phosgene	11.77	
Phosphine	9.87	
Phosphorus trichloride	9.91	
Phthalic anhydride	10.00	
2- Picoline	9.02	
3- Picoline	9.02	
4- Picoline	9.04	
Pinene, alpha	8.17	
Pinene, beta	-8	
Propane	11.07	
1- Propanethiol	9.20	
Propargyl alcohol	10.51	
Propiolactone	9.70	
Propionaldehyde	9.98	
Propionic acid	10.24	
Propionitrile	11.84	
Propyl acetate	10.04	
n- Propyl acetate	10.04	
Propyl alcohol	10.20	
Propyl amine	8.78	
Propyl benzene	8.72	
Propyl ether	9.27	
Propyl formate	10.54	
n- Propyl nitrate	11.07	
Propylene	9.73	
Propylene dichloride	10.87	
Propylene imine	9.00	
Propylene oxide	10.22	
Propyne	10.36	
Pyridine	9.32	
Pyrrole	8.20	
Q		
Quinoline	-	
Quinone	10.04	
S		
Stibine	9.51	
Styrene	8.47	
Sulfur dioxide	12.30	X
Sulfur hexafluoride	15.33	X
Sulfur monochloride	9.66	
Sulfuryl fluoride	13.00	X
T		
o- Terphenyls	7.78	
1,1,2,2- Tetrachloro-1,2-difluoroethane (Freon 112)	11.30	
Tetrachloroethane	11.62	
Tetrachloroethene	9.32	

Chemical Name	(eV)	
Tetrachloroethylene	9.32	
Tetrachloromethane	11.47	
Tetrahydrofuran	9.54	
Tetrahydropyran	9.25	
Thiolacetic acid	10.00	
Thiophene	8.86	
Toluene	8.82	
o- Toluidine	7.44	
Tribromoethene	9.27	
Tribromofluoromethane	10.67	
Tribromomethane	10.51	
1,1,2- Trichloro-1,2,2-trifluoroethane (Freon 113)	11.78	
1,1,1- Trichloroethane	11.00	
Trichloroethene	9.45	
Trichloroethylene	9.47	
Trichlorofluoromethane (Freon 11)	11.77	
Trichloromethane	11.42	
Triethylamine	7.50	
Trifluoromonobromo-methane	11.40	
Trimethyl amine	7.82	
2,2,4- Trimethyl pentane	9.86	
Trimethylamine	7.82	
Tripropyl amine	7.23	
Turpentine - crude sulfite	-	
Turpentine - pure gum	-	
V		
Valeraldehyde	9.82	
Valeric acid	10.12	
Vinyl acetate	9.19	
Vinyl bromide	9.80	
Vinyl chloride	10.00	
Vinyl methyl ether	8.93	
o- Vinyl toluene	8.20	
Vinylcyclohexane (VCH)	9.83	
Vinylidene chloride (1,1-DCE)	-	
W		
Water	12.59	X
X		
m- Xylene	8.56	
o- Xylene	8.56	
p- Xylene	8.45	
2,4- Xylidine	7.65	

Bi-polar ionization has been proven to disassemble most gases back in to base elements of Nitrogen, Oxygen, CO2 and water vapor (virtually pure and odorless air). This disassembly of the gas has several factors that influence the time necessary to complete the process. Some of the factors are; the volume of positive and negative ions being produced; the concentration of the gas within the space; air volume and distribution; humidity; and most notable (as it relates to the chart) the Electron Volt Potential of that gas. Gases with Electron Volt Potential over 12 are difficult to disassemble with bi-polar ionization. These are gases such as some within the family of Freons. Other gases such as Oxygen, Nitrogen and Hydrogen are already base elements, can not be disassembled, and thus have an eV over 12 and are unaffected by bi-polar ionization. In general, the lower the eV the easier (and quicker) it is to disassemble the gas. Hydrocarbons and Ammonia (as examples) are quickly disassembled. In summary, the chart is just a guide to establish what one may expect as to the effect in time bipolar ionization has on any gas – from instantaneous (fuels and fuel emissions) to an extended period of days influenced by the variables previously listed above.