

violent air motion will sustain them in air long enough for them to be breathed. This means that, in hygienic problems, the engineer is concerned mostly with suspensions of particles comparable to the common

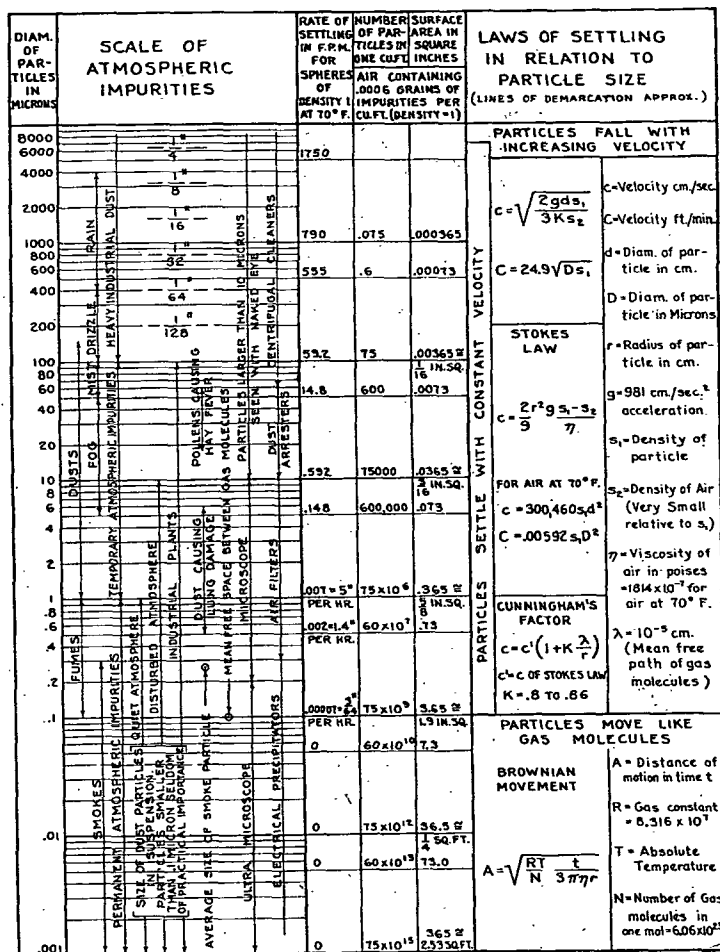


FIG. 1. SIZES AND CHARACTERISTICS OF AIR-BORNE SOLIDS

bacteria in size. A notable exception to this size limitation is the common hay-fever producing pollen such as that from rag-weed. Pollen grains may be anything from fragments 15 microns in diameter to whole pollens 25 microns or more in size. Since the lower limit of visibility to the

TABLE 1. APPROXIMATE LIMITS OF INFLAMMABILITY OF SINGLE GASES AND VAPORS IN AIR AT ORDINARY TEMPERATURES AND PRESSURES*

GAS OR VAPOR	LOWER LIMIT VOLUME IN PER CENT	HIGHER LIMIT VOLUME IN PER CENT
Hydrogen.....	4.1	74.0
Ammonia.....	16.0	27.0
Hydrogen sulphide.....	4.3	46.0
Carbon disulphide.....	1.0	50.0
Carbon monoxide.....	12.5	74.0
Methane.....	5.3	14.0
Methane (turbulent mixture).....	5.0	15.0
Ethane.....	3.2	12.5
Propane.....	2.4	9.5
Butane.....	1.9	8.5
Pentane.....	1.45	7.5
Ethylene.....	3.0	29.0
Acetylene.....	3.0	.....
Acetylene (turbulent mixture).....	2.3	.....
Benzene.....	1.4	7.0
Toluene.....	1.4	7.0
Cyclohexane.....	1.3	8.3
Methyl cyclohexane.....	1.2	.....
Methyl alcohol.....	7.0	.....
Ethyl alcohol.....	4.0	19.0
Ethyl ether.....	1.7	26.0
Benzine.....	1.1	.....
Gasoline.....	1.4	6.0
Water gas.....	6 to 9	55 to 70
Ethylene oxide.....	3.0	80.0
Acetaldehyde.....	4.0	57.0
Furfural (125 C).....	2.0	.....
Acetone.....	3.0	11.0
Acetone (turbulent mixture).....	2.5	.....
Methyl ethyl ketone.....	2.0	12.0
Methyl formate.....	6.0	20.0
Ethyl formate.....	3.5	16.5
Methyl acetate.....	4.1	14.0
Ethyl acetate.....	2.5	11.5
Propyl acetate.....	2.0	.....
Butyl acetate (30 C).....	1.7	.....
Ethyl nitrite.....	3.0	.....
Methyl chloride.....	8.0	19.0
Methyl bromide.....	13.5	14.5
Ethyl chloride.....	4.0	15.0
Ethyl bromide.....	7.0	11.0
Ethylene dichloride.....	6.0	16.0
Dichlorethylene.....	10.0	13.0
Vinyl chloride.....	4.0	22.0
Pyridine (70 C).....	1.8	12.5
Natural gas.....	4.8	13.5
Illuminating gas.....	5.3	31.0
Blast-furnace gas.....	35.0	74.0

*Limits of Inflammability of Gases and Vapors, by H. F. Coward and G. W. Jones, (U. S. Bureau of Mines, Bulletin No. 279, 1931).