TABLE 9. CORROSION RESISTING MATERIALS FOR EXHAUST SYSTEMS[a]

MATERIAL	ACID[b] Acetic	Chromic	Hydro-chloric	Hydro-fluoric	Nitric	Phos-phoric	Sul-phurous	Sul-phuric
Metals	Dil. / Conc.	Dil. / Conc.	Dil. / Conc.	Dil. / Conc.	Dil. / Conc.	Dil. / Conc.	Dil. / Conc.	Dil. / Conc.
Aluminum	Good	Fair	Poor	No Data	Poor / Good	Poor	Poor	Poor
Magnesium and Alloys	No Data	Good / Poor	No Data	Poor / Good	No Data	No Data	No Data	No Data
Lead and Lead-Coated	Poor	Good	Poor	Poor	Poor	Poor	Good	Good / Poor
Moly Alloy (60 Ni—20 Mo—20 Fe)	Good	No Data	Fair	No Data	Poor	Poor	No Data	Good
Monel Metal	Fair	Poor	Fair / Poor	Good[d]	Fair / Poor	Fair	Poor	Good[e] / Poor
Bronze	Poor						Good	
Silicon Iron	Fair / Good	No Data	Fair	Poor	Good	Good	No Data	Good
Stainless Steel[c] (18 Cr-8 Ni)	Good	Good	Poor	No Data	Good	Poor	Good	Poor / Good[e]
Enameled Steel	No Data	No Data	Good	Poor	Good	Poor	No Data	Good
Miscellaneous								
Asbestos Comp.			Good except against strong acids and alkalies					
Wood	Some woods are decomposed or softened faster than others.							
Rubber					Poor			Poor
Plastics	In general plastics resist weak acids and are decomposed by concentrated acid.							

[a]Standard Practice Sheet No. 115 (Division of Industrial Hygiene, New York State Labor Department).
[b]Acid mists in air are more corrosive than as liquid in storage tank. Galvanized iron not resistant to acid.
[c]Stainless steel of (24 Cr—10 Ni) fairly resistant at low temperature for HCl and H_3PO_4.
[d]Under most conditions.
[e]At room temperatures.

Friction drop in the pipes must be computed for each section where there is a change in area or in velocity. The velocities should be found in each section of pipe starting with the branch most remote from the fan. The friction drop for these sections can be determined by reference to Table 8 in this chapter and Fig. 2, Chapter 41. Total friction loss in the piping system is the friction drop in the most remote branch plus the drop in the various sections of the main, plus the drop in the discharge pipe.

EFFICIENCY OF EXHAUST SYSTEMS

The efficiency of an exhaust system depends upon its effectiveness in reducing the concentration of dusts, fumes, vapors and gases below the safe or threshold limits[14].

Too much emphasis cannot be placed on the necessity of testing exhaust systems frequently by determining the concentration of atmospheric contamination at the worker's breathing level[15]. Commonly accepted values of threshold limits for usual atmospheric contaminants will be found in Tables 3, 4 and 5, Chapter 10.

AIR FLOW PRODUCING EQUIPMENT

In any type of exhaust system some form of air flow producing equipment should be required to create the pressure necessary to cause the air

to flow through the system to the discharge stack. Natural draft should not be depended on to remove harmful or dangerous gases, fumes, mists, dusts, or other matter when it is imperative that such matter be removed from the work place or room atmosphere.

The principal types of air moving equipment are chimney exhausts, venturi ejectors, centrifugal exhaust fans, disc or propeller fans, and axial flow fans[16].

Manufacturers generally provide special fans for the collection of various industrial wastes. These are available for the collection of coal dust, wood shavings, wool, cotton and many other substances. When substances having an abrasive character are conveyed, the fan blades and housing should be protected from wear. This may be accomplished by placing a collector on the negative side of the fan or by lining the housing and blades with rubber.

PROTECTION AGAINST CORROSION

The removal of gases and fumes in many chemical plants requires that metals used in the construction of the exhaust system be resistant to chemical corrosion. A list of the materials which may be used to resist the action of certain fumes is given in Table 9. Hoods and ducts, when short, may frequently be constructed of wood and be quite effective. Rubberized paints are available and may be applied as protective coatings in handling such gases and fumes as chlorine and hydrochloric acid.

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