orating solvent and is independent of the volume of the oven

From the following table

Lower explosive limit for n-heptane = 1 2 percent
Vapor volume = 22 cu ft/gal

$$\text{Exhaust rate required to dilute vapors to the lower explosive limit} = \frac{22 \times 100}{1\,2}$$

$$= 1833 \text{ cu ft/hr}$$
$$= 30\,6 \text{ cfm}$$

This rate is normally multiplied by a safety factor of about 5 to allow for imperfect mixing Therefore $30\,6 \times 5 = 153$ cfm exhaust rate For more precise calculations, see NFPA Standard No 86A, *Ovens and Furnaces*

Explanation of Table Headings

Column headings of the table (pages 1212–1231) are explained as follows

Listing of substances

The "chemical hazards" table lists those physical properties associated with the fire and health hazards of common industrial chemicals (For tables of threshold limit values and maximal acceptable concentrations, see Chapter 38, "Industrial Toxicology")

Data in the table have been taken from the following principal references Standard 49, *Hazardous Chemicals Data,* and Standard 325M, *Flammable Liquids, Gases, and Volatile Solids,* both published by the National Fire Protection Association, 470 Atlantic Ave, Boston, Mass 02210, and *Handbook of Organic Industrial Solvents,* published by the American Mutual Insurance Alliance, 20 N Wacker Dr, Chicago, Ill 60606 Be sure to check latest editions of these standards and booklets

Other information is contained in Chapter 46, "Safety Engineering Tables," Table 46-O, "Explosion Characteristics of Various Dusts" Check the Cross Index for names of chemicals and compounds that may be listed under another name (See pages 1208–1211)

Column 1

FLASH POINT is the lowest temperature at which the liquid gives off vapor within a test vessel in sufficient concentration to form an ignitable mixture with air near the surface of the liquid The flash point is used by OSHA and NFPA to define and classify the fire hazard of liquids (see Chapter 42, "Flammable and Combustible Liquids")

A standard closed container is used to determine the closed-cup flash point of a liquid and a standard open-surface dish is used for the open-cup flash point determination, as specified by the standards of the American Society for Testing and Materials (ASTM)

Unless otherwise specified, the flash point values in the table are closed-cup determinations

Column 2

FLAMMABLE OR EXPLOSIVE LIMITS are those concentrations of a vapor or gas in air below or above which propagation of a flame does not occur on contact with a source of ignition The lower limit is the minimum vapor concentration below which the vapor-air mixture is too "lean" to burn or explode The upper limit is the maximum vapor concentration above which the vapor-air mixture is too "rich" to burn or explode

Flammable or explosive limits are given in the Table in terms of percentage by volume of gas or vapor in air, and, unless otherwise noted, at normal atmospheric pressures and temperatures Increasing the temperature or pressure lowers the lower limit and raises the upper limit Decreasing the temperature or pressure has the opposite effect

Column 3

VAPOR VOLUME is the number of cubic feet of solvent vapor formed by the evaporation of one gallon of a liquid at 75 F

Column 4

SEVERITY AND TYPE OF HAZARD Each hazardous substance presents a distinct problem and must be treated individually in the light of its own characteristics Conclusions regarding the hazards of a product cannot safely be drawn either from the properties of the materials from which it is formed or by analogies based upon chemical structure Mixtures of two or more chemicals may have properties that vary in kind or degree from those of the individual components Impurities may con-