FIGURE 6.4 Laboratory-scale V-blender. (Courtesy of GlobePharma.)

particles remain suspended in air longer and do not settle as quickly as the larger or denser particles. General guidelines to minimize or prevent segregation include (*a*) minimum number of transfer steps and drop heights; (*b*) control of dust generation; (*c*) control of fluidization of the powder; (*d*) slow fill/transfer rate; (*e*) appropriate venting; (*f*) use of a deflector, vane, or distributor; and (*g*) proper hopper design and operating valves (if present).

Eutectics

Some powders may become sticky or pasty, or they may liquefy when mixed together, such as those listed in Table 6.2. To keep the powders dry, one can mix them with a bulky powder adsorbent such as light magnesium oxide or magnesium carbonate. Also, these powders should be triturated very lightly on a pill tile by using a spatula for mixing rather than a mortar and pestle. The latter will cause compression and make the problem worse. It may also be advisable to double wrap the papers. Mixing these powders with the bulky powders first and then performing a light blending can minimize the problem. Another approach is to first make the eutectic and then adsorb the paste or liquid that results onto a bulky powder. One also has the option of dispensing the ingredients separately. After preparation, the charts can be dispensed in a plastic bag.

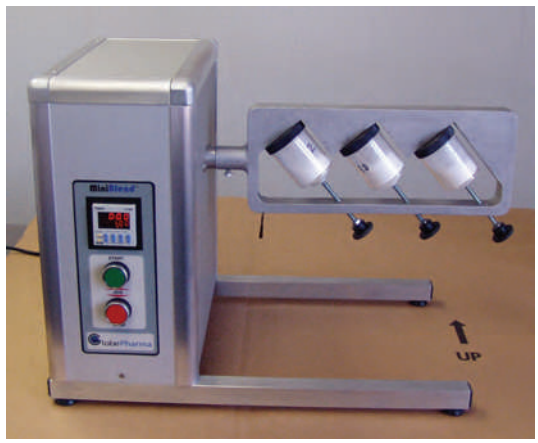

FIGURE 6.5 Laboratory-scale Triple V-type blender. (Courtesy of GlobePharma.)

Hygroscopic and Deliquescent Powders

Hygroscopic powders will absorb moisture from the air. Deliquescent powders will absorb moisture from the air to the extent that they will partially or wholly liquefy. These problems must be overcome for the powder to be acceptable to the patient and usable. The best approach is to dispense the ingredients in tight containers and incorporate a desiccant packet or capsule when necessary. The patient should be instructed to store the powder in a dry place in a tightly closed container. To lessen the extent of the problem, the compounding pharmacist can in some situations dilute the powder with an inert drying powder to reduce the amount of surface area exposed to the moisture. Common hygroscopic and deliquescent powders are listed in Table 6.3.

Efflorescent Powders

An *efflorescent powder* (Table 6.4) is a crystalline powder that contains water of hydration or crystallization. This water can be liberated either during manipulations or on exposure to a low-humidity environment. If this occurs, the powder will become sticky and pasty, or it may even liquefy. One approach is to use an anhydrous salt form of the drug, keeping in mind the potency differential between its anhydrous form and its hydrated