



Fig. 11.14 • Sigma blade mixer.

semi-solid materials. As the blades continuously advance along the periphery of the mixer vessel, they remove material from the walls and transport it towards the interior.

Sigma blade mixers

This robust mixer will deal with stiff pastes and ointments and depends for its action on the close intermeshing of the two blades which resemble the Greek letter Σ in shape – hence the name. The clearance between the blades and the mixing trough is kept small by the design shown in Figure 11.14.

Further treatment of semisolid dispersions

It is very difficult, using primary mixers, to completely disperse powder particles in a semi-solid base so that they are invisible to the eye. The mix

is usually subjected to the further action of a roller mill or colloid mill so as to ‘rub out’ these particles by the intense shear generated by rollers or cones set with a very small clearance between them.

References

- Bakeev, K.A. (2010) *Process Analytical Technology*. John Wiley & Sons, Chichester, UK.
- Ciurczak, E.W., Drennen, J.K. (2002) *Pharmaceutical and medical applications of near-infrared spectroscopy*. Marcel Dekker, New York.
- Nikolakakis, N., Newton, M. (1989) Solid state adsorption of antibiotics onto sorbitol. *Journal of Pharmacy and Pharmacology*, **41**, 145–148.
- Travers, D.N., White, R.C. (1971) The mixing of micronized sodium bicarbonate with sucrose crystals. *Journal of Pharmacy and Pharmacology*, **23**, 260S–261S.
- Venables, H.J., Wells, J.I. (2001) Powder mixing. *Drug Development and Industrial Pharmacy*, **27**, 599–612.

Bibliography

- Harnby, N., Edwards, M.F., Nienow, A.W. (1997) *Mixing in the Process Industries*, 2nd edn. Butterworth-Heinemann, Oxford.
- Kaye, B.H. (1997) *Powder Mixing*. Chapman and Hall, London.
- Levin, M. (2011) *Pharmaceutical Process Scale-up*, 3rd edn. Informa Healthcare, London.
- Miyamoto, K. (1996) Mixing. In: Masuda, H., Higashitani, K., Yoshida, H. (eds) *Powder Technology Handbook*, 3rd edn. Marcel Dekker, New York.
- Paul, E.L., Atiemo-Obeng, V.A., Kresta, S.M. (2004) *Handbook of Industrial Mixing – Science and Practice*. John Wiley and Sons, New Jersey.
- Staniforth, J.N. (1982) Advances in powder mixing and segregation in relation to pharmaceutical processing. *International Journal of Pharmaceutical Technology and Product Manufacture*, **3**(Suppl), 1–12.