

## Bran Sucrose Gelatin Calcium Carbonate Tablets

### Manufacturing Directions

1. Gelatin–sucrose syrup is prepared by placing the following ingredients in a mixing kettle equipped with a heater and agitator: distilled water, 24000.0 g; gelatin, 3000.0 g; sucrose, granular, 31995.0 g.
2. The mixture is heated up to about 150°F with agitation until solution is effected and the gelatin–sucrose syrup then slowly stirred and held at a temperature of about 150°F until needed.
3. Wheat bran is comminuted in a Schutz-O'Neill Airswept Pulverizer to provide a particle size whereby a minimum of 94% passes through a United States Standard number 20-mesh screen and a maximum of 60% passes through a United States Standard number 80-mesh screen. [The required amount of bran for the batch is calculated by the following formula:  $44250 \text{ g} \times 100 / (100 - \text{percent moisture in bran.}]$
4. After pulverizing, the bran is transferred to a heavy-duty double sigma arm mixer and mixed with 1500 g of calcium carbonate, and the previously prepared gelatin–sucrose syrup added rapidly thereto with stirring.
5. When the bran appears to be damp, the mixture is stirred for a 30-minute period and then stopped.
6. Powdered sucrose (16600.0 g) is added and the mixture agitated for an additional 2 to 5 minutes.
7. The wet mix is then discharged through an Ambrette screw extruder and the extrudate spread on drying trays and dried in an oven at 225°F to 3% moisture content.
8. The dried extrudate is granulated employing a FitzMill (2A plate) and then pressed into 1-g tablets by a conventional tableting machine.

### Bran Tablets

| Bill of Materials |      |                           |                           |
|-------------------|------|---------------------------|---------------------------|
| Scale (mg/tablet) | Item | Material Name             | Quantity/1000 Tablets (g) |
| 250.00            | 1    | Bran wheat (milled <1 mm) | 250.00                    |
| 200.00            | 2    | Ludipress®                | 200.00                    |
| 5.00              | 3    | Kollidon® 30              | 5.00                      |
| 4.00              | 4    | Aerosil® 200              | 4.00                      |
| 4.00              | 5    | Magnesium stearate        | 4.00                      |

### Manufacturing Directions

1. Mix all components, pass through a sieve, and press with medium-compression force.
2. If the bran is not milled, the hardness of the tablet is higher but the content uniformity is less.
3. Compress into 477-mg tablets, using 12-mm punches.

## Bromhexine Hydrochloride Tablets

| Bill of Materials |      |                     |                           |
|-------------------|------|---------------------|---------------------------|
| Scale (mg/tablet) | Item | Material Name       | Quantity/1000 Tablets (g) |
| 8.00              | 1    | Bromhexine HCl      | 8.00                      |
| 78.00             | 2    | Lactose monohydrate | 78.00                     |
| 30.40             | 3    | Comstarch           | 30.40                     |
| 3.00              | 4    | Gelatin (powder)    | 3.00                      |
| QS                | 5    | Purified water      | 12.00                     |
| 0.60              | 6    | Magnesium stearate  | 0.60                      |

### Manufacturing Directions

*Note:* The binding solution is susceptible to microbiological growth, and so prepare the solution immediately before the granulation process. Protect bromhexine HCl from light.

1. Make slurry in a separate container by dissolving item 4 in hot item 5 (70–80°C).
2. Mix for 10 minutes using stirrer at medium speed.
3. Pass items 2, 1, and 3 through a 630- μm sieve using a sifter.
4. Charge the sieved material into the mixer.
5. Mix, using mixer and chopper, for 5 minutes at high speed. Add binding solution to the dry powders in the mixer while mixing at low speed.
6. After the addition is complete, mix for an additional 4 minutes at low speed or until a satisfactory mass is obtained.
7. Spread the wet granules onto the trays.
8. Load the trolleys into the drying oven.
9. Dry the granules at 60°C for 10 hours.
10. Turn the granules after 4 hours of drying in order to obtain uniform drying.
11. Transfer the dried granules in stainless steel drums.
12. Check moisture content (limit: NMT 2.0%).
13. Pass the dried granules first through a 1.5-mm and then a 1.0 mm sieve using a granulator. Collect in stainless steel drums.
14. Load the granules into the blender.
15. Pass item 6 through a 250- μm sieve using a sifter, and add to the granules in blender; blend for 2 minutes.
16. Compress the granules using a rotary tableting machine.
17. Use a 7-mm flat, beveled edge punch to compress 1.20 g per tablet at a hardness of NLT 3.0 kPa.