



# Quetiapine Fumarate Extended Release Tablets

The extended release film coated tablet contains **Quetiapine fumarate 230 mg equivalent to 200 mg Quetiapine**. The formulation features use of **Carbopol® 971P NF polymer** as the extended release matrix ingredient and methacrylic acid copolymer dispersion providing porous enteric film coating. The formula uses a low drug to Carbopol® polymer ratio of about 9:1.

Number	Ingredients	% w/w	mg/Tablet
	Intra-Granular Phase:		
1.	Quetiapine fumarate (Eqv. to Quetiapine 200 mg)	40.64	230.00
2.	Lactose monohydrate (200 mesh)	53.00	230.00
3.	Carbopol <sup>*</sup> 971P NF polymer	4.42	25.00
	Extra-Granular Phase:		
4.	Talc	0.97	5.50
5.	Magnesium stearate	0.97	5.50
	TOTAL (core tablets):	100.00	566.00

Lab batch size - 1000 Tablets (water used as binder)

Number	Ingredients	% w/w	mg / Tablet
	Intra-Granular Phase:		
1.	Methacrylic acid copolymer (Eudragit® L 30 D-55)	23.00 (equiv. to solid content of 6.90)	30.00 (equiv. to solid content of 9.00)
2.	Lactose monohydrate (200 mesh)	11.46	15.00
3.	Talc	0.69	0.90
4.	Triethyl citrate	1.72	2.24
5.	FD&C Yellow #6	0.46	0.60
6.	Titanium dioxide	0.28	0.37
7.	Deionized water (removed during processing)	62.46	(81.50 gm/1000 tablets)
	TOTAL (coating):	100.00	28.00
	TOTAL (coated tablets):	-	594.00 (566 + 28)

\*Coating process should be conducted till 5% weight gain is achieved.

#### **Process:**

#### **Core Tablets:**

- **1.** Pass quetiapine fumarate, Carbopol<sup>®</sup> 971P NF polymer and lactose through 40 mesh screen.
- **2.** Granulate the blend with water in high shear granulator using about 100 g water for 555 g powder blend adding the water as a thin stream, as droplets using peristaltic pump or as a spray and impeller speed above 250 to 300 RPM during wet massing.
- 3. Dry the granules in fluid bed drier (inlet temperature at 60 °C) to loss on drying (LOD) of about 2%.
- 4. Mill the granules through 18 mesh screen.
- 5. Pass magnesium stearate and talc through 40 mesh and blend with the granules in V cone blender for 5 minutes.





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### **Core Tablets (continued):**

- 6. Compress the blend into tablets on a tablet press at 30 rpm using 15.3 X 7.8 mm capsule shaped biconvex punches to achieve following parameters:
  - Target weight: 566 mg Mechanical Strength: 12 to 15 kP Friability (100 revolutions): NMT 0.5 %

#### Film Coating:

- 1. Dissolve triethyl citrate and lactose in 60g water heated at about 45 °C. Add talc, titanium dioxide and FD&C Yellow #6, and homogenize.
- 2. Add solution to Eudragit L 30 D 55 dispersion and mix using propeller stirrer.
- 3. Pass the dispersion through 100 mesh nylon filter.
- 4. Coat the tablets using this coating dispersion with suitable coating pan (tablet bed temperature to about 40°C) to achieve a weight gain of 5% w/w (average tablet weight of 594 mg).
- 5. Cure the tablets in tray drier for 3 hours at 50 °C.

Final Tablet Properties:	Diss	
<b>Appearance:</b> Film coated biconvex tablets	Time (h)	
Weight (mg)*: 599 ± 3	1	
<b>Thickness (mm)*:</b> 5.5 ± 0.02	2	
• • •	4	
Mechanical Strength (kP)*: 15.29 ± 0.66	8	
Friability (100 revolutions) (%): 0.03	16	
	24	

Dissolution**(% average of 6 tablets)				
Lubrizol	Innovator			
20	21			
36	36			
50	43			
58	54			
80	85			
96	102			
	Lubrizol 20 36 50 58			

#### \*Average ± SD

#### Summary:

Carbopol<sup>®</sup> polymers have demonstrated to be useful and highly efficient as extended release matrix former making them a polymer of choice when formulating high drug load extended release tablets.

The Lubrizol Life Science Health website **www.lubrizol.com/Health** provides additional information:

- Bulletin 30 Controlled Release Tablets and Capsules; Bulletin 31 Formulating Controlled Release Tablets and Capsules with Carbopol; Bulletin 32 - Application of Carbopol 71G NF Polymer in Controlled Release Tablets
- Wet granulation videos from video gallery
- Technical Papers, Technical Data Sheets, Test Procedures, Certificates, and other Formulations

#### Please contact your Lubrizol representative to get samples, quotations or further technical assistance.





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<sup>\*\*</sup>Dissolution method per US Patent 5,948,437: USP Apparatus 1 100 RPM, 0-2 hours: 750 ml 0.1 N HCl, 2-24 hours: 1000 ml pH 6.2 phosphate buffer.