



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 [*] 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[®] 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.





Quetiapine Fumarate Extended Release Tablets

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	
Appearance: Film coated biconvex tablets	Time (h)	
Weight (mg)*: 599 ± 3	1	
Thickness (mm)*: 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[®] 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.





9911 Brecksville Road Cleveland, OH 44141-3201 USA

Lubrizol.com/Health

The information contained herein is believed to be reliable, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications or the results to be obtained. The infor-mation often is based on laboratory work with small-scale equipment and does not necessarily indicate end-product performance or reproducibility. Formulations presented may not have been tested for stability and should be used only as a suggested starting point. Because of the variations in methods, conditions and equipment used commercially in processing these materials, no warranties or guarantees are made as to the suitability of the products for the applications disclosed. Full-scale testing and end-product performance are the responsibility of the user. Lubrizol Advanced Materials, Inc., shall not be liable for and the customer assumes all risk and liability for any use or handling of any material beyond Lubrizol Advanced Materials, Inc.'s direct control. The SELLER MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Nothing contained herein is to be considered as permission, recommendation nor as an inducement to practice any patented invention without permission of the patent owner. Lubrizol Advanced Materials, Inc.'s a wholly owned subsidiary of The Lubrizol Corporation.

©2020 The Lubrizol Corporation, all rights reserved. All marks are the property of The Lubrizol Corporation. The Lubrizol Corporation is a Berkshire Hathaway company Eudragit® is trademark of the Evonik Corporation • Edition: March 2020 • Previous Edition: June 2011

^{**}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.