

# 4282-006

**Key Words:** Ciprofloxacin HCl, Very Low Bulk Density, Dry Granulation  
**JRS Products:** VIVAPUR® 12

## Ciprofloxacin HCl Dry Granulation

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### Summary

Ciprofloxacin is an antimicrobial agent that stops the multiplication of bacteria by inhibiting the replication and repair of their genetic material (DNA).

Ciprofloxacin is used to treat infections of the skin, lungs, airways, bones and joints. It is also frequently used to treat urinary infections caused by bacteria such as *E. coli*.

Common dosages are in the range between 250 and 750 mg.

Ciprofloxacin HCl has very low bulk density and must be **precompacted**. This can be done with a roller compactor or by “re-processing.”

### Formulation

#### Step 1 (Granules)

	Active content [mg]	mg/tablet	Contribution [%]
Ciprofloxacin HCl	500.0	582.0	86.9
VIVAPUR® 12 (Microcrystalline Cellulose)		75.5	11.2
PRUV®		7.5	1.1
Fumed Silica (Aerosil® 200)		5.0	0.8
<b>Total</b>		<b>670.0</b>	<b>100.0</b>

#### Step 2 (Tablets)

	Active content [mg]	mg/tablet	Contribution [%]
Ciprofloxacin Granules	500.0	587.5	85.1
VIVAPUR® 12 (Microcrystalline Cellulose)		93.5	13.6
PRUV®		5.0	0.7
Fumed Silica (Aerosil® 200)		4.0	0.6
<b>Total</b>		<b>684.0</b>	<b>100.0</b>

### Procedure

#### Blending:

In the **first step**, tablets 20 mm in size were made. In the **second step**, the tablets were crushed by passing them through a dry granulator with a screen size of 19 mesh (800 µm). The resulting granules were compressed to the final tablet by mixing all ingredients for 4 minutes and compressing at a compaction force of approximately 8.5 kN.

#### Equipment:

Granulator:	Erweka 20240
Tablet Press:	Korsch EK 0 eccentric press, 13 mm punch
Turbula Mixer:	Type T2A
Hardness Tester:	Schleuniger Type 2 E
Friability Tester:	Pharmatest Type PTF 1, Nr. 6453
Disintegration Tester:	Pharmatest Standard, Type PTZ, Nr. 6454
Dissolution Tester:	Pharmatest PTW II, with 6 vessels, flat blade paddle
Spectrophotometer:	Cecil CE 1021

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## Ciprofloxacin HCl Dry Compaction

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### Tablet Characteristics

Tablet Weight:	670 mg
Tablet Diameter:	13 mm
Compression Force:	8.5 kN
Crushing Strength:	110 N
Disintegration Time:	540 s
Friability:	0.36 %

**Disclaimer:** The information provided is based on thorough research and is believed to be completely reliable. Application suggestions are given to assist our customers, but are for guidance only. Circumstances in which our material is used vary and are beyond our control. Therefore, we cannot assume any responsibility for risks or liabilities, which may result from the use of this technical advice.