Although there are quite a few articles available about the morphology of Gentiana seeds, I found them hard to ‘translate’ into practice sometimes and time consuming. So, I adapted a simple, practical classification using only characters that are visible with the naked eye and/or with a hand lens.

Please note that this classification can only be used to determine rapidly the group of species to which your gentian belongs, not to identify particular species.

*For the blue highlights species there are images posted in the forum – type the name in the Search feature, preferably the left upper side forum search, and then choose the Seed Exchange topic. Depending on the image resolution, some characters may not be visible.

Major types of *Gentiana* seeds and their corresponding species

**Type 1: Seeds have a seemingly smooth surface; however, a hand lens or close-up pictures may reveal fine ribs or reticulations**

- *G. cruciata; G. olivieri* (thick reticulate), *G. straminea*
- *G. acaulis; G. clusii; G. angustifolia* (ribs)
- *G. tibetica; G. dahurica*
- *G. macrophylla, G. siphonantha*
- *G. verna, G. oschtenica , G. verna ssp. angulosa, G. nivalis, G. brachyphylla*
- *G. tianschanica; other spp.*

Example: *Gentiana cruciata*

(exception in Sect. Cruciata - *G. waltonii* with winged seeds)
Type 2: Seeds with a wing *completely surrounding* the seed body

- G. lutea; G. punctata; G. purpurea
- G. andrewsii; G. gelida
- G. boisierii; G. freyniana; G. calycina
- G. linearis; G. rubricaulis
- G. newberry; G. setigera
- G. affinis; - G. venusta; other spp.
Example: G. lutea

![Image of Type 2 seeds](http://botanicallyinclined.org)

Type 3: Seeds as in type 2, but the wing is incomplete, interrupted in the micropyl area.

*This seems more of an exception of type 2, but for the sake of precision I kept it as a distinct type:* G. asclepiadea; G. asclepiadea ssp. schistocalyx

Example: G. asclepiadea ssp. schistocalyx

![Image of Type 3 seeds](http://botanicallyinclined.org)
Type 4: Seeds with *narrow/small wings at the ends, or on the side.*

These seeds have a particular elongated/linear/fusiform shape; hand lens is required to see the wing(s), which may be hard to notice otherwise. Some sources don’t mention the ‘wings’ because they are not very noticeable. In addition to the narrow wings, the seed coat may also be reticulate.

- G. makinoi: G. scabra, G. triflora var. japonica


- G. calycosa; G. septemfida and G. septemfida var. lagodechiana; G. pneumonanthe; G. cachemirica; other spp.

Example: G. triflora var. japonica

![Image of seeds with narrow wings](image)

Type 5. Seeds with an irregular surface; with a hand lens (or very good eyes) one can see *honeycomb-like structures on the seed coat surface*

The ‘honeycombs’ are visible in this image of the North American Gentiana sceptrum – [http://westerncascades.com/photos/seeds/seeds-d-h/](http://westerncascades.com/photos/seeds/seeds-d-h/)

*Many Chinese species exhibit this type, which can further vary in the sculpture of the seed coat depending on the section* (Gentiana in *Flora of China* - [http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=113422](http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=113422))

**Sect. frigida:** seed coat with a membranous lamella forming spongy, complex hexagonal pits

- G. frigida; G. algida; G. nubigena; G. microdontha, *G. purdomii*

http://botanicallyinclined.org
Sect. Isomeria: seed coat with honeycomb-like pits

G. depressa; G. wardii, G. urnula, G. sikkimensis, G. glauca

Sect. Kudoa: seed coat alveolate, with simple, shallow hexagonal pits.

G. stipitata, G. georgei, G. hexaphylla, G. lawrencei, G. ornata, G. prolata, G. altorum, G. caelestis

- and other spp., I mainly pointed out the perennial ones.

I hope some may find this helpful. If someone notices errors and/or has more examples or useful info that can be added to this classification, please let me know.