|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Vertex with animation data without light** | |  |  | **Vertex data with sun and RGB torchlight** | |  |  | **Vertex data with sun, animation and RGB torchlight** | |
|  | Bits | Purpose |  |  | Bits | Purpose |  |  | Bits | Purpose |
|  | 12 | X |  |  | 12 | X |  |  | 12 | X |
|  | 12 | Y |  |  | 12 | Y |  |  | 12 | Y |
| 32 | 8 | 2b: Normals; 6b: Animation |  | 32 | 8 | 2b: Normals 3b: ambient occlusion |  | 32 | 8 | 2b: Normals; 6b: animation |
|  | 8 | U |  |  | 12 | Z |  |  | 12 | Z |
|  | 8 | V |  |  | 10 | U |  |  | 9 | U |
| 32 | 16 | texture |  | 32 | 10 | V |  |  | 9 | V |
|  | 12 | Z |  |  | 16 | texture |  | 32 | 2 | Ambient Occlusion |
| 32 | 20 | Unallocated |  | 32 | 16 | light |  |  | 16 | texture |
|  |  |  |  |  |  |  |  | 32 | 16 | light |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  | 96 | total bits |  |  | 96 | total bits |  |  | 96 | total bits |
|  | 12 | total bytes |  |  | 12 | total bytes |  |  | 12 | total bytes |
|  | 0 | bytes leftover |  |  | 0 | bytes leftover |  |  | 0 | bytes leftover |

## Vertex and UV position

We can more easily preserve digits of vertices in the chunk by multiplying them by the desired amount and converting them into unsigned numbers if necessary.

For example

2.548 \* 100 = 254

254/100=2.54

We just preserved 2 digits.

# Light

|  |  |  |  |
| --- | --- | --- | --- |
| Sun | Torch R | Torch G | Torch B |
| 4 bits | 4 | 4 | 4 |

# Normals and AO

|  |  |
| --- | --- |
| Normals | AO |
| 3 bits (8 values) | 2 bits (4 values) |