

# Starship Speed Standard

This article presents guidelines for starship speeds ([FTL](#) and STL) in the setting.

## Explanation

Starships moving at speeds faster than that of light have two commonly used references for their speed. One is *constant*, or *c*, which is the true measurement of the speed of light. It is roughly 186,000 miles per second, or 300,000,000<sup>1)</sup> meters per second in a vacuum.

The other common expression is a measurement in distance over time, the *Lightyear/Minute*, or *ly/m*. Both have their advantages, the *c* being the exact way to measure performance in a technically correct setting (such as the ship submissions which are routinely made) and the *ly/m*, which is best for day-to-day navigation. It is *ly/m* which can be easily used to calculate how long it takes to get from point "A" to point "B".

As such, both are used in the starship submission, usually the *c* measurement first with the *ly/m* immediately afterward in parenthesis. It is standard practice to set a *ly/m* speed first and then derive a *c* speed from it so that the *ly/m* speed is more well rounded. Otherwise, you may wind up with some obscure figure which is harder to calculate when trying to determine IC travel time.

## The Golden Number

The golden number; calculated by [Fred](#) and [Wes](#), and based on [Toshiro's](#) efforts, is 525,960c. 525,960c is equal to 1 *ly/m*, and can be used to easily translate back and forth between *c* and *ly/m*.

**(NOTE: The rest of this part can be skipped if you don't need to understand the reason for the golden number. [Click here to move to the next heading.](#))**

The golden number was found by using these basic formulae:

Since physics specifies that Rate is Distance divided by Time (  $R = d / t$  ), 1 Constant is 1 Lightyear divided by 1 Year. (  $c = ly / y$  )  $(ly/y) / 365.25 = (ly/day)$   $(ly/day) / 24 = (ly/hour)$   $(ly/hour) / 60 = (ly/m)$

However, rather than dividing three times, one can do this:

$$365.25 * 24 * 60 = \mathbf{525,960}$$

Hence the golden number. The Golden Number can be used to directly convert between *c* and *ly/m* with one simple division or multiplication operation.

## Converting between c and ly/m

The operations for converting between c and ly/m are simple with the Golden Number.

### c to ly/m

$$c / 525,960 = (\text{ly/m})$$

### ly/m to c

$$(\text{ly/m}) * 525,960 = c$$

## Target Speeds

There is an effort to lessen the top speeds of vessels in the setting, lead by [Fred](#) and supported by the admin, [Wes](#). It has a great deal of support by the staff of [Star Army](#) and should be observed.

For conventional [FTL](#) propulsion systems such as [continuum distortion drives](#), a top speed of roughly 20,000c is recommended. This is roughly 0.0038 ly/m, or 2.3 ly/hour. For [fold](#)-based FTL propulsion, the target maximum speed is roughly 315,000c, or 0.6 ly/m. This is also 36 ly/h.

Given that it is easier to give ly/h based speeds for the slower models, ly/h may become a common measurement in the future, derived merely by multiplying the ly/m speed by a factor of 60.

Also, note that these are the higher end speeds. Less developed civilizations will have even slower vessels. Below is a table of Fred's ideal settings.

### Sublight Propulsion

	Standard Technology Aptitude	Advanced Technology Aptitude	Very Advanced Technology Aptitude
<b>Slow</b>	0.075c (22,484 km/s)	0.100c (29,979 km/s)	0.125c (37,474 km/s)
<b>Average</b>	0.150c (44,969 km/s)	0.200c (59,958 km/s)	0.250c (74,948 km/s)
<b>Fast</b>	0.225c (67,453 km/s)	0.300c (89,937 km/s)	0.375c (112,422 km/s)

### Continuum Distortion Drives

	Standard Technology Aptitude	Advanced Technology Aptitude	Very Advanced Technology Aptitude
<b>Slow</b>	3,750c	5,000c	6,250c
<b>Average</b>	7,500c	10,000c	12,500c

	Standard Technology Aptitude	Advanced Technology Aptitude	Very Advanced Technology Aptitude
<b>Fast</b>	11,250c	15,000c	18,750c

## Hyperspace Fold Drives

	Standard Technology Aptitude	Advanced Technology Aptitude	Very Advanced Technology Aptitude
<b>Slow</b>	0.15 ly/m	0.20 ly/m	0.25 ly/m
<b>Average</b>	0.30 ly/m	0.40 ly/m	0.50 ly/m
<b>Fast</b>	0.45 ly/m	0.60 ly/m	0.75 ly/m

**Military vessels will usually have better charging times and jumping ranges compared to civilian vessels.**

## Unarmored Craft

A vessel's armor has an effect on its STL speeds. The below table, taken from the [Damage Rating \(Version 3\)](#) article, covers the adjustments that can be made based on the degree to which a vessel is armored.

Armor Type	Examples	Speed Bonus	Maximum Speed
Unarmored	<a href="#">Xiulurium</a>	+.075c	0.450c
Light	<a href="#">Durandium</a>	+.050c	0.425c
Medium	<a href="#">Yama-Dura</a> , <a href="#">Zanarium</a>	+.025c	0.400c
Heavy	<a href="#">Nerimium</a> , <a href="#">Yamataium</a> , <a href="#">Zesuaum</a>	None	0.375c

## Notes

- STL speeds should be posted in the formats listed here: [Sublight Speed Conversion](#)<sup>2)</sup>
- STL “doublers” and “boosters” previously allowed in the setting are no longer valid as of January 1st, [2011](#).
- Missile-based weapon systems such as missiles, rockets, and torpedoes are no longer required to have a listed STL velocity as of January 1st, [2018](#).
- [FTL](#) devices other than teleportation modules cannot be used inside a sun's [Hill Sphere](#).

Being able to convert properly is important, as [Wes](#) has indicated a wish to implement both *c* and *ly/m* into submissions in the future. This system will prevent errors from occurring in the future, as the old way of translating between *c* and *ly/m* was incorrect by a factor of 21. If you see an incorrect speed setting, please edit it to the slower value, or report it to the staff.

## Examples

- [Star Army of Yamatai Starship Speeds](#)
- [Star Navy of Nepleslia Starship Speeds](#)

## OOC Notes

[frostjaeger](#) updated this article on 2018/01/09 18:45 after receiving [approval](#) from [Wes](#) on 2018/01/08 09:44.

<sup>1)</sup>

299,792,458 exactly

<sup>2)</sup>

299,792,458 divided by c divided by 1,000

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