# States of Matter and interesting variables

| Object | State of Matter | Average Time to Live | Climate | Object Cost |
|---|---|---|---|---|
| Water vapor | Gas | not appliable | (usually) hot | not applicable |
| orange juice | liquid | 1-3 days [1] | any | 2.89$/KG [2] |
| a house's walls | solid | 100 years [3] | any | Bricks: 56$–330$/m2 [4] |
| Fire | Plasma* | a few hours | any | cost of materials used |
| Glass | Solid* | 15 years [3] | any | 10$/square foot [5] |

**I Object:**
**- The Object described by the other fields**

**II State of Matter notes:**
**We will use the following states of matter for this research:**
**a) Solid: Closely packed particles with strong inter-molecular forces leading to particles able to only vibrate but not move freely. A solid has a stable, definite shape and a definite volume [6];**
**b) Liquid: A liquid is a nearly incompressible fluid that conforms to the shape of its container but retains a (nearly) constant volume independent of pressure [7];**
**c) Gas: a compressible fluid. Not only will a gas conform to the shape of its container but it will also expand to fill the container [8] ;**
**d) Plasma: Ionized gaz with electrons [9].**

**III Average Time to Live:**
**- Average living time for an object, living time = time existing in a form that is not decomposed or altered beyond resemblence of the original object.**

**IV Climate notes:**
**1. for usage of x object at specific temperatures we will use the following notation:**
**a) very cold = average temperature of place of usage under -10 degrees Celsius;**
**b) cold = average temperature of place of usage from -10 degrees to 10 degrees Celsius;**
**c) medium = average temperature of place of usage is from 10 degrees to 25 degrees Celsius;**
**d) hot = average temperature of place of usage is from 25 degrees to 40 degrees.**
**2. for something used at least in temperatures from -20 degrees Celsius to 40 degrees Celsius we will use the notation "any".**

**V Object cost:**
**- Average cost of an object worldwide.**

***notes:**
**1. Fire is either considered a low-level plasma or a lightly ionized gas. [10];**
**2. Glass is a non-crystaline (it lacks long-range symmetry in it's system of particles,**

**that which is characteristic of a crystal) solid that is sometimes considered to be a liquid due to its lack of a first-order phase transition where certain thermodynamic variables are discontinuous through the glass transition range. [11]**

# References


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[4] Check a Trade. *Cost to Build a Brick Wall*. CheckaTrade, 2016-2021.

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