



# Emulsifier For Increasing Life Span of Milk

67. Chamaguha

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## Introduction:

Emulsifier is an equipment that assists in the process of homogenizing. Homogeneity improves the components of milk and stay for a long time without separate each other. It breaks the solid material present in fat of milk and breaks down large water particles into small homogeneous structure resulting in an emulsion consisting of water molecules spread evenly throughout the whole liquid. This equipment helps the milk to stay for a long time without destroying and helps better stability of cultured milk products.

We decided to design this project in order to help the people from Shinyanga who deal with dairy farming and no permanent market of milk in Shinyanga. This equipment can help them to transport fresh milk out of Shinyanga for business.



## Method:

We constructed emulsifier by using drill machine has 2800RPM (Rotation Per Minute) and spindle which made by stainless steel materials. Emulsifier mainly works by agitating the liquid that is to be homogenized. Agitation can be done through mechanical arrangement which force the liquid to pass the smallest hole at high pressure. The design consists of fixed stator housing with a rotor which is generally drill driven. The mating surface of stator and rotor has specialized holes moreover, the designed is made in such away that the liquid forces at high pressure to make the dissolved components uniform in nature.



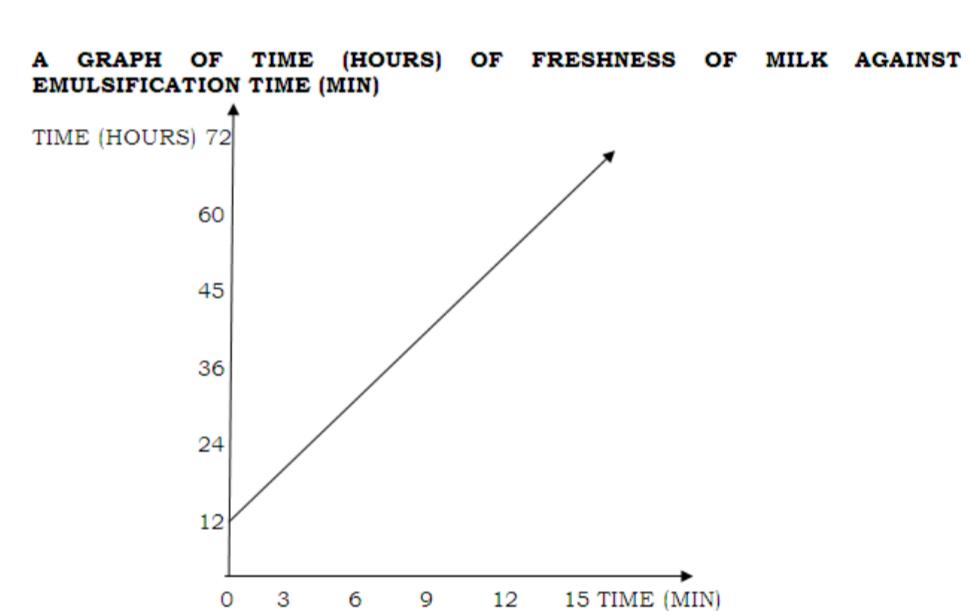
## Results:

After designing this equipment we tested it by using milk. At homogenization the milk is forced through a small holes where the fat globules are split when the liquid passes the small holes the flow velocity increase. When the liquid leaves the holes the speed decreases and the pressure increase again.

It can be seen that reducing the particle size is an efficient way of reducing the rising velocity. Therefore reducing the size of fat globules in milk reduces the creaming rate. In our experimental test after constructing this equipment, data we collected for 3days (72hrs) and the results shown in the following table after every 12hrs.

We constructed the emulsifier in simple way and left it show its efficiency on how can increase the life span of milk. In our experimented test after constructing this equipment data collected for 3days (72hrs) and the results shown in the following table after every 12 hrs.

Milk from (250mls)	12hrs	24hrs	36hrs	48hrs	60hrs	72hrs
1 <sup>st</sup> beaker	v	x	x	x	x	x
2 <sup>nd</sup> beaker	v	v	x	x	x	x
3 <sup>rd</sup> beaker	v	v	v	x	x	x
4 <sup>th</sup> beaker	v	v	v	v	x	x
5 <sup>th</sup> beaker	v	v	v	v	v	x
6 <sup>th</sup> beaker	v	v	v	v	v	v



According to the graph which drawing from the data obtained the unemulsified milk start to loose its freshness compared to the emulsified milk. Also according to the graph when the emulsification time increase the time of freshness increase as well.

## Conclusions

Due to the results obtained it seems that our equipment (Emulsifier) work and can increase life span of milk. This instrument is good to be used by farmers in their dairy farming because fresh milk remain as it as since no content of milk removed from this process.

The effect of emulsification on the physical structure of milk has many advantages.

Smaller fat globules leading to less cream line formation.

Whiter and more appetizing colour.

Reduce sensitivity to fat oxidation.

More full-bodied flavor and better mouth fell.

Better stability of cultured milk products.

We think that this instrument can be made and affordable by farmers due to the presence of materials in our environment.

We can conclude that, Emulsifier can increase the life span of milk and hence the market of milk can be enlarged, means that fresh milk can be sold even out of Shinyanga and rise funds in our families which make us to live standard life.

## References

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