



# Salt Production

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Nanjing, China

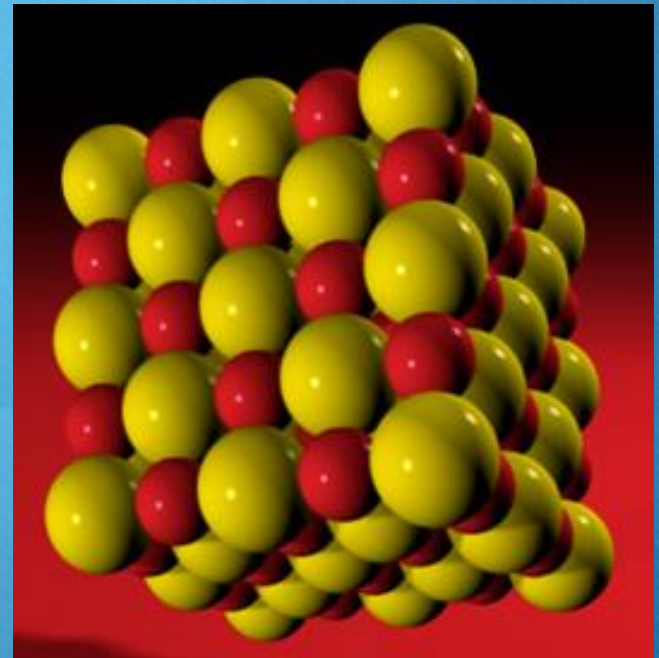


# Problem

Solar evaporation of seawater or salt mining are common methods to produce common salt (NaCl). Propose a method to extract salt from a natural source and determine both productive capacity of your method and purity of the product. Demonstrate an amount of salt produced by your method

# What is Salt ?

- Natural mineral
- Made up of white cube-shaped crystals
- Composed by sodium (40%) and chlorine (60%)
- Translucent, colorless, and odourless



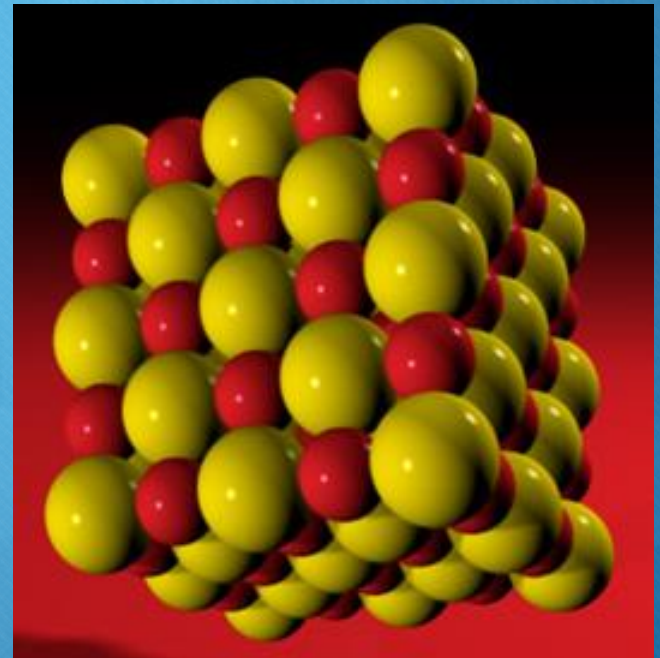
# What is Salt ?

- Appear in many colors

yellow, orange, red, mauve, blue, purple, green, and colorless

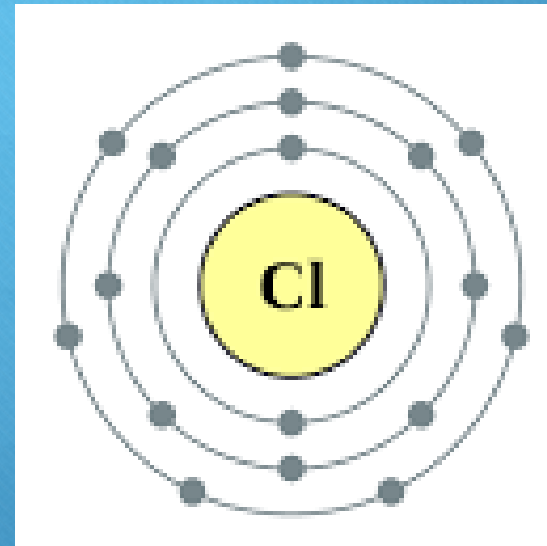
- Appear in all basic flavors

Salty, sweet, sour, bitter, and umami/savory



# How Salt is Formed ?

- Evaporation of seawater ( $\text{Na}^+$  and  $\text{Cl}^-$  ions, which has attractive characteristic)





# Why is it in the Sea ???

## A. Rain

1. Rain falls on land and dissolved carbon dioxide
2. The rain eroded and break rocks that contain minerals and salts
3. The salts and minerals are flown by river stream into the ocean
4. Dissolved salts and minerals used by living organisms



**THE METHOD**

# What Are We Going To Do?



1. To find other ways to extract salt
2. To determine the both productive capacity and purity
3. To compare which method is the best and most compatible



# The Method



- Using artificial heat
- Traditional way (comparison)
- Result control : table salt
- 6 Variable tested

# Things That We Need...



1. Salt water (200 ml)
2. A tray
3. A spoon
4. Filter tool
5. A pan
6. A stove
7. A container

# 1. Gather Salt Water



- From salt rich seas or salt ponds
- Results can be different
- Recommended :  
Gather it from a clean source
- Not recommended :  
Gather water from the ocean



## 2. Strain the Water



### 3. Leave the Water (Traditional)



# 3. Boil the Water (Modern)



0 minute  
Nothing  
happened



2 minute  
Water began  
to recede



1 minute  
Water began  
to boiled



3 minute  
Salts are  
getting formed

### 3. Boil the Water (Modern)



5 Minute :  
Salt are finally  
formed  
completely

## 4. Scrape the Salt

- Traditional way : easy
- Modern way : hard





# Results

**Traditional**

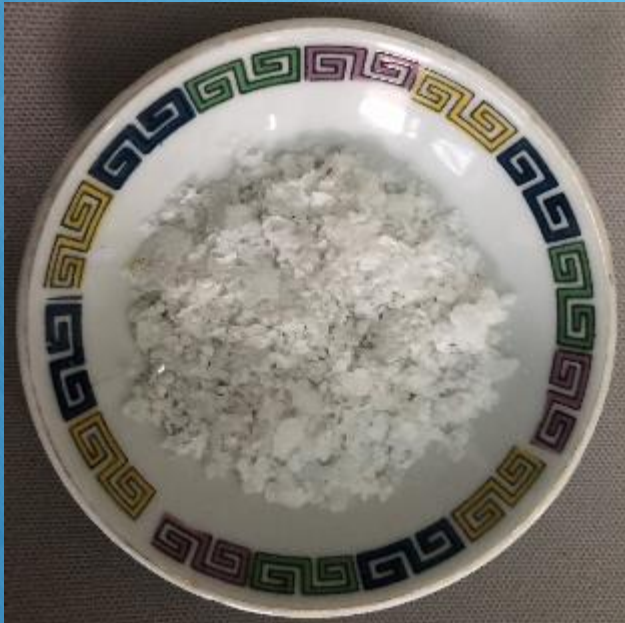


**Modern**



# Results

**Traditional**



**Modern**



# Results

No.	Variables	Traditional	Modern
1.	Amount of salt water	100 ml	100 ml
2.	Amount of salt collected	20 gram	15 gram
3.	Texture	Rough	Smooth
4.	Shape	Crystal	Powder
5.	The time it takes to form	26 hours	5 minutes
6.	Purity	16.6 ppt	13.01 ppt
7.	Productive capacity	20 gram/100 ml	15 gram/100 ml

# Conclusion

1. Common salt =  $\text{Na}^+$  and  $\text{Cl}^-$   
(translucent, colorless, and odourless)
2. Different methods > different results
3. Water = different salinity = not spread evenly
4. Productive capacity = - traditional : 20 gr/100 ml  
- modern : 15 gr/100 ml



# Sources

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