

READING PASSAGE 1

You should spend about 20 minutes on **Questions 1–13**, which are based on Reading Passage 1 below.

Salt

Salt is the common name for the substance sodium chloride (NaCl), which occurs in the form of transparent cubic crystals. Although salt is most familiar as a food supplement, less than 5% of the salt produced worldwide is used for that purpose. About 70% is utilized by the chemical industry, mostly as a source of chlorine. Salt is also used for countless other purposes, such as removing snow and ice from roads, softening water, preserving food, and stabilizing soils for construction.

The earliest humans obtained their salt from natural salt concentrations, as well as from meat. Those people who lived near the ocean may also have obtained it by chewing seaweed or from the natural evaporation of small pools of seawater. Meat became a more important source of salt as hunting was developed, as did milk when sheep, goats, horses, camels, reindeer, and cattle were domesticated. Even today, certain peoples—such as the Bedouin of the Middle Eastern deserts and the Maasai of East Africa—use no other forms of salt.

As agriculture developed, leading to a diet consisting mostly of plants, it became necessary to devise ways of obtaining salt in greater amounts. The earliest method of salt production employed by humankind was the evaporation of seawater using the heat of the sun. This method was particularly suited to hot, arid regions near the ocean or near salty lakes, and is still used in those areas. Solar evaporation was soon followed by the quarrying of exposed masses of rock salt, which quickly developed into the mining of underground deposits of salt. Two thousand years ago, the Chinese began using wells to reach underground pools of salt water, some of which were more than one kilometer deep.

In areas where the climate did not allow solar evaporation, salt water was poured on burning wood or heated rocks to boil it. The salt left behind was then scraped off. During the time of the Roman Empire, shallow lead pans were used to boil salt water over open fires to extract the salt. Later, in the Middle Ages, these were replaced with iron pans which were heated with coal. In the 1860s, a procedure known as the Michigan process was invented, in which salt water was heated by steam running through pipes immersed in the water. This process is still used to produce certain types of salt.

Nowadays, salt is collected from two sources: rock salt and brine. Rock salt is simply crystallized salt, also known as halite. It is the result of the evaporation of ancient oceans millions of years ago. Underground salt deposits are usually discovered by prospectors searching for water or oil. When salt is detected, a diamond-tipped, hollow drill is used to take several regularly spaced core samples throughout the area. These are analyzed to determine if salt mining would be profitable. If the site is thought to be suitable, vertical tunnels are sunk into the center of the salt deposit. Then a machine resembling a gigantic chain saw is used to cut a long horizontal slot through the salt, in a procedure known as undercutting. A series of holes are then drilled into the salt with an electric drill, and the holes are filled with explosives such as dynamite. Cutting and blasting are repeated in a pattern that leaves salt pillars standing to support the roof of the mining area. This is known as the room-and-pillar method and is also used in coal mines. Once blasted, chunks of the rock salt are transported to an underground crushing area where smaller pieces are collected via a metal grill and larger pieces are crushed in a rotating cylinder. Finally, redundant matter is extracted from the rock salt, in what is known as picking.

Brine is water containing a high concentration of salt. The most obvious source of brine is the ocean, but it can also be obtained from salty lakes such as the Dead Sea and from underground pools of salt water. Most brine is processed by a multi-effect vacuum evaporator. This device consists of three or more closed metal cylinders. Brine is first treated to remove chemical compounds. It then fills the bottom of the cylinders. The brine in the first cylinder passes through tubes heated by steam. The brine boils and its steam enters the next cylinder. In each cylinder, the condensation of steam causes the pressure inside to drop. A material called slurry forms at the bottom of the cylinders and goes into a tank. The slurry is then filtered to remove excess brine, dried, and passed through screens to sort the salt particles according to how large they are.

Specifications for salt vary widely according to the intended use. Salt intended for human consumption must be much purer than salt used for melting snow and ice on roads, but salt used for certain scientific purposes may need to be even purer.

Questions 1–5

Do the following statements agree with the information given in Reading Passage 1?

In boxes 1–5 on your answer sheet, write

TRUE if the statement agrees with the information

FALSE if the statement contradicts the information

NOT GIVEN if there is no information on this

- 1 The chemical industry makes use of the majority of salt produced globally.
- 2 In ancient times, people were only able to get salt from a single source.
- 3 Salt production through quarrying rock salt was common before the solar evaporation method of producing salt.
- 4 Two thousand years ago, the Chinese were quick to develop the equipment needed to mine underground.
- 5 At the time of the Roman Empire, salt was removed from salt water by heating the water in a type of pan.

Questions 6–9

Complete the notes below.

Choose **ONE WORD ONLY** from the passage for each answer.

Write your answers in boxes 6–9 on your answer sheet.

The production of rock salt

- samples of the salt are collected with the aid of a drill
- the salt is analysed to see if mining should go ahead
- vertical tunnels are sunk into the middle of the salt deposit
- during a process called 6 _____, a machine is used to break into the salt
- explosives are placed in the holes in the salt
- after blasting, 7 _____ of salt are left behind to hold the roof up
- in an underground crushing area, small pieces of rock salt are gathered using a 8 _____
- the process of 9 _____ removes any unwanted material from the rock salt

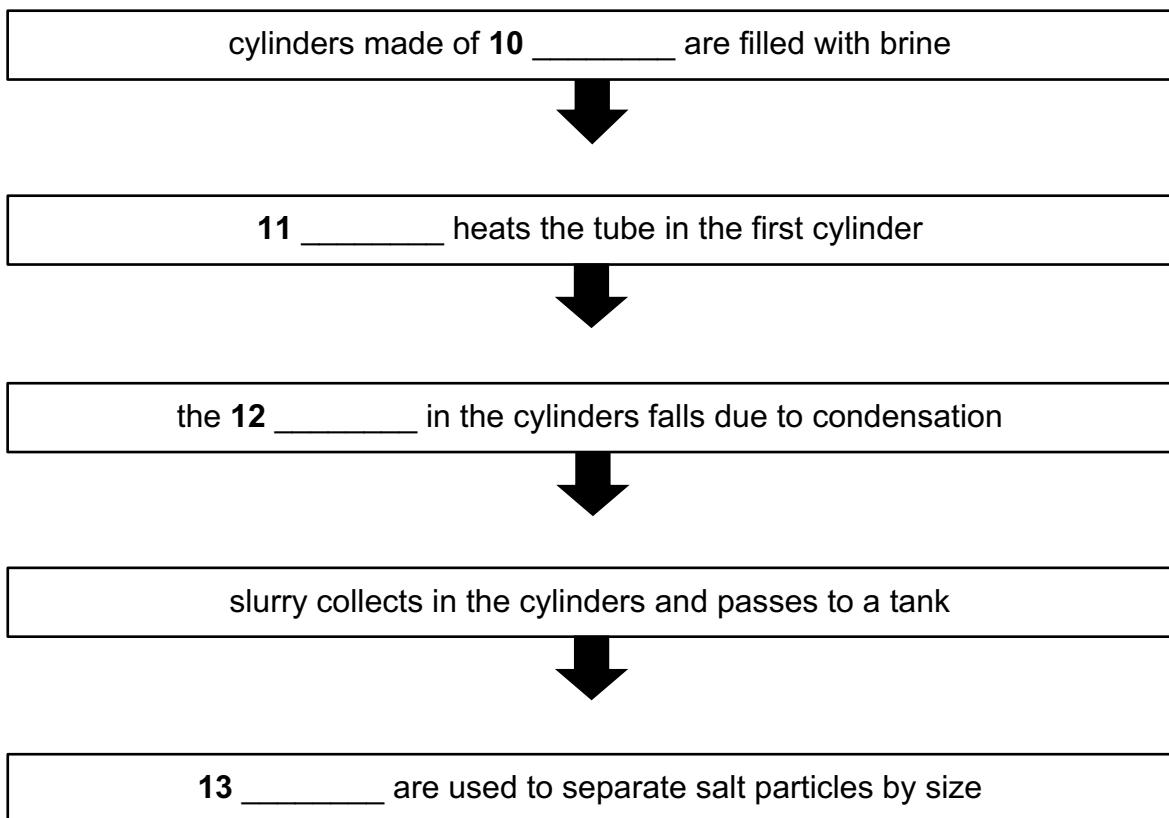
Questions 10–13

Complete the flow-chart below.

Choose **ONE WORD ONLY** from the passage for each answer.

Write your answers in boxes 10–13 on your answer sheet.

Obtaining salt from brine: the multi-effect vacuum evaporator



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判断题 (Q1–5)

题号	答案	题干翻译	精确定位 (原文摘句 → 译文)	解析
1	TRUE	化学工业使用了全球生产食盐中的大多数。	“About 70% is utilized by the chemical industry...” → “约 70% 的食盐被化学工业使用。”	“majority (大多数)” ≈ 70% (明显 > 50%)。与题干一致, 故为 TRUE。
2	FALSE	古代人只能从单一来源获取盐。	“The earliest humans obtained their salt from natural salt concentrations, as well as from meat... those near the ocean... chewing seaweed or from evaporation of small pools of seawater... as did milk when animals were domesticated.” → 早期人类可从天然盐渍地/肉类/海藻/海水蒸发/奶等多种来源取盐。	题干说 “only...single source (只有单一来源)”, 而原文列出多来源, 与之矛盾, 故 FALSE。
3	FALSE	通过采掘岩盐的方式在日晒蒸发法之前就很普遍。	“The earliest method... was the evaporation of seawater... Solar evaporation was soon followed by the quarrying of exposed masses of rock salt...” → 最早的方法是日晒蒸发, 随后才出现对岩盐的采掘。	原文明确 “先日晒, 后采掘”, 题干颠倒先后, 故 FALSE。
4	NOT GIVEN	两千年前, 中国人很快地开发了地下采矿所需设备。	“Two thousand years ago, the Chinese began using wells to reach underground pools of salt water...” → 两千年前, 中国人开始用井到达地下盐水池。	原文只说 “开始使用井”, 并未评价 “很快 (quick to develop)” 这一速度/效率, 信息缺失, 故 NOT GIVEN。
5	TRUE	罗马帝国时期, 人们用一种平底锅把盐水加热以取盐。	“During the time of the Roman Empire, shallow lead pans were used to boil salt water... to extract the salt.” → 罗马时期用浅铅锅烧盐水以提取食盐。	与题干完全一致 (type of pan = shallow lead pans; heating salt water), 故 TRUE。

笔记填空 (Q6–9)

(每空 ONE WORD ONLY, 按文中拼写作答)

题号	答案	题干要点 (中译)	精确定位 (原文摘句 → 译文)	解析
6	undercutting	在名为 6 _____ 的工序中, 用机器切入盐层。	“a machine... to cut a long horizontal slot... in a procedure known as undercutting.” → 一种称为 undercutting 的工序。	直接同形替换; 注意小写、单词拼写完整。
7	pillars	爆破后, 留下 7 _____ 支撑顶板。	“in a pattern that leaves salt pillars standing to support the roof of the mining area.” → 留下盐柱以支撑顶部。	题干要求 ONE WORD, 故写 pillars (而非 “salt pillars” 两词)。含义明确: 柱体支撑顶板。
8	grill	地下破碎区用 8 _____ 收集小块岩盐。	“smaller pieces are collected via a metal grill and larger pieces are crushed in a rotating cylinder.” → 小块通过**金属格栅 (grill)**收集。	题干对应 “小块... gathered using a ____”, 契合 grill; “cylinder” 用于大块, 不匹配题干对象。
9	picking	9 _____ 这一过程去除杂质。	“redundant matter is extracted... in what is known as picking.” → 去除多余杂质的过程称作 picking。	直接原词; 表示 “拣选/拣除” 杂质。

流程图填空 (Q10–13)

(每空 ONE WORD ONLY)

题号	答案	题干要点 (中译)	精确定位 (原文摘句 → 译文)	解析
10	metal	由 10 _____ 制成的圆筒被注入卤水。	“This device consists of three or more closed metal cylinders .” → 多个金属圆筒。	流程第一步为“圆筒被注入卤水”，其材质在原文仅“metal”，故填 metal 。
11	steam	11 _____ 加热第一只圆筒中的管。	“Brine... passes through tubes heated by steam .” → 管子被蒸汽加热。	直接同义替换；主语用 steam 。
12	pressure	由于冷凝，圆筒内的 12 _____ 下降。	“the condensation of steam causes the pressure inside to drop.” → 蒸汽冷凝使内部压力下降。	关键词“condensation... pressure... drop”与题干完全对应。
13	screens	用 13 _____ 按颗粒大小分离盐。	“dried, and passed through screens to sort the salt particles according to how large they are.” → 通过筛网按大小分拣。	名词复数 screens ；与题干“separate... by size”同义。