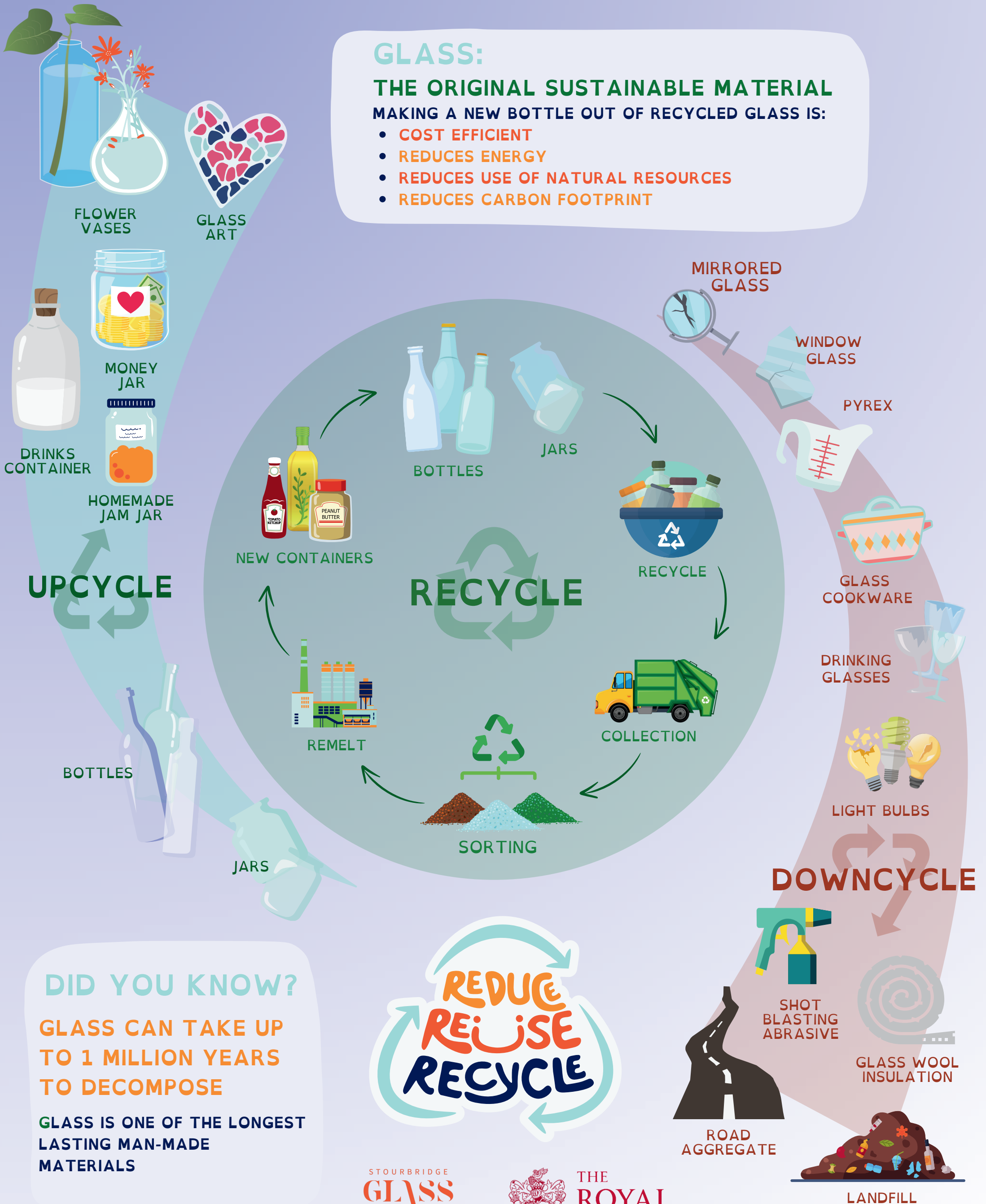


# HOW IS GLASS RECYCLED?

## GLASS:

**THE ORIGINAL SUSTAINABLE MATERIAL**  
**MAKING A NEW BOTTLE OUT OF RECYCLED GLASS IS:**

- **COST EFFICIENT**
- **REDUCES ENERGY**
- **REDUCES USE OF NATURAL RESOURCES**
- **REDUCES CARBON FOOTPRINT**



**UPCYCLE**

**DOWNCYCLE**

## DID YOU KNOW?

**GLASS CAN TAKE UP TO 1 MILLION YEARS TO DECOMPOSE**

**GLASS IS ONE OF THE LONGEST LASTING MAN-MADE MATERIALS**



# WORD SEARCH

## GLASS RECYCLING



BOTTLES



JARS



RETURNABLE



INSULATION

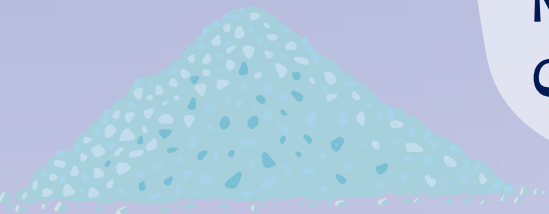


SORTED

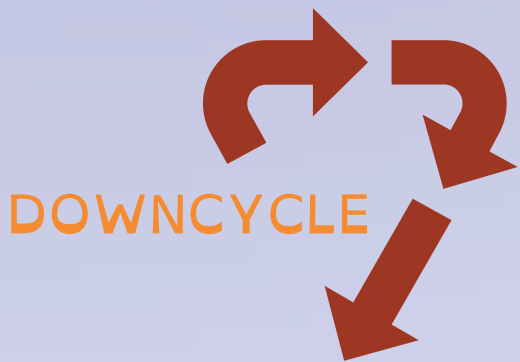
R A Y F J O R E F I L L A B L E K R  
 E E E U E C C O L L E C T I O N Z E  
 U L C R D O W N C Y C L E Z W S Q M  
 G A C Y O D X W J O U P C Y C L E E  
 S N O J C I B O T T L E S R Z P Y L  
 F D G A O L C U L K E O T I O N R T  
 Q F L R K A E T F Y C U L L E T E I  
 H I A S H U O L S A N D S B N H U O  
 I L S H I N S U L A T I O N C U S A  
 Y L S R H T O N B S O D A A S H E K  
 N O S O R T E D J A Y L I M E M X B  
 O U K X B R E T U R N A B L E T J B



RECYCLE



CULLET



DOWNCYCLE



UPCYCLE



REUSE



REFILLABLE



LANDFILL



REMELT



COLLECTION

### DID YOU KNOW?

1 recycled glass bottle would save enough energy to power a computer for 25 minutes.



SAND

LIME

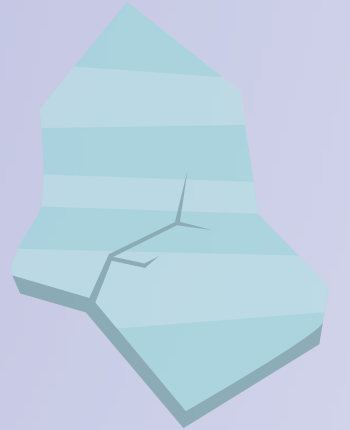
SODA ASH

# BE A RECYCLING CHAMP!

Draw or write which types of glass you can recycle at home and which have to be taken to a local recycling centre.



BOTTLES



WINDOW GLASS



MIRRORED GLASS



JARS



GLASS COOKWARE

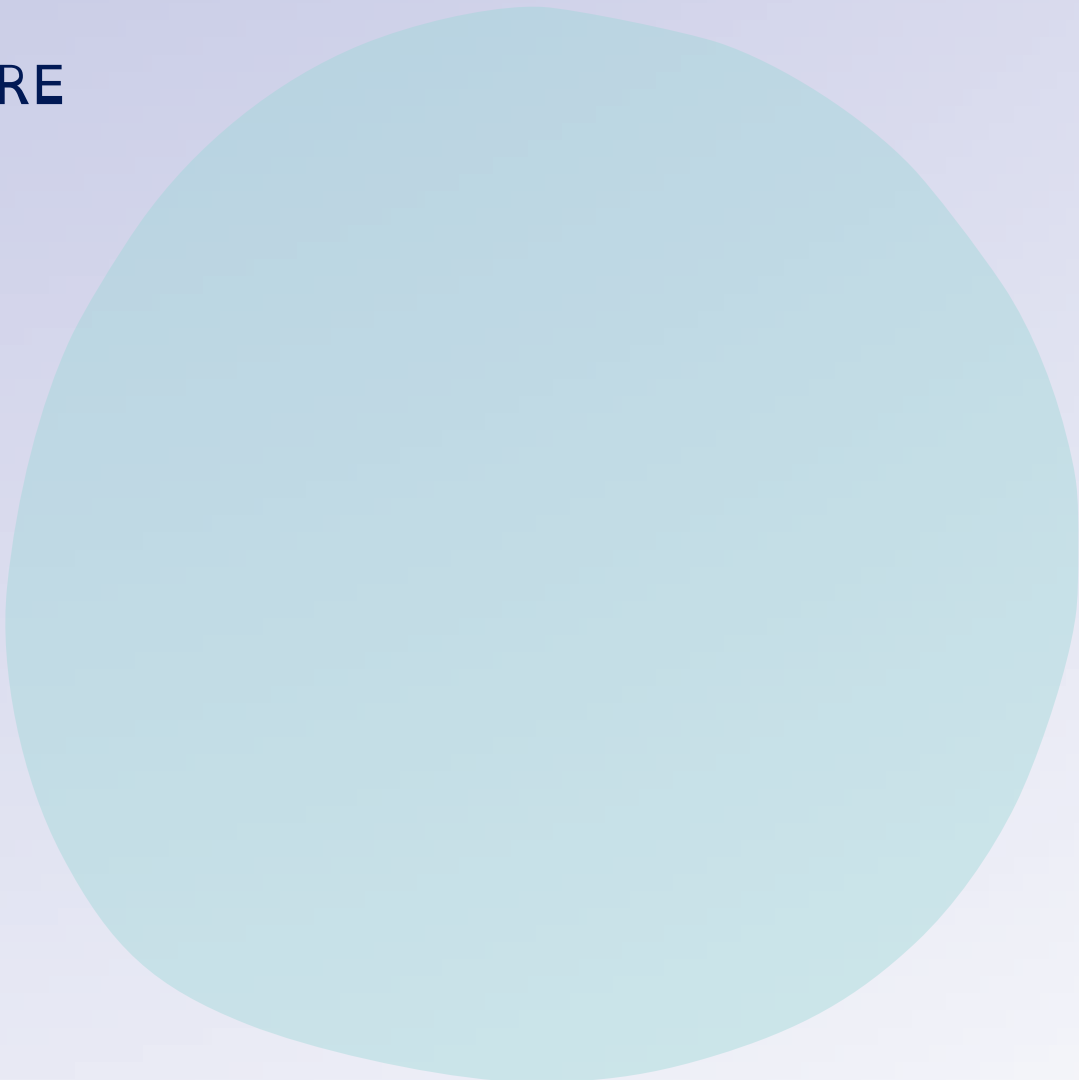
## LOCAL RECYCLING CENTRE



LIGHT BULBS



PYREX



DRINKING GLASSES

\*Take a look at the 'How glass is recycled' poster for clues!

# HOW WE USE GLASS EVERYDAY



Glass has many uses, how many can you see and name on this page? Can you think of any more? Write or draw them below.

A large, empty white rounded rectangle intended for writing or drawing additional examples of glass uses.



# WHAT IS GLASS MADE FROM?

1



2



+

3



+

4



+

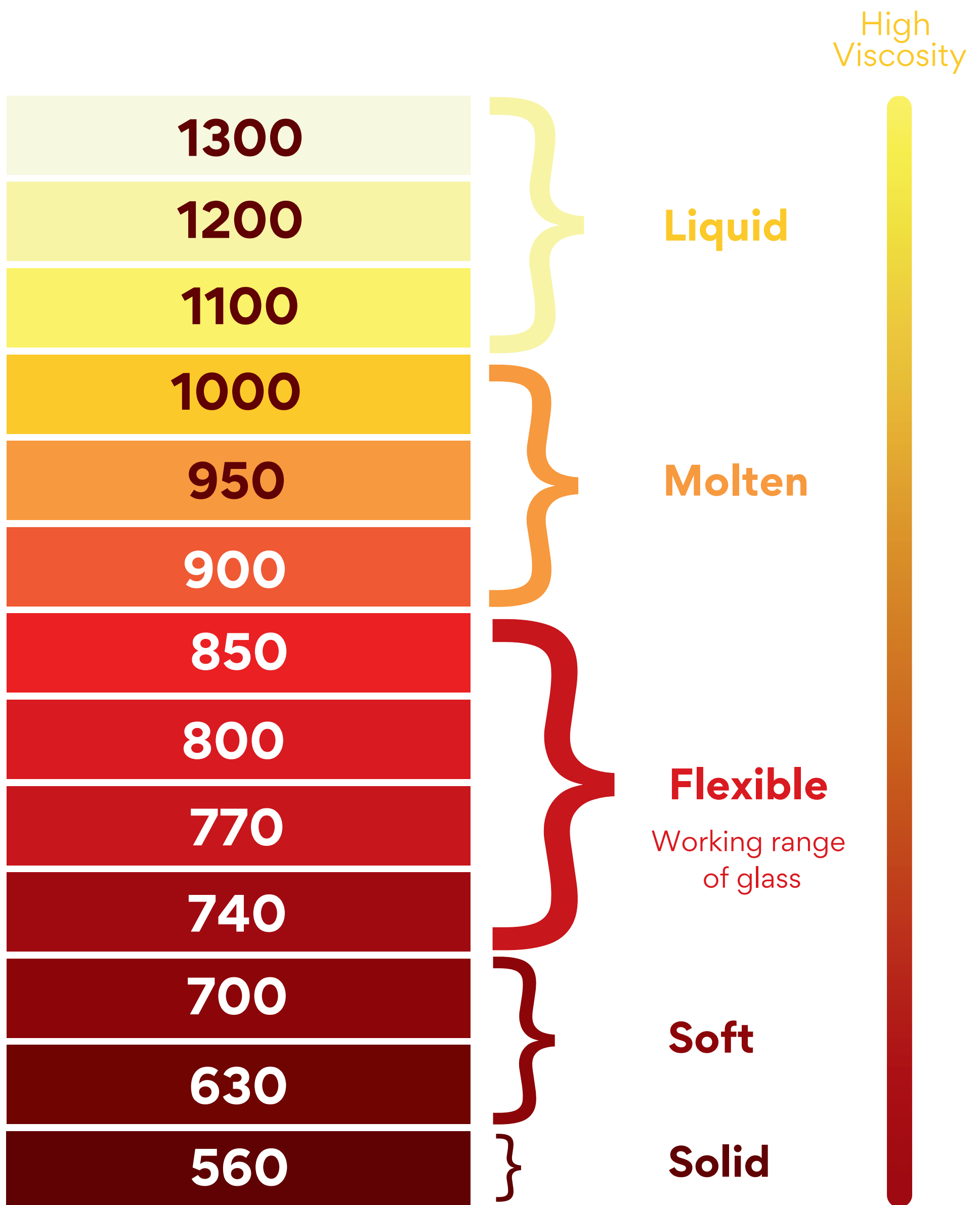
=



Bonus points if you can write the percentage of each ingredient:

- 1      %
- 2      %
- 3      %

# Glass State and Temperature in °C



# THE STRONGEST GLASS IN EXISTENCE!

## Prince Rupert's Drops

Once upon a time, in Germany, there was a prince named Rupert. Around 1660, he brought these seemingly magical drops to England and presented them as a gift to King Charles II, who handed them to his newly founded (and now esteemed) **Royal Society** for study.

### WHAT ARE PRINCE RUPERT'S DROPS?

They are small droplets of glass, practically unbreakable at the bulbous end. They resist shattering even if slammed with a hammer, or directly hit with a bullet. But the whole drop shatters easily into smithereens from the slightest pressure on its tail.

**It's one of the strongest naturally occurring materials known!**

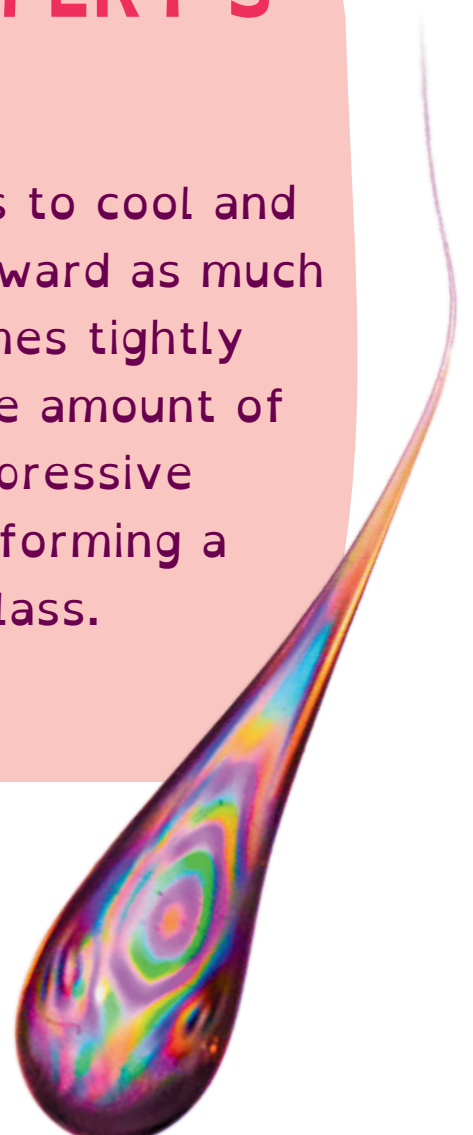
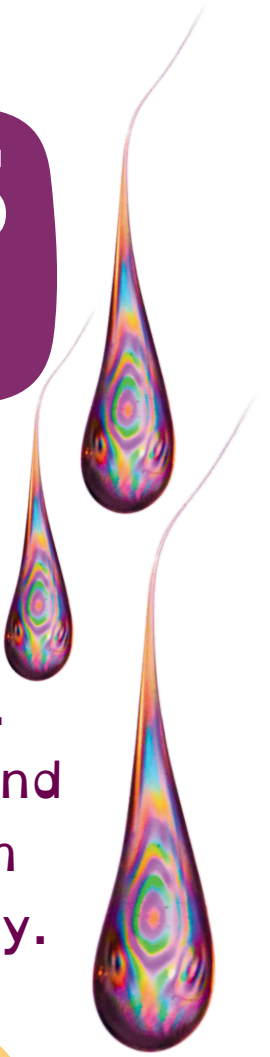
Prince Rupert's droplets are created by dripping molten glass into cold water, which causes it to solidify into a tadpole-shaped droplet with a long, thin tail.

To break a drop, it is necessary to create a crack that enters the interior tension zone. The easiest way is by breaking the fragile tail. This releases all pent-up energy causing the whole thing to shatter.

### WHY ARE PRINCE RUPERT'S DROPS SO STRONG?

The molten glass inside continues to cool and retract, pulling the outer layer inward as much as possible. The inner core becomes tightly squeezed, which generates a huge amount of tension inside the drop. This compressive force, binds together the layers, forming a strong shock absorber made of glass.

When glass breaks, the cracks move at 3,000 mph. That's 5 times faster than the average aeroplane, which travels at 575 mph!



# WORD SEARCH

V A Y S O U A F E R U P E R T P Q C  
L O Y S M Z N B O V M T S C V R M O  
P S G M T I P B S R W M H N N E O M  
T H T L F R T R R O C W O R V S L P  
A A M E A D O H I E R E C R I S T R  
D T B E N S E N E N A B K G T U E E  
P T R A D S S N G R C K E U N R N S  
O E R Y X D I B E B E E A R M E P S  
L R C U H V Z O P R S E H B A Z R I  
E S W A T E R A N G G L N G L Y G V  
C Q R H A M M E R Y N Y G S G E B E  
W V U A F R A G I L E O D R O P L A



ABSORBER  
COMPRESSIVE  
DROP  
ENERGY FORCE  
FRAGILE GLASS  
HAMMER  
MOLTEN  
PRESSURE  
PRINCE RUPERT  
SHATTERS  
SHOCK  
SMITHEREENS  
STRONG  
TADPOLE  
TENSION  
UNBREAKABLE  
WATER

## THERE'S AN URBAN MYTH ...

That the world famous glass artist Dale Chihuly wanted to make the world's largest Prince Rupert's drop. Whilst in Finland, a glassmaker from his team grabbed a huge ladle of hot glass from the furnace, ran into a helicopter, which then flew over a nearby lake. From a great height he dropped the molten glass into the cold water, it still is there today, at the bottom of a lake in Finland.

STOURBRIDGE  
**GLASS MUSEUM**

Charity Number: 1139252



Bench



Furnace



Marver



Glass



Lehr

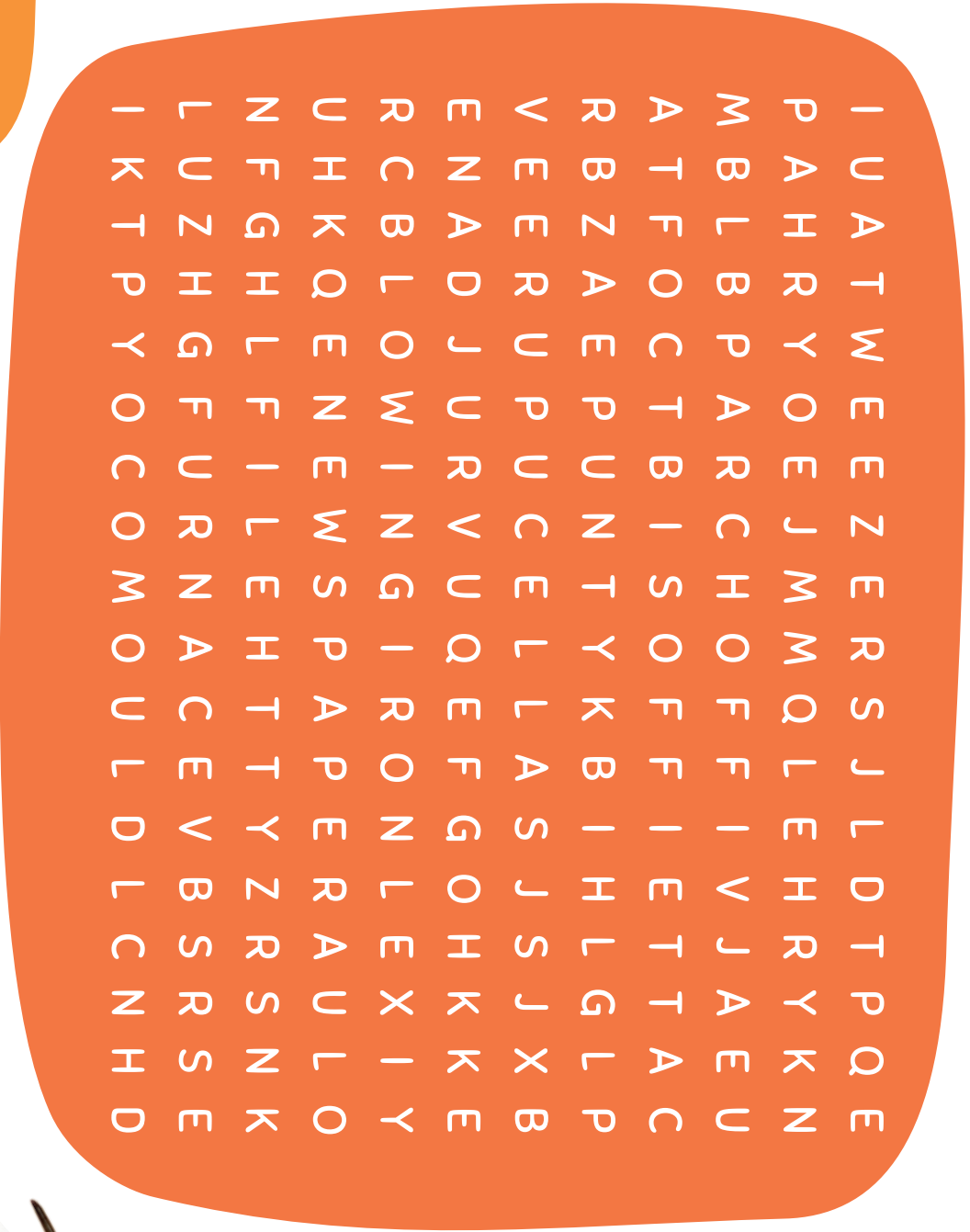


Kiln



# Word Search

Find the glass makers tools!

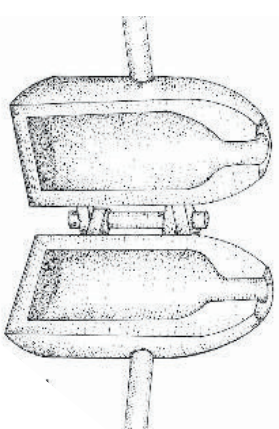


Punty



Blowing Iron

Mould



Shears



Tweezers



Newspaper



Pucellas



Parchoffi



Soffietta



Board



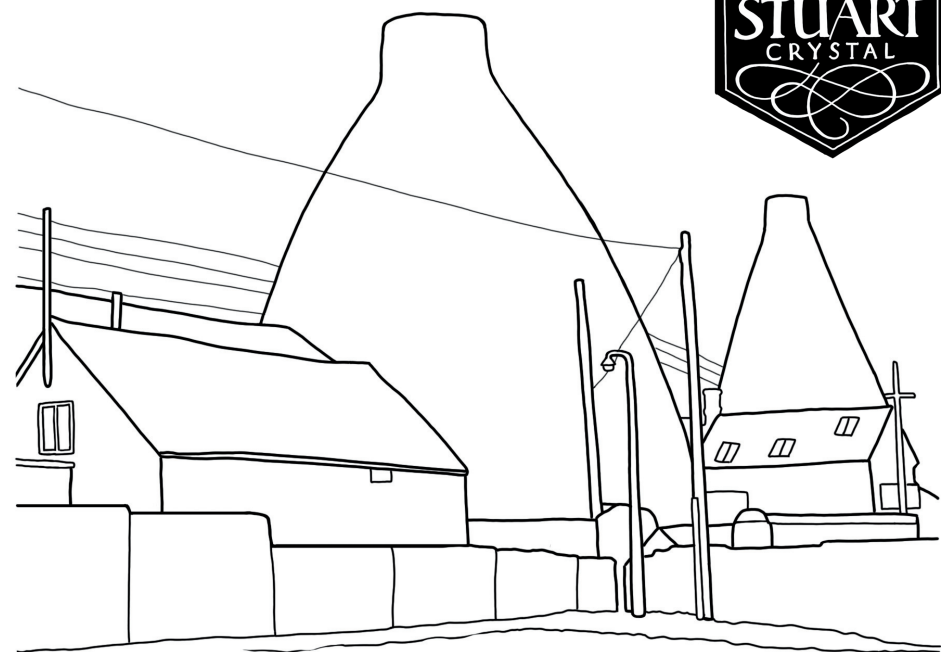
File



Did you know? ...  
Lehr is a German word, which means 'empty oven'. It's the name of the kiln used to cool the glass safely to room temperature.

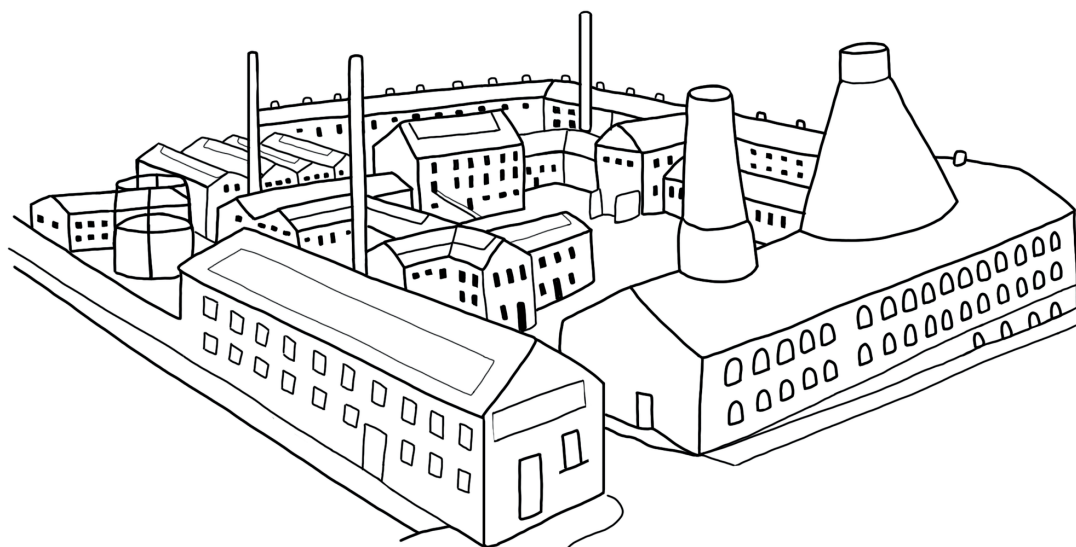
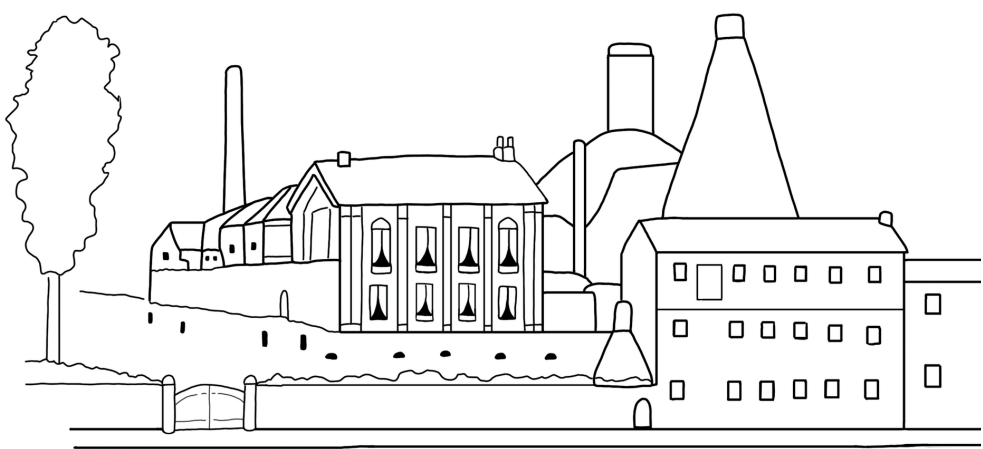
Some glassmaking tools are still called by their Italian names....

# The Glass Quarter Giants



**WEBB CORBETT**  
MADE IN  
ENGLAND

RICHARDSON;  
Flint Glass Manufacturer

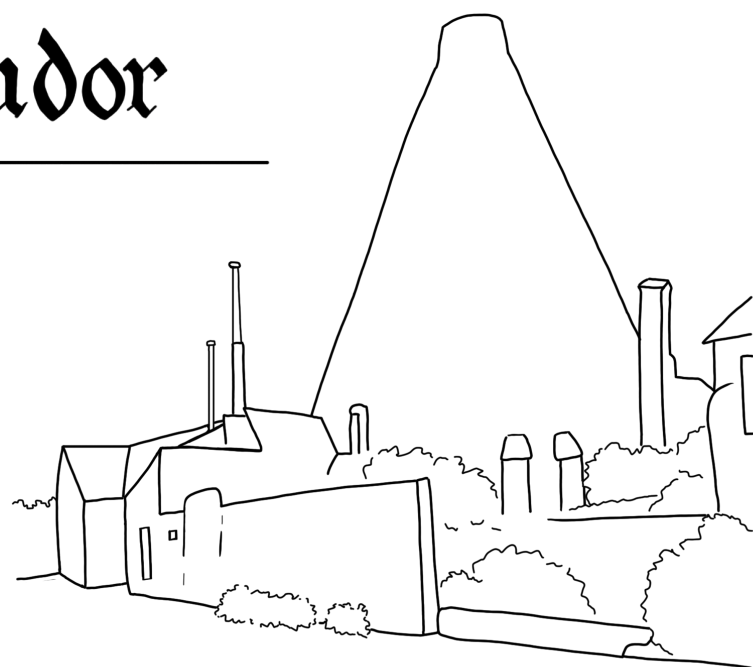


STEVENS & WILLIAMS, LTD.

STOURBRIDGE GLASS CO., LTD.



**Tudor**



STOURBRIDGE  
**GLASS MUSEUM**