

# PLASTICS

**1. Look around you. List at least 5 things made entirely of plastic.**

**2. A.** Think of at least three objects which, a few years ago, would have been made of other materials and which are now commonly made of plastics.

**B.** For each object you listed, provide the advantages of the plastic over the other material. Give reasons why you believe plastics are now used.

**3. Fill in the gaps. First letters have been provided for you:**

**P**....., such as polythene, PVC and perspex are often flexible. They are usually soft and are easily **b**..... They are excellent thermal and electrical **c**..... They are usually transparent or **t**.....

Polymers are used widely in cars. They are lightweight, **t**.....and flexible. Plastic does not rust when wet, unlike iron and **s**.....

Plastics are used widely in the clothes industry and fashion world; it is a **d**..... and tough material. Plastic with low **m**..... points would be unsuitable for the high **t**..... in the summer. Plastics are suitable for protection in wet weather because they are **w**.....

**4. Discuss these questions:**

a) Imagine you would have to spend one day without plastics. What would you miss most?

b) Do you prefer synthetic or natural materials for clothing? Why?

c) Do you think using plastics can be harmful for humans?

**Some rumours about plastics:**

Using plastics in the microwave creates dioxins that can migrate into food.

Reusing plastic bottles causes harmful chemicals to leach into water.

Cups and containers made with polystyrene plastic leach toxic dihydrogen monoxide.

**5. You are going to read an article about plastics. The title is „Plastics from Oranges“.**

**Do you have any idea what the text may be about?**

# PLASTICS FROM ORANGES

## I. Pre-reading activities

### Vocabulary

Give explanations to the following expressions:

catalyst  
deforestation

Think of Czech equivalents of the expressions below:

disposable products  
renewable resources  
building blocks  
to pump CO<sub>2</sub> in the atmosphere  
readily abundant  
greenhouse gas  
fossil fuels

## II. Reading activities

### A. Scanning

Read the text quickly and answer the questions:

1. What kind of plastic does the article describe?
2. What ingredients did the researchers use to produce the new plastic?
3. What is so good about the new plastic?

### B. Transferring Information

Complete the table below. Try and ask a question for each item in the table and answer it.

Researchers Based at: Research Reported in: Research Led by: Name of New Plastic:	
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### C. Comprehension

Are these sentences true or false?

1. Limonene makes up about 95 % of the new plastic.
2. A catalyst is used to speed up the reaction of polylimonene carbonate and CO<sub>2</sub>.
3. The building block of most plastics is petroleum.
4. We should investigate new ways of plastics production.
5. In the future, carbon monoxide may be used as a building block for polymers.

### D. Vocabulary Building

Find the English equivalents of the expressions below:

- katalyzátor urychlí reakci
- četné výrobky z plastů na jedno použití
- využít obnovitelné zdroje
- mít zájem využít kysličník uhličitý
- nejdůležitější skleníkový plyn
- vytvářený činností člověka

### E: Translation

Translate the underlined sections of the text

## Plastics created from orange peel

Cornell University researchers created a novel polymer using CO<sub>2</sub>, an oil present in orange peel and a catalyst that speeds the reaction along.

The team hopes CO<sub>2</sub> could one day be collected for making plastics instead of being pumped into the atmosphere.

Details of the research in the Journal of the American Chemical Society.

Plastics are polymers, long-chained carbon-based (organic) molecules.

Limonene is a carbon-based compound that makes up about 95% of the oil in orange peel and is used to give household cleaners their citrus smell.

Geoffrey Coates, a professor of chemistry at Cornell in Ithaca, US, and colleagues used a derivative of this oil called limonene oxide as one of the building blocks for their polymer.

The researchers used a helper molecule, or catalyst, to get the limonene oxide to react with CO<sub>2</sub> and form a new polymer called polylimonene carbonate.

This polymer has many of the characteristics of polystyrene, which is used in numerous disposable plastic products.

"Almost every plastic out there, from the polyester in clothing to the plastics used for food packaging and electronics, goes back to the use of petroleum as a building block," said Professor Coates. "If you can get away from using oil and instead use readily abundant, renewable and cheap resources, then that's something we need to investigate.

What's exciting about this work is that from completely renewable resources, we were able to make a plastic with very nice qualities."

Coates' team is interested in using carbon dioxide as an alternative building block for polymers in industry. The gas could be isolated and used to produce plastics such as polylimonene oxide.

CO<sub>2</sub> is the principal greenhouse gas caused by human activities, and is emitted by fossil fuel burning and deforestation.

Article©

<http://news.bbc.co.uk/1/hi/sci/tech/4191737.stm>

## LISTENING (Voice of America)

### New Findings Add to Health Concerns About a Chemical in Plastics

Available at <http://www.voanews.com/specialenglish/2008-09-24-voa1.cfm>

#### Vocabulary:

safety research  
levels in the urine

within the limits  
twice as likely

findings must be reproduced  
cause of these conditions

**Answer the question:** What chemical are we talking about?

**Are these sentences true or false? If they are false, say what is true.**

1. The chemical is often used in baby bottles. T/F
2. People can swallow this chemical by accident. T/F
3. Researchers found unsafe levels of the chemical in some people's urine. T/F
4. The study shows that the chemical causes diabetes and heart disease. T/F
5. The study was led by a researcher from the University of Exeter. T/F
6. The study was published in The Journal of British Medical Association. T/F



Canadian Environment Minister John Baird, left, and Health Minister Tony Clement hand out baby bottles that are free of BPA. In April, Mister Clement announced Canada's plans to limit use of the chemical.

## Homework: **PRESENT PERFECT**

### ❖ I. Present Perfect Simple - (předpřítomný čas prostý)

#### active – rod činný **have + past participle**

**I have finished / seen – have you finished / seen? – he hasn't finished / seen**

✓ Předpřítomný čas používáme, když jde o minulé děje, které ovlivňují přítomnost:

- **I've lost** my passport. (a teď jej nemohu najít)
- 'Where's Linda?' **She's gone** to bed.' (a teď spí)
  
- ✓ Mluvíme o době, která začala v minulosti a sahá do přítomnosti.
- **Have you been** to France? (in your life) – No, **I haven't**.
- **I've been** to Canada, but **I haven't been** to the United States.
  - ✓ I've **just** ..... just – právě
  - ✓ I've **already** ..... already – už (překvapení: tak brzo? dřív než jsem čekala)
  - ✓ Have you ..... **yet?** Yet? – už (bez překvapení)
  - ✓ I haven't ...**yet** not yet – ještě ne
  - ✓ **Ever, never**
- **Has Ann ever been** to Australia? – Yes, once.
- **Have you ever played** football? Yes. I often play football.
  - ✓ Výrazy zahrnující přítomnost často vyžadují použití předpřítomného času prostého: recently, in the last few days, so far, since breakfast, atd.
  - **Have you heard** from George *recently*?
  - We **haven't had** any problems *so far*.
  - It's nice to see you again. **We haven't seen** each other **for a long time**.
  
  - ✓ Také pokud výrazy **today, this morning, tonight**, atd. zahrnují přítomnost, pokud to časové období ještě neskončilo, je nejlépe použít předpřítomný čas.

### ❖ Present Perfect Continuous – předpřítomný čas průběhový

#### Active - rod činný

**have/has been + .....ing**

- ✓ Pro činnost, která právě nebo před nedávnem skončila,
  - You're out of breath. **Have you been running**?
  - Paul is very tired. **He's been working** very hard.
  
  - ✓ nebo pro činnost, která začala v minulosti a stále trvá,
    - How long **has it been raining**? It has been raining for two hours.
    - Where have you been? **I have been looking** for you for the last half hour.
    - **George hasn't been feeling** well recently.
  
    - ✓ nebo pro činnosti, které se během minulosti opakují a opakují se i nyní.
      - She is a very good tennis player. **She's been playing** since she was eight.
      - Every morning they meet in the same café. **They've been going** there for years.

*Continuous – zajímá nás ta činnost samotná, je jedno, jestli byl skončena nebo ne.*

*Simple – důležité je, že jde o skončenou činnost, zajímá mě její výsledek.*

WHEN x HOW LONG

When + minulý čas prostý

How long + předpřítomný čas průběhový i prostý

A. Dokončete věty za použití výrazů *today/this year/this term, atd.*

- 1) I saw Tom yesterday but ***I haven't seen him today.***
- 2) I read a newspaper yesterday but I ..... today.
- 3) Last year the company made a profit but this year .....

B. Write a question for each situation.

- 1) John looks sunburnt. You ask: (you / sit / in the sun?) ***Have you been sitting in the sun?***
- 2) You have just arrived to meet a friend who is waiting for you. You ask: (you / wait / long?)
- 3) You meet a friend in the street. His face and hands are very dirty. You ask: (what / you / do?)
- 4) long ...? You ask: (how long / you / sell / computers?)

C. Přečtete a utvořte dvě věty za použití slov v závorce.

- 1) Tom started reading a book two hours ago. He is still reading it and now he is on page 53. (read / for two hours) ***He has been reading for two hours.***  
(read / 53 pages so far) ***He has read 53 pages so far.***
- 2) Linda is from Australia. She is travelling round Europe at the moment. She began her tour three months ago. (travel / for three months) She ..... (visit / six countries so far) .....
- 3) Jimmy is a tennis player. He began playing tennis when he was ten yours old. This year he is national champion again – for the fourth time. (win / the national championship four times) ..... (play tennis since he was ten) .....

D. Vyberte vhodnější tvar sloves - předpřítomný prostý nebo předpřítomný průběhový

- 1) Where have you been? ***Have you been playing*** (you / play) tennis?
- 2) Look! Somebody ..... (break) the window.
- 3) You look tired. ....(you / work) hard?
- 4) ..... (you / ever / work) in a factory. – No, never.
- 5) Sorry, I'm late. – That's all right. I ..... (not / wait) long.
- 6) Is it still raining? – Not, it ..... (stop).
- 7) I ..... (lose) my address book. .... (you / see) it anywhere?
- 8) I ..... (read) the book you lent me but ..... but I (not finish) it yet.
- 9) I ..... (read) the book you lent me, so you can have it back now.

E. Dejte slovesa v závorkách do správného tvaru, času předpřítomného nebo času minulého.

- 1) Where is your key? – I don't know, ***I've lost*** it. (lose)
- 2) On Sunday I .... very tired, so I lay down on the bed and went to sleep. (be)
- 3) Is Helen still here? – No, she..... out. (just / go)
- 4) The police .....three people but later they let them go. (arrest)
- 5) Yesterday I ..... my keys. (lose)
- 6) What do you think of my English? Do you think I .....? (improve)