New, super-thin material cools buildings

15th February, 2017

A team of engineers has created a super-thin material that could help keep buildings cool. The team is from the University of Colorado Boulder in the USA. Engineers from the university developed the revolutionary new material, that is very thin and can cool objects even under direct sunlight. The material does not need energy to work nor does it need water to help keep things cool. The engineers say the new material could provide an answer to air conditioners, which are expensive to run and need a lot of water. The material is unlike anything found in nature. It is a glass-polymer hybrid that is just 50 micrometers thick. That's slightly thicker than the aluminum foil we use for cooking.

The engineers explained how their new material works. They said when it is put on top of something, two things happen. The first thing is that it cools the object underneath by reflecting the sun's rays back into space. At the same time, the second thing happens - the material removes the object's own heat and sends that into the air. An engineer said: "The key advantage of this technology is that it works 24/7 with no electricity or water usage….We're excited about the opportunity to explore potential uses in the power industry, aerospace, agriculture and more." Another researcher said: "Just 10 to 20 square meters of this material on the rooftop could nicely cool down a…house in summer."

Sources: *knowridge.com / ctvnews.ca / techtimes.com*

Writing

Scientists will find an answer to all our problems. Discuss.

Chat

Talk about these words from the article.

team / engineers / buildings / cool / revolutionary / direct / sunlight / expensive / material / object / heat / technology / electricity / aerospace / agriculture / summer

True / False

a) A team of computer scientists created the super-thin material. T / F

b) The super-thin cooling materials does not work under direct sunlight. T / F

c) The new material does not need energy and water to work. T / F

d) The material is thinner than the aluminium foil we use for cooking. T / F

e) The material works by absorbing the sun's rays and keeping the heat. T / F

f) The material works all day, every day. T / F

g) An engineer is looking forward to seeing the material used in agriculture. T / F

h) Around 15 square meters on a roof could cool a house in the summer. T / F

Synonym Match

(The words in **bold** are from the news article.)

1.	**super**	a.	thing
2.	**revolutionary**	b.	mixture
3.	**under**	c.	benefit
4.	**provide**	d.	advanced
5.	**hybrid**	e.	possible
6.	**object**	f.	ultra
7.	**happens**	g.	only
8.	**advantage**	h.	give
9.	**potential**	i.	takes place
10.	**just**	j.	beneath

Discussion – Student A

a) What are the disadvantages of air conditioners?

b) What meanings of the word 'cool' do you know of?

c) How does the new material work?

d) What are the advantages of the new material?

e) Why do buildings get hot?

f) How could the aerospace industry use the new material?

g) How could the agriculture industry use the new material?

h) What questions would you like to ask the engineers?

Phrase Match

1. A team
2. under direct
3. The material is unlike
4. slightly
5. the aluminium foil
6. engineers explained how their
7. reflecting the Sun's rays
8. The key advantage
9. the opportunity to
10. cool

a. new material works
b. thicker
c. explore potential uses
d. of this technology
e. anything found in nature
f. of engineers
g. sunlight
h. down a house in summer
i. we use for cooking
j. back into space

Discussion – Student B

a) How important is air conditioning to you?

b) What do you think about what you read?

c) How do you think the new material will change our life?

d) Would you wear clothes made from the new material?

e) What other things can we do to keep buildings cool?

f) What other things could we use the material for?

g) What do you do to keep cool?

h) Is it better to be too cool or too hot?

Spelling

1. A team of rensgiene
2. pdeeevdol the revolutionary new material
3. can cool sjtbcoe
4. under dtierc sunlight
5. eenpivesx to run
6. hysgllit thicker than the aluminium foil
7. indelexap how
8. gilenctefr the Sun's rays
9. reovmes the object's own heat
10. The key avegdntaa of this
11. eoexlpr potential uses
12. the power tisuyndr

Answers – Synonym Match

1. f	2. d	3. j	4. h	5. b
6. a	7. i	8. c	9. e	10. g

Role Play

Role A – Cooling Material

You think cooling material is the best kind of material. Tell the others three reasons why. Tell them why their material is not as good . Also, tell the others which is the worst of these (and why): leather, bulletproof material or silk.

Role B – Leather

You think leather is the best kind of material. Tell the others three reasons why. Tell them why their material is not as good . Also, tell the others which is the worst of these (and why): cooling material, bulletproof material or silk.

Role C – Bulletproof Material

You think bulletproof material is the best kind of material. Tell the others three reasons why. Tell them why their material is not as good . Also, tell the others which is the worst of these (and why): leather, cooling material or silk.

Role D – Silk

You think silk is the best kind of material. Tell the others three reasons why. Tell them why their material is not as good . Also, tell the others which is the worst of these (and why): leather, bulletproof material or cooling material.

Speaking – Material

Rank these with your partner. Put the best kind of material at the top. Change partners often and share your rankings.

- cooling material
- silk
- leather
- denim
- bulletproof material
- waterproof material
- camouflage material
- warming material

Answers – True False

a	F	b	F	c	T	d	F	e	F	f	T	g	T	h	T

Answers to Phrase Match and Spelling are in the text.

