

Homework — Adilson

Part 1 — Complete the sentences

Complete each sentence with the correct expression from the box. You may need to change the form of the expression.

Word Bank

deal with · hold up · take a toll on · come into play · break down · walk someone through · run into · make a difference · come at a cost · be exposed to

1. The refinery is currently _____ higher levels of iron contamination in the feedstock.
2. If the catalyst is continuously _____ high levels of iron, its performance may gradually decline.
3. The new catalyst is designed to _____ better under harsher operating conditions.
4. Could you _____ how the new catalyst works step by step?
5. Iron contamination can _____ catalyst performance over time.
6. We may _____ problems when processing heavier feedstocks.
7. Catalyst design really _____ when the iron concentration in the feedstock increases.
8. The new formulation could _____ by helping the catalyst maintain its performance.
9. Higher activity may _____ a cost, particularly if selectivity decreases.
10. Could you _____ the technical explanation and explain it in simpler terms?

Part 2 — Complete with the correct technical term

Word Bank

feedstock · contamination · catalyst deactivation ·
conversion · selectivity · iron tolerance · active site · pore
structure · catalyst performance · yield · profitability

1. The material entering the refinery process is called the _____.
 2. The presence of unwanted substances such as iron is known as _____.
 3. The gradual reduction in catalyst performance is called _____.
 4. The ability of the catalyst to maintain its performance despite iron contamination is its _____.
 5. The amount of feedstock converted into products is referred to as _____.
 6. The tendency to produce the desired products rather than unwanted ones is called _____.
 7. Molecules need to reach the catalyst's _____ for the reaction to take place.
 8. The network of spaces and channels inside the catalyst is its _____.
 9. If the refinery produces more valuable products from the same feedstock, this can improve its _____.
 10. A reduction in production costs or an increase in product value can have a positive effect on refinery _____.
 11. High levels of iron contamination can negatively affect overall _____.
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Part 3 — Choose the better option

Choose the word or expression that best completes each sentence.

1. The refinery needs to process heavier **(feedstock / operation)** while maintaining acceptable catalyst performance.
2. Iron contamination can **(negatively affect / negatively effect)** catalyst activity.
3. The new technology was developed to improve the catalyst's **(iron tolerance / iron resistance against)** contamination.
4. The catalyst needs to maintain its performance **(under operating conditions / under operation conditions)**.
5. The new catalyst could improve conversion, but this may **(come at a cost / come with a toll)** in terms of selectivity.
6. The catalyst is **(exposed to / exposed against)** high levels of contaminants.
7. The new technology could make a significant **(difference / toll)** under high-iron conditions.
8. A catalyst that performs well in the laboratory may behave differently **(under actual operating conditions / under actual operate conditions)**.
9. The new catalyst may allow the refinery to process lower-quality feedstocks, increasing its **(flexibility / accessibility)**.
10. Improving one performance parameter may sometimes **(affect / effect)** another.

Part 4 — Correct the mistakes

Each sentence contains **one mistake**. Rewrite it correctly.

1. The refinery is dealing with higher levels of iron contaminations.
 2. Iron contamination can negatively effect catalyst performance.
 3. The catalyst needs to maintain its performance under operating condition.
 4. The new catalyst has better resistance against iron contamination.
 5. The technology was developed for improve iron tolerance.
 6. The catalyst is exposed against high levels of contaminants.
 7. The new technology can make a significant different.
 8. The catalyst's pore structure affects molecular accessible.
 9. The new formulation prevents the decrease of catalyst performance.
 - 10.The previous catalyst was less effective under these operating conditions.
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Part 5 — Translate into English

1. A refinaria está lidando com níveis mais altos de contaminação por ferro.
2. A contaminação por ferro pode afetar negativamente o desempenho do catalisador.
3. O novo catalisador consegue manter seu desempenho sob condições operacionais mais severas.
4. A tolerância ao ferro pode fazer uma diferença significativa.
5. A contaminação pode prejudicar a conversão e a seletividade.
6. O catalisador é exposto a altos níveis de contaminantes.
7. O desenvolvimento de uma nova tecnologia pode aumentar a flexibilidade da refinaria.

8. O aumento da atividade pode vir a um custo em termos de seletividade.
 9. A tecnologia pode melhorar a rentabilidade da refinaria.
 10. O ferro pode se acumular na superfície do catalisador e afetar os sítios ativos.
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Part 6 — Complete the answers

Complete the answers using the vocabulary from today's lesson.

1. Why is iron contamination a problem?

Iron contamination can _____ catalyst performance because iron can accumulate on the catalyst and interfere with the _____.

2. What is the main advantage of the new catalyst?

The main advantage is its improved _____, which allows it to _____ under higher levels of iron contamination.

3. Why are heavier feedstocks challenging?

Heavier _____ can contain higher levels of contaminants and heavier molecules, which can put additional demands on the catalyst and negatively affect _____.

4. What is the business benefit?

If the catalyst can maintain its performance under harsher conditions, the refinery may have greater feedstock flexibility, which could make a positive difference to _____.

5. Is improving conversion always enough?

Not necessarily. We need to consider both conversion and _____ because improving one parameter can sometimes come at a _____.

Answer Key

Part 1

1. **deal with**
2. **exposed to**
3. **hold up**
4. **walk me through**
5. **take a toll on**
6. **run into**
7. **comes into play**
8. **make a difference**
9. **come at**
10. **break down**

Part 2

1. **feedstock**
2. **contamination**
3. **catalyst deactivation**
4. **iron tolerance**
5. **conversion**
6. **selectivity**
7. **active site**
8. **pore structure**
9. **yield**

10. **profitability**
11. **catalyst performance**

Part 3

1. **feedstock**
2. **negatively affect**
3. **iron tolerance**
4. **under operating conditions**
5. **come at a cost**
6. **exposed to**
7. **difference**
8. **under actual operating conditions**
9. **flexibility**
10. **affect**

Part 4

1. The refinery is dealing with higher levels of **iron contamination**.
2. Iron contamination can negatively **affect** catalyst performance.
3. The catalyst needs to maintain its performance under operating **conditions**.
4. The new catalyst has better **tolerance to iron contamination**.
5. The technology was developed **to improve** iron tolerance.
6. The catalyst is exposed **to** high levels of contaminants.
7. The new technology can make a significant **difference**.
8. The catalyst's pore structure affects molecular **accessibility**.
9. The new formulation prevents **the decrease in** catalyst performance.
10. **The previous catalyst** was less effective under these operating conditions.

("Old catalyst" is grammatically possible, but "previous" or "former" is more appropriate in this technical context.)

Part 5 — Possible answers

1. **The refinery is dealing with higher levels of iron contamination.**
2. **Iron contamination can negatively affect catalyst performance.**
3. **The new catalyst can maintain its performance under more challenging operating conditions.**
4. **Iron tolerance can make a significant difference.**
5. **Contamination can negatively affect conversion and selectivity.**
6. **The catalyst is exposed to high levels of contaminants.**
7. **The development of new technology can increase the refinery's flexibility.**
8. **Higher activity can come at a cost in terms of selectivity.**
9. **The technology can improve the refinery's profitability.**
10. **Iron can accumulate on the surface of the catalyst and affect the active sites.**

Part 6

1. **negatively affect / active sites**
2. **iron tolerance / maintain performance**
3. **feedstocks / catalyst performance**
4. **profitability**
5. **selectivity / cost**