Checking a Strip After Repeated Loads

Base your answers on the information provided and your knowledge of chemistry. Use the 2025 Chemistry Reference Tables as needed.

A workshop uses flexible strips as tabs on a container. A strip must survive one pull of 40 N and at least 200 repeated pulls of 20 N. In the first test a fresh strip is pulled once and the force is increased until it breaks. In the second test a different fresh strip receives repeated 20 N pulls of the same duration.

Strip material	Force at break in one pull (N)	Repeated pulls completed before breaking
P	50	80
Q	48	320

1 Which tab material can withstand the specified one-time pull and the full series of repeated pulls?

(1) P only

(2) Q only

(3) Both

(4) Neither

2 A student picks P because it breaks at the greater force in the first test. Evaluate the choice using the other requirement. [1]

Answer and work

A third material R breaks at 46 N on a single pull. Its repeated-load test stops at 150 completed pulls with the strip still intact.

3 Explain which requirement the record establishes for R and what remains unresolved. [1]

Answer and work

4 Describe what to do with the repeated-load test of R to finish the comparison. State one condition that should stay the same. [1]

Answer and work