Answer on Question 64795, Physics, Mechanics, Relativity

Question:

A sand falls vertically on a venter conveyor belt at a steady rate of $400\ g/s$. If the belt moves at $10\ m/s$, find the force on the belt.

Solution:

Since the force is the rate of change of momentum, we can write:

$$F = \frac{\Delta p}{\Delta t} = v\frac{\Delta m}{\Delta t} = 10\ \frac{m}{s} \cdot 0.4\ \frac{kg}{s} = 4\ N.$$

Answer:

$F = 4\ N.$