



Gymnázium Jiřího Wolker, Prostějov

Laboratory task – physics - report

2.10 Isothermal process

Name:	Class:
Date:	Evaluation:
Cooperated:	

TASK

Verify diagrammatical relation of pressure and volume of gas during an isothermal process.

MEASUREMENT

1) Pressure – volume graph (pressure and volume of air at the temperature $t_1 =$)



2) Chart of pressure and volume of air, in which we calculate the product of pressure and volume of air in the syringe.

Measurement number	$\frac{V}{\text{ml}}$	$\frac{p}{\text{kPa}}$	$\frac{pV}{\text{Pa} \cdot \text{m}^3}$
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

3) The constant calculation in an equation for an isothermal process:

Equation of state of ideal gas: $pV = \frac{m}{M_m} R_m T = \frac{\rho V}{M_m} R_m T,$

air density at the temperature of 20°C is c. 1,2 kg.m⁻³,
molar mass of air is 28,96. 10⁻³kg.mol⁻¹.

From the measurement n. and the thermodynamic temperature $T =$ is given:

$$pV =$$

4) Diagram of pressure-volume relationship of air in the syringe at two different temperatures (in the air $t_1 =$ and in the warm water $t_2 =$):



CONCLUSION

Sum up the measurements, draw a conclusion.