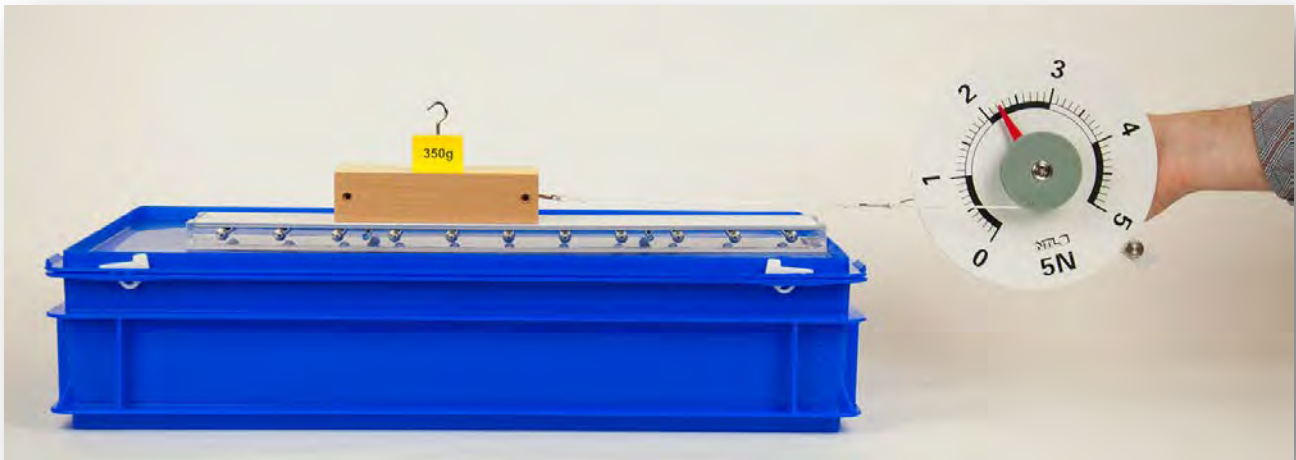


FRICTION – SURFACE AND MASS

MED 05.02



Material

Item-no.	Qty.	Description
DM680-2P	1	Static, sliding and rolling friction board
DM680-2R	1	Block for friction and stability
DM680-3R	1	Weight, 350 g, with hook
DM132-1B	1	Torsion dynamometer 1 N
DM132-1C	1	Torsion dynamometer 2 N
DM132-1D	1	Torsion dynamometer 5 N
DM132-1F	1	Torsion dynamometer 10 N
DS400-3K	1	Bosshead cross-pattern, Demo, green
DG200-1S	1	Cord, white, D=1.7 mm, L=5 m
P7806-1G	1	Storage box II big, with cover

FRICTION – SURFACE AND MASS

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Purpose

To demonstrate the dependence of the frictional forces on the normal force (with which the friction surfaces are pressed against one another) and on the contact surface.

Preparation

The static, sliding and rolling friction board is raised and placed on a non-slipping surface on a table (for example put it on a box as shown on the image); the plastic side of the friction board is facing upwards.

Cut off a 50 cm piece of the cord and make loops at the both ends of the cord.

Position the block for friction and stability on the left end of the friction board.

The bosshead is mounted on the support rod of the Torsion dynamometer; it serves as a handle for the dynamometer.

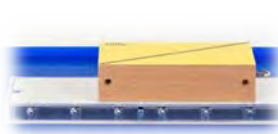


Hang the free end of the cord to the hook of the Torsion dynamometer.

The Torsion dynamometer is now pulled horizontally at a slow but constant speed to the right.

Experiment

As soon as the friction body is in almost uniform motion read off the friction force and note the values in the 1st column of the table below.



Material of the friction surface	Static friction (N) standing	Static friction (N) resting	Static friction (N) resting – double mass
smooth (plastic)			
coarse (sand paper)			
Rolls (rolling friction)			

Place the friction body flat on the board to receive double the contact surface.

Again determine the frictional force and note it in the 2nd column of the chart.

Double the mass by placing the mass body 350 g on the friction body.

Again determine the frictional force and and note it in the 3rd column of the chart.

Conclusion

The friction is not depending on the contact surface.

The frictional force is proportional to the mass of the body. Die Reibungskraft ist proportional zur Masse des Körpers.

Note

The use of the Newtonmeter instead of the Torsion dynamometer is not recommended in this experiment because the force can be read only with difficulty due to strongly fluctuating values.