

MATERIALS ENGINEERING - HOMEWORK 1

1	Spoon	Produced in large series, corrosion resistant
2	Kitchen knife	Produced in large series, corrosion resistant
3	Butcher's knife	Produced in large series, can be sharpened quickly
4	Butcher's hatchet (cheap for home)	It is being produced in large series.
5	Butcher's hatchet (expensive for butchers)	Produced in medium series, corrosion resistant
6	Metric screw	It is being produced in large series.
7	Corrosion-resistant screw	It is being produced in large series.
8	Wood screw	It is being produced in large series.
9	Drywall screw	It is being produced in large series.
10	Fastener for steam generator	Series produced, operating temperature 400 °C
11	Threaded shaft for tensile test machine	Custom-made
12	Engine block series V4	It is being produced in a very large series for passenger cars.

13	Engine block series V8	It is being produced in large series for trucks.
14	Engine block series V12	It is being produced in large series for passenger cars.
15	Engine block series V12	It is produced in small series for supercars
16	Mobile crane boom	Custom-made
17	Hand hammer head	It is being produced in large series.
18	Machinery hammer head	Custom-made
19	Hand file	It is being produced in large series.
20	Saw blade for wood	It is being produced in large series.
21	Saw blade for steel	It is being produced in large series.
22	PB gas cylinder	It is being produced in large series.
23	Oxygen gas cylinder	It is being produced in large series.
24	Argon gas cylinder	It is being produced in large series.
25	Valve (suction)	It is being produced in a very large series for passenger cars.

26	Valve (exhaust)	It is being produced in a very large series for passenger cars.
27	Bearing ball	It is being produced in large series.
28	Surgical scalpel	It is being produced in series.
29	Dishwasher tray	It is being produced in large series.
30	Machine tool bed	Large-sized component, manufactured individually or in small series. Low weight is not a requirement.
31	Manhole cover	It is being produced in large series.
32	Welded machine frame	It is produced in medium series and requires moderate material costs.
33	Railway	It is being produced in large series.
34	Bicycle frame	It is produced in large series. Low weight and reasonable cost are required.
35	Industrial ladder	It is produced in large series. It should be movable by hand, be suitable for outdoor use and bear moderate mechanical loads. Simple profiles can be used.
36	Car coil spring	It is produced in very large series. It undergoes repeated elastic deformation and is subjected to dynamic loading.
37	Layer radiator	For radiators with EK, DK, EK-DK layouts of classic heating systems.
38	Intake valve (internal combustion engine)	Homogeneous structure, strong alloying, predictable thermal expansion. Use: fluctuating heat, corrosion, wear. Produced in large series.

39	Exhaust valve plate (internal combustion engine)	Homogeneous structure, strong alloying, predictable thermal expansion. Use: fluctuating heat, corrosion, wear. Produced in large series.
40	Swimming pool railing, ladder	Swimming pools, wellness spas, handrails, pool ladders. Produced in medium series.
41	Foldable metal ladder (7 rung)	Household ladder that can be folded or set up in an "A" shape. Produced in large series.
42	Extendable metal ladder (21 rung)	A three-piece, long-extendable ladder. Produced in large series.
43	Threaded spindle	Tr24x2 trapezoidal threaded spindle, which operates at elevated temperatures (300C). The required surface hardness is min. 55 HRc. It is produced in small series.
44	Chimney sweep ball	For cleaning the chimney of classic solid fuel heating systems (without lining). Produced in large series.
45	Injection molding tool	A tool used in the injection molding technology of thermoplastic polymers into which the polymer is injected. Its required surface hardness is at least 38 HRc, it is chemically resistant, and it is produced in small series.
46	Truck leaf spring	It provides suspension for the rear axle of a pickup truck. It is produced in large series.
47	Railway brake system lever	A double fork-shaped lever used in pneumatic brake systems of railway braking systems to generate braking force. A component subjected to high dynamic loads and manufactured in large series.
48	Railway bumper pipe	Irreversible energy absorbing unit used in railway coupling systems. Produced in small series. During a collision, the tube is expanded by a ring, during which a significant part of the impact energy is converted into plastic deformation (diam: 150-250 mm; t=10-20mm; length: 300-1000 mm). During the collision the path-force diagram predefined by
49	Bucket (railway) brake unit brake pad holder shoe	Supports brake pads; assists power transmission; small to medium series; dynamic loads
50	Telescope tube	Lightweight, inexpensive, cylindrical tube. For Newtonian telescopes.

51	Drinking can	For food industry purposes, increased corrosion resistance, good formability. Produced in large series production (160,000 pcs/hour).
52	Saddle bodí	Cheap, complicated design
53	Bicycle frame	Lightweight, large series, weldable, >100 MPa strength
54	B-pillar	Middle part of B-pillar. Energy absorbing elements in the body of passenger cars.
55	Pressure vessel	Sterilization tank used in the chemical industry with an internal pressure of 4 bar. Diameter 1200 mm, operating temperature 85°C.