

new words**0. warming up**0.1 curriculum vitae

forename		
first name	Vorname / Rufname	
christian name		
given name		
surname	Nachname	
family name	Familiennamen	
maiden name		
fathers name	Geburtsname	
marital status	Familielenstand	
application for admission	Bewerbung um Zulassung...	
letter of application	Bewerbungsschreiben	
military service	Wehrdienst	
civil/community service	Zivildienst	
references	Referenzen	BE
testimonials		AE
ltd - limited company	~ GmbH	
plc - private public co.	~ AG	
isp	internet service provider	
intermediate diploma		
pre-diploma	Vordiplom	
first exam		
as to...	bertreffe... zum thema/punkt...	

0.1 the university

...been to England	... in England gewesen	
to surf the internet	im Internet surfen	
attend school	Schule besuchen (NOT visit!)	
grammar school		BE
highschool	Gymnasium	AE
obtain qualification	Abschluss/Qualification erwerben	
apprenticeship	Lehr-/Berufsausbildung	
vocational training		
vocational school	Berufsschule	
college		
university	Hochschule	
student loan	Studiendarlehen, BAföG	
credit	Guthaben	
work placement		BE
internship	Praktikum	AE
student intern	stud. Praktikant	
get a degree	(akad.) Bildungsgrad erwerben	

profession	Beruf	akademisch
trade		Handel/Handwerk
craft	Handwerk	
proficiency	(Fach-) Kenntnisse	
to graduate	absolvieren	
doctorate student	Promotionsstudent / Doktorant	
to enrol	immatrikulieren	
enrolment	Immatrikulation	
civil engineer	Bauingenieur	
building contractor	Bauunternehmer	
estimating department	Kostenstelle	
specialist area	Fachgebiet	
medieval	mittelalterlich	
The Middle Ages	das Mittelalter	
ore	Erz	
remnants	Überreste	
preserved	erhalten	
to owe	schulden, verdanken	
owing to	in Folge, aufgrund, wegen	
to hand down	weiterreichen	
to prove to be...	sich erweisen als	
decree	Erlass	
prince regent	Kurfuerst	
faculty	Fakultät	
course	Studiengang	
applied natural science	Angewandte Naturwissenschaften	
geotechnics	Geotechnik	
mine surveying	Markscheidewesen	
geodesy	Geodäsie	
Mechanical Engineering	Maschinenbau	
Process Engineering	Verfahrenstechnik	
Materials Science	Werkstoffwissenschaften	
Materials Technology	Werkstofftechnologie	
Foundry Technology	Gießereitechnik	
Vehicle Construction	Fahrzeugbau	
Economics	Wirtschaft	
Business Administration	BWL	
Industr. Engineering & Management	Wirtschaftsingenieurwesen	
open cast mining	Tagebau	
underground mining	Bergbau unter Tage	
specialization	Vertiefungsrichtung	
meet the demand	den Bedarf decken	
refectory		
dinig hall	Mensa	
outskirts	Vororte	

instruction mine		Lehrbergwerk	
students foundation		Studentenwerk	
students council		StuRa	
students fraternities		Verbindungen	
students house		Alte Mensa (in FG)	
administration		Verwaltung	
senate		Senat	
halls of residence			
students halls		Studentenwohnheime	
dormitories			AE
shared accommodation		Wohngemeinschaft	
i.e (lat.: id est, engl.: it is)		das heißt, d.h.	
regal		prächtig, großartig	
deposit		Lagerstätte	
education		Lehre	
mining town		Bergstadt	
distinguished		typisch	
university-city		Universitätsstadt	
flourishing		blühend, florierend	
take/occupy an important place		einen bedeutenden Platz einnehmen	
carry out / conduct		durchführen	
metallurgy		Hüttenwesen, Metallurgie	
thus		folglich	
ore extraction		Erzgewinnung	
processing		Aufbereitung, Verarbeitung	
advanced higher education		Hochschulwesen	
degree programs		?	
nonetheless		nichtsdestoweniger, dennoch	
majors		Hauptfächer	
core programs		Studiengänge	
to tutor		betreuen	
term paper		Studien- / Semesterarbeit	
diploma paper		Diplomarbeit	
auditorium			
lecture theatre		Hörsaal	
lecture hall			
specimen		Probe, Muster, Exemplar	
shaft		Schacht	
depth		Bergbau: Teufe	
ore mining		Erzbergbau	
tuition fees		Studiengebühren	
parantheses	()		
brackets	[]	Klammern	
braces	{}		
to respond		antworten	

exhausting flight	anstrengender Flug
ride to Freiberg	Fahrt nach Freiberg
cobble-stone	Pflasterstein
theme park	Vergnügungspark
speciality	Fachgebiet
to meet the requirements	die Anforderungen erfüllen
water treatment	Abwasseraufbereitung
waste disposal	Abfallentsorgung
watering hole (fam.)	Kneipe
fellow students	Kommilitonen
to restore the natural habitat	die natürliche Umgebung wiederherstellen
to fall into disuse	außer Betrieb genommen werden
to make up one's mind	sich klarwerden
to indulge in	sich gönnen
applicable knowledge	anwendbare Kenntnisse
hands-on experience (fam.)	praktische Erfahrung
trial run	Testlauf
to stroll around the old city	durch die alte Stadt ziehen

1. Unit 1

cost estimate	Kostenvoranschlag	
feasibility studies	Durchführbarkeitsstudien	
cutlery	Besteck	
domestic appliances	Haushaltsgeräte	
low-carbon steel	niedrig	
medium-carbon steel	mittel	gekohlter Stahl
high-carbon steel	hoch	
hardness	Härte	
toughness	Zähigkeit	
matter	Materie	
distinguishing	typisch, kennzeichnend	
gravitaion	Schwerkraft, Gravitation	
inertia	Trägheit	
state	hier: Aggregatzustand	
solid	Feststoff	
liquid	Flüssigkeit	
gas	Gas	
vapor	Dampf	
plasma	Plasma	
constituents	Bestandteile	
elemtary particles	Elementarteilchen	
chemical element	chem. Element	
chemical compound	chem. Verbindung	
chemical bond	chem. Bindung	
charge	Ladung	

isotope	Isotop
composition	Zusammensetzung
formula	Formel
definite	definiert
abbreviation	Abkürzung (schriftl.)
oxygen	Sauerstoff
hydrogen	Wasserstoff
chlorine	Chlor
copper	Kupfer
carbon	Kohlenstoff
carbon dioxide	Kohlendioxid
critical temperature	kritische / Curie-Temperatur
liquify	verflüssigen
liquifaction	Verflüssigung
solidify	Verfestigen / Erstarren
vaporize	Verdampfen
degrees centigrade	°C
circle	Kreis
triangle	Dreieick
square	Quadrat
rectangle	Rechteck
pentagon	Fünfeck
octagon	Achteck
n-gon	n-Eck
oval / ellipse	Ellipse
spiral	Spirale / spiralförmig
sphere / ball	Kugel
cube	Würfel
pyramid	Pyramide
sperical	Kugelförmig
cubic	Würfelförmig
pyramidal	Pyramidal
diameter	Durchmesser
circumference	Umfang
vaporization = evaporation	Verdampfung
steam	Wasserdampf
friction	Reibung
stress	Spannung, Belastung, Beanspruchung
strain	Dehnung
hardness test	Härteprüfung
indentation	Eindruck(fläche)
indentation hardness	Eindringhärte
silicon	Silizium
silicone	Silikon
strenght	Festigkeit

material goods	materielle Güter
alloy	Legierung
metal	Metall
ceramic	Keramik
glass	Glas
cement	Zement
concrete	Beton
polymers	Polymere
plastics	Plastik / Kunststoffe
composites	Verbundwerkstoffe
semiconductors	Halbleiter
superconductors	Supraleiter
graphite	Grafit
diamond	Diamant
amorphous	amorph
crystalline	kristallin
spatial distribution	räumliche Verteilung
condensed matter	aufgedampfte Materie
practitioner	Anwender, Praktiker
inorganic	anorganisch
non-metallic	nichtmetallisch
enabling technology	vielversprechende Technik
to work sth.	etw. bearbeiten
ferrous metal	Eisenmetall
non-ferrous metal	Nichteisenmetall
cast iron	Gusseisen
chromium	Chrom
tungsten	Wolfram
bronze	Bronze
brass	Messing
thermoplastic	Thermoplaste
thermoset	Duroplaste
undergo	durchlaufen
to be employed	hier: eingesetzt werden
withstand	widerstehen
brazing	
electric-arc welding	Lichtbogenschweißen
soldering	Löten
metal-joining methods	Metallfügemethoden
welding	Schweißen
oxy-acetylene welding	Autogenschweißen
measuring instruments	Messmittel / -instrumente
non-precision -"-	Grob-
precision -"-	Präzisions- / Fein-
micrometer	Feinmessschraube

vernier gauge	Messschieber
metre stick	
slip-blocks	Parallelendmaße
foot-rule	
rubber	Gummi, Kautschuk
brittle	spröde
flammable	leicht entzündlich
flexible	beweglich, biegsam
gaseous	gasförmig
hard	hart, fest
heat-resistant	hitzebeständig
heavy	schwer
light(weight)	leicht(wiegend)
opaque	undurchsichtig
pliable	biegsam (im Sinne von plastisch)
rigid	starr
soft	weich
solid	fest
stiff	steif, starr
strong	fest, starr
tough	zäh, widerstandsfähig
transparent	durchsichtig
volatile	flüchtig
bend	biegen, krümmen
corrode	korrodieren, zerfressen
crack	brechen, zerspringen
decompose	(sich) zersetzen
reinforce	verstärken
rust	rosten
tear	(zer)reißen
flaw	Fehler, Mangel, Defekt
impurity	Verunreinigung
oblong	Rechteck
cone	Kegel
rectangular block	Quader
angle	Winkel
acute	spitz-
obtuse	stumpf-
right	recht-
apex	Spitze
perpendicular to	senkrecht zu
sloping	schräg
vertical	senkrecht

2. Unit 2

customary units	gebräuchliche Einheiten
sanitation engineering	Sanitärtechnik
approach	Standpunkt, Ansatz
to retain	beibehalten
at first glance	auf den ersten Blick
derived from	abgeleitet von
instrumentation	Gerätetechnik
since (ohne zeit)	da (Satzanfang)
appliance	Apparatur, Gerät, Vorrichtung
lb (latin libra) - pound	Pfund

3. Unit 3

indefinitely	unbestimmt, unendlich
unaided senses	bloße Sinnesorgane
suspicion	Verdacht, Vermutung
amply	ausführlich, hinreichend
distinct	getrennt, einzeln, trennbar
to suspect	vermuten
transverse	quer
tension	Zugspannung /-belastung
accompanied by	begleitet von
yield to sb/sth	jn/etw nachgeben
magnitude	Größe, Betrag
to exert	ausüben
yield	Ertrag, Ausbeute
order of magnitude	Größenordnung
adjacent particles	angrenzende Teilchen
to cease	aufhören
to regain	wiedererlangen
die	Gesenk, Form
cross-sectional	Querschnitts-
rod	Stab
tube	Rohr
sheet	Blech, Platte
mould	Gussform (Sand)
accelerator	Gaspedal
alternator	Lichtmaschine
camshaft	Nockenwelle
cam	Nocken, Mitnehmer, Daumen
valve	Ventil
piston engine	Kolbenmotor
clutch	Kupplung

to corner	um die Ecke/Kurve fahren	
keyed	verzahnt	
gearbox	Getriebe	
friction	Reibung	
to retard	verzögern	
proportion	mengenmäßiges	
ratio	zahlenmäßiges	Verhältnis
whereas	wohingegen	
assembly	Ansammlung, Anhäufung, große Gruppe	
subscript	Index, Fußnote	
carbon tetrachloride	Tetrachlorkohlenstoff	
applies to	bezieht sich auf	
shorthand method	Kurzform	
reacts to	reagiert	
yields	bildet	
attractive forces	Anziehungskräfte	
proper circumstances	passende, richtige Bedingungen	
tangential stress	Scherspannung, tangetiale Spannung	
hence	also; folglich, deshalb	
equilibrium	Gleichgewicht	
vapor pressure	Dampfdruck	
cohesion	Kohäsion, Zusammenhalt	
superheated	überhitzt	
to take account	Rechnung tragen; berücksichtigen	

4. Unit 4

engine surrounds	Motobereiche, -umgebung
to be dumped	deponiert werden
to obtain	erhalten, bekommen
heat treatment	Wärmebehandlung
Tempering	Glühen
Annealing	Anlassen
hardening	härten
quenching	abschrecken
to break down	zerlegen
to dismantle	demontieren
alloyed steel	legierter Stahl
engineering specifications	technische Daten
landfill	Deponie
dump	Halde
all the time	ständig
estimate	Kostenvoranschlag
builder	Baufirma
damp patch	Feuchtstelle
decent	anständig

soothing beruhigend
to loathe sth. etw. hassen

5. Unit 5

brittleness	Sprödigkeit	
elasticity	Elastizität	
durability	Haltbarkeit, Beständigkeit	
malleability	Schmiedbarkeit, Hämmerbarkeit	
crystal	Kristall	
guttering	Dachrinne	
drain pipe	Abflussrohr	
tool steel	Werkzeugstahl	
petrol cap	Tankdeckel	
sunroof	Sonnendach/Schiebedach	
windscreen	Windschutzscheibe	
bonnet	Motorhaube	BE
hood		AE
headlight	Scheinwerfer	
indicator	Blinker	BE
turn signal		AE
wing		BE
fender	Kotflügel	AE
wheel arch	Radlauf	
wheel trim	Felge	
tyre	Reifen	AE: tire
sill	Türleiste	
side mirror	Seitenspiegel	
side window	Seitenfenster	
aerial		BE
antenna	Antenne	AE
rear window	Heckfenster	
number plate		BE
licence plate	Nummernschild	AE
rear bumper	Heckstoßdämpfer	
exhaust pipe	Auspuff	
tail light	Rücklicht	
brake light	Bremslicht	
door	Türleiste	
door handle	Türgriff	
drill bit	Bohrer	
valve	Ventil	
damp conditions	feuchte Umgebungsbedingungen	
in short supply	selten	
abundant	knapp	
both ... and	sowohl... als auch	

wrought iron	Schmiedeeisen
elastic limit	Elastizitätsgrenze
metal fatigue	Metallermüdung
span	Spannbogen
trusses	Fachwerk
column	Säule, Reihe
pillar	Stützsäule
pier	Brückenpfeiler, Steg
to rock	schwanken
to take a long time to die	lange Bestand haben
ultrasensitive	hochempfindlich
to plot	grafisch darstellen
slope	Anstieg, Neigung, Gefälle
engineering design	technische Konstruktion
to obey	entsprechen, befolgen, einhalten
tedious	langwierig, zeitraubend, mühsam
yielding	Fließen
notch	Kerbe
rate of loading	Beanspruchungsgeschwindigkeit
yield stress	Fließspannung
embrittling agent	versprödetendes Agens

6. Unit 6

smelting	ausschmelzen, erschmelzen, extragieren, <u>verhütten</u>
blast furnace	Hochofen
fire brick	Schamotte
limestone	Kalkstein
slag	Schlacke
remainder	Rest
charcoal	Holzkohle
lump	Klumpen
crusher	Brecher
skip	Kübel
to drain off	abstechen, abziehen, ablassen, absaugen, abführen...
residue	Rückstand
refining	veredeln, raffinieren, frischen
comminute	zerkleinern
to grind	mahlen
to tap off	abstechen
filter / screen	filter
magnetite	Magnetit
haematite	Hämatit
to feed into (furnace)	beschicken, befüllen
silica	Kieselerde
flux	Flussmittel

subsequent		anschließend, folgend
lead		Blei
tin		Zinn
slag tap		Schalckenabstich (Öffnung)
nozzle		Düse
matte		Rohstein?
fusible		schmelzbar
open hearth converter		Siemes-Martin-Ofenb
excess carbon		überschüssiger Kohlenstoff
crucible		Schmelztiegel
pear-shaped		birnenförmig
trunnions		Tragzapfen
scrap steel		Schrott
ingot		Barren, Gussblock
ladle		Schöpflöffel, Gießpfanne
electric arc furnace		Elektro-Lichtbogenofen
oxygen lance method		Sauerstoffblasverfahren
continuous pour process		Stranggießen
multitude		Vilezahl
preliminary	shapes	Vorformate, Halbzeuge
commercial		handlesübliche Formate
angles		Winkel(stahl)
bars		Stäbe
beams, girders		Träger
billets		Platten, Vorblöcke
blooms		Brammen
channels		U-Profile
plates		Flachstahl; Bleche; Platten: Grobblech
sheets		Bleche, Feinblech
tubing		Rohre
wires		Draht
towing cable		Abschleppseil
cruise control		Tempomat
electronic climate control		Klimaanlage
leather upholstery		Lederausstattung
tow-away protection		Abschleppsperr
to tilt, to tip		kippen
screen		Sieb
gun barrel		Kanonenrohr
supply requirement		Versorgungsanforderungen
electric arc furnace		Elektrolichtbogenofen
high-quality steel		Edelstahl
wing, AE: fender		Kotflügel
to fend		abwehren
badge		Plakette
token		

emblem	
achievement	
cowl	
contaminant	Schadstoff
due to	in Folge von
versus, vs	gegen, über, in Abhängigkeit von
sun visor	Sonnenblende
steering wheel	Lenkrad
dashboard	Armaturenbrett
ignition	Zündung
glove compartement	Handschufach
ashtray	Aschenbecher
coolant temperature gauge	Kühlerthermometer
fuel gauge	Tankfüllstandsanzeige
rev counter	Drehzahlmeter
speedometer	Tachometer
voltmeter	Spannungsmesser
lubricant	Sch,iermiottel
deteriorate	verschlechtern
lever	Hebel
to engage the clutch	kuppeln
(drive) shaft	(Antriebs-) Welle
manual gearbox	Handschaltung
thus	folglich, somit
passenger compartement	Fahrgastzelle
odometer	Tageskilometerzähler
to forge	schmieden
to galvanize	verzinken
to temper	Anlassen
to anneal	Glühen
to found	Gießen
electroplating	elektrolytisch bechsichten
plating	beschichten
diminished	
resiliency	Stoßelastizität
to immerse / submerge	eintauchen
to design for	
prolific	
flamboyant	
modest	

SS08

casual	leger, Freizeit-
eager	eifrig
reluctant	
to dress up	

to quench	abschrecken
to chill	kühlen
the top of the furnace	die Gicht
outlet	Auslass
pig	Massel
charge	Beschickung, Ladung
flux material	Flussmittel
towing equipment	
Pre-assembly	Vormontage
in time	rechtzeitig
on time	pünktlich
floor pan	Bodenwanne
control unit	Steuergerät /-anlage
Body-in-white	Rohkarosserie
data carrier	Datenträger
delivery date	Liefertermin
to mount	montieren
to release	freigeben
to weld together	zusammenschweißen
junction	
motorway junction	
cupola	
matte	

terms & definitions

<u>corrosion</u>	The eating away and eventual destruction of metals and alloys by chemical attack. The rusting of ordinary iron and steel is the most common form of corrosion. Rusting takes place in moist air, when iron combines with oxygen and water to form a brown-orange deposit of rust.
<u>blast</u>	Air (hot or cold), under pressure, usually blown into a furnace. Furnaces employ a hot blast. Cold blast is also used in cooling solid metals, for cleaning and for such purposes as shot-blasting and Sand-blasting.
<u>converter</u>	A refractory-lined container in which molten metal is treated with a blast of air under pressure. The Bessemer Converter is the general type used in the production of steel from crude iron.
<u>crucible</u>	An open-topped refractory vessel in which material may be heated in furnaces and of such size that it may be lifted by means of tongs. A crucible should be able to resist the temperatures and variations in temperature likely to be encountered in service, and to resist the attack by the materials to be treated therein.
<u>ingot</u>	A term applied to metal that has solidified from the molten state into forms that are suitable for, or are intended for, subsequent mechanical working, e.g. rolling, pressing, forging, extruding and drawing.
<u>furnace</u>	A metallurgical furnace is a plant or contrivance in which metallurgical operations are carried out with the aid of heat. The heat may be produced by combustion (usually but not always of fuel) or from the heating effect of an electric current. The size and shape of furnaces vary considerably, as also do the internal arrangements.
<u>alloying</u>	Any of various processes by which an alloy is manufactured, such as melting, sintering, electro-chemical co-depositioning or diffusing.
<u>alloy steel</u>	Steel in which other elements as well as carbon have been added as alloys, e.g. chromium, nickel and vanadium.
<u>austenite</u>	An interstitial solid solution of carbon in gamma-iron, having a face-centered cubic structure and a much higher solubility for carbon than alpha-ferrite.
<u>Gamma-iron</u>	Any iron that has a face-centered cubic crystalline structure, produced by heating alpha-iron to a temperature above 900 degree C
<u>carbon steel</u>	Any of numerous steels containing only incidental amounts of alloying elements, except for minimum quantities of copper, manganese and silicon.

<u>ferrite</u>	<p>1: The solid solution of carbon in body-centered iron, containing small amounts of carbon.</p> <p>2: A compound consisting of the iron oxides Fe_2O_3 and FeO, with the latter being replaced by oxides of other transition metals. The most important chemical characteristic is the magnetic moment, used in computers, tape recorders, and a wide variety of communication devices.</p>
<u>extraction</u>	<p>all processes used in obtaining metals from their ores, i.e. Separating a metal from the other minerals in the ore. It involves breaking down the ore (mechanically: crushing, chemically: decomposition) and the separation of the metal from the gangue</p>
<u>ores</u>	<p>the minerals that can be used economically as a source of one or more of the metals they contain (must be crushed and separated from the gangue)</p>
<u>smelting process</u>	<p>A mixture of crushed iron ore, coke and limestone is fed into the top of the furnace. Hot air is blasted into the base of the furnace to produce very high temperatures (up to 1800 degree C). The process produces gas, molten iron and slag. The liquid iron settles at the bottom of the tower, the slag floating on top of the molten metal. iron and slag are drained off periodically through valves at the bottom of the tower.</p>
<u>elasticity</u>	<p>The ability of a solid to recover its shape once deforming forces are removed. An elastic material obeys Hooke's law: its deformation is proportional to the applied stress up to a certain point, called the elastic limit, beyond which additional stress will deform it permanently. Especially rubber and metals, but also all other materials have some degree of elasticity.</p>
<u>refractory</u>	<p>material that has a high softening point and a very high melting point, can withstand high temperatures, chemical attack, mechanical strain and the scouring action of the fuel</p>
<u>Charge / melt</u>	<p>(metal) the raw material loaded into a melting or smelting furnace</p>
<u>tuyeres</u>	<p>water cooled nozzles through which hot air is blown into a blast furnace or cupola, symmetrically arranged above the hearth.</p>
<u>tap hole</u>	<p>hole near the furnace base, usually plugged with clay, when unplugged it permits the outflow of molten metal from the furnace or cupola</p>
<u>slag hole</u>	<p>hole in the side of a furnace which may be unplugged to run off the slag; is located above the surface level of the molten steel.</p>
<u>blast furnace</u>	<p>kind of industrial oven for smelting iron of iron oxide ore; combustion is intensified by a blast of hot air</p>
<u>conduction</u>	<p>process by which heat energy is transferred from molecule to molecule, which involves no movement of mass</p>

convection

transfer of heat within a fluid involving the transfer of mass, e.g. in the atmosphere: heated air rises and is replaced by cooler air.

*Diese Darstellung ist mindestens missverständlich, eher noch falsch:
Natürlich sinkt die kältere Luft, weil jedes Volumenelement auf Grund
höherer Dichte von einer größeren Gravitationskraft angezogen
wird; dabei wird die warme Luft nach oben verdrängt.
Herr Kreher will aber die populärversion hören...*

flotation

process for the separation of finely pulverized particles of a mineral ore in aqueous media. A valuable method for recovering metals from Low-grade ores.

After pulverizing, these minerals in water attach to gas bubbles and rise with them to the surface, where the froth can be separated, so the heavy solids collect at the bottom.

terms & definitionsengineering

(Ingenieurwesen)

the application of scientific knowledge about matter and energy for practical human tasks and uses, such as construction, machines, products or systems

tasks for engineers

to understand the structure-property-performance paradigm
 # manipulate atomic and molecular structure of materials
 # to create new materials or products
 # to improve products and technologies
 # to carry out cost estimates
 # -"- feasibility studies (costs, markets)
 # research and development (R&D)
 # to make products saleable (hier: absatzfähig)

steel

a great number of alloys that contain the element iron as the major component and small amounts of carbon as the main alloying element --> carbon steel
 small amounts of a few percent of other elements, such as manganese, silicon, chromium, molybdenium and nickel may also be present (e.g. a large amount of Cr, >12%, --> stainless steel)

stainless steel

corrosion-resistant steel with a wide variety of compositions, but always containing a high percentage of Cr (12%-25%), since the stainless property derives from chromium oxide film on the surface, chemically passive and therefore highly resistant to corrosive attack by organic acids, weak mineral acids, atmospheric oxidation etc. used for cutlery and domestic appliances, furnace parts, turbine blades, ball bearings etc.; also widely used in nuclear reactors

low-carbon steel

=>mild steel

(niedrig gekohlter...)

usually contains less than 0,25% of C, also known as soft steel

medium-carbon steel

0,25% - 0,75% C

high-carbon steel

> 0,7% C --> high hardness, high toughness

matter

the substance composing bodies, possessing mass and occupying space;
 its distinguishing properties are gravitation and inertia, it exists in four states: solid, liquid, gas & plasma;
 its fundamental constituents are elementary particles

elements

- the fundamental units of which all matter is composed
 - any of a class of substances that cannot be decomposed or transformed into simpler substances by chemical or physical means (all atoms of a given element have the same charge, proton & electron number but may differ in mass -> isotopes)

compound

(chemical)

materials or substances consisting of two or more elements and whose atoms & molecules are held together by chemical bonds and which has a definite composition (-> formula)

<u>chemical symbol</u>	abbreviation of an elements name (latin), often the first or first two letters as in O, H, Cl, Cu (oxygen, hydrogen, chlorine, copper)
<u>formula</u> pl.: formulas, formulae	a combination of chemical symbols and numbers to indicate the composition of a substance (e.g. NaCl)
<u>vapor</u> BE: vapour	a gas whose temperature is less than the critical temperature so that it may be liquified by compression (liquifaction)
<u>chemical equation</u>	expression including the formulas of all substances entering the reaction (left) and the formulas of all products (right); for example $C + O_2 \rightarrow CO_2$ means that carbon reacts with oxygen to form carbon dioxide
<u>steam</u>	the vapour of any liquid Physical Chemistry: water vapour, esp. such vapour having a teperature above the boiling point of water
<u>viscosity</u> adj: viscous	the internal friction of a fluid; the resistance to flow which is exhibited by a liquid or gas which is subjected to deformation
<u>strength</u>	the ability of a material to resist deformation (to resist stress without fracture)
<u>hardness</u> hard, to harden	resistance of a material to penetration of a harder one
<u>hardness test</u>	tests that determine: a) the ability of a solid to scratch another b) the area of indentationformed in a test -> indentation hardness
<u>pick up</u>	a motor vehicle with low sides and no roof at the back; used, for example, by farmers
<u>MPV</u>	abbr. for „multi-purpose vehicle“; a large car like a van
<u>coupé</u>	a car with two doors and usually a sloping back rather large, between sedan and sports car
<u>estate (car)</u> AE: station wagon	an automobile with more cargo space than a comparable sedan model, two or four doors, a rear seat that folds down ans a rear door hinged in various ways
<u>saloon</u> AE: sedan	an automotive with two or four doors a permanent rigid and full sized rear seat
<u>SUV</u>	abbr. for „sports utility vehicle“ a passenger vehicle similar to a station wagon but with the chassis of a small truck and, usually, four wheel drive

<u>convertible</u>	an automobile with a top, as of canvas, that can be folded back or removed
<u>hatchback</u>	an automobile body with a rear door or section that swings up, providing a wide opening into a storage area; a car having such a body
<u>limousine</u>	any large, luxurious sedan, esp. one driven by a chauffeur, and with glass partition separating the driver and the passengers
<u>sports car</u>	a small car, often with only two seats, offering above-average speed, acceleration and handling
<u>CUV</u>	crossover utility vehicle; combines many of the features of a traditional SUV but is built from a sedan platform instead of a truck platform, typically improving safety, boosting fuel economy and allowing for smaller six-cylinder engines
<u>compressive stress</u> Druckbelastung	an external force that acts on a body to shorten it in the direction of the application of the force. (generally accompanied by a certain transverse expansion according to Poisson's Ratio; the volume is thus reduced but its shape is unchanged)
<u>compressive strength</u> Druckfestigkeit	the maximum compressive stress that a material can withstand without failure
<u>tensile strength</u> noun: tension Zugfestigkeit	the maximum tensile stress (stretching) that a material can withstand without failure; the maximum engineering stress encountered during a tensile test of a given material
<u>extrusion</u> Strangpressen	common method of shaping metals, plastics and other materials, the materials, usually hot, are forced through a hole in a metal die and take its cross-sectional shape; rods, tubes and sheets may be made in this way
<u>casting</u>	1 the process of pouring molten metal into a mould and letting it solidify for the purpose of producing a shaped component 2 a component produced by casting
<u>toughness</u>	property of a material to absorb energy from plastic deformation without fracturing (opposite: brittleness); a condition intermediate between brittleness and softness as indicated in tensile tests by high ultimate tensile stress and low to moderate elongation and reduction in area
<u>ductility</u>	relative ability of a material to be molded or shaped; the ability of metals and alloys to retain their strength and freedom of cracks

when their shape is altered

<u>titanium</u>	metallic element (Ti, Atom.# 22); silvery looking solid or dark grey powder characterized by strength, lightness and corrosion resistance; is widely used in aircraft manufacturing, in some wet extraction processes, as a deoxidizer for special types of steel etc.
<u>brittleness</u>	the fracture of a material under low stress and without deformation (Fe, high-carbon steel)
<u>elasticity</u>	- the capacity of a material to stretch easily and go back to the original shape - the tendency of a body to return to its original size and shape after deformation (spring steel)
<u>durability</u>	- lasting for long time withstanding unfavorable conditions (Cr, Pt, Ag, Au, Al, tungsten steel) - do not corrode in air
<u>malleability</u>	- the property of metals that describes that they can be beaten or pressed in new shapes easily - easy to form without fracturing e.g. rolling or pressing (Au, Ag, Cu, low-carbon steel)
<u>chem. bond</u>	attractive force which links atoms together in a molecular or ionic structure
<u>crystal</u>	(crystallography) homogeneous solid that has a regularly repeating atomic arrangement; may be a chemical element, a compound or an isomorphous mixture
<u>wing</u>	US: fender; a metal or plastic enclosure over the wheels of an automobile or other vehicle to protect against splashing mud etc.
<u>badge</u> Plakette	1: distinctive token, emblem or sign worn to show membership, rank or achievement 2: any distinguishing mark, sign or symbol
<u>bonnet</u>	the automobile hood; a metal covering, hood or cowl, as cover of a fireplace, stove or chimney for draft or ventilation
<u>add-on (part)</u>	an optional item that can be purchased to supplement or enhance another consumer item
<u>aerial</u>	US: antenna an arrangement of wires, metal rods etc used in sending and receiving electromagnetic waves
<u>body shop</u> Karosseriewerkstatt	a garage where repair work on the body and chassis of automotive vehicles is done
<u>impurity</u>	a foreign substance that contaminates something pure

<u>metal fatigue</u>	the process leading to the failure of metals under the repeated action of stress
<u>stress</u> Spannung, Belastung, Beanspruchung	the force within a body which resists deformation due to an externally applied load
<u>strain</u>	distortion or deformation of a material due to an external force
<u>stress-strain curve</u> (diagram)	a stress-strain curve is a graph derived from measuring load (stress) versus extension (strain) for a sample of a material. The curve usually varies from material to material. The curve usually seen is from a ductile metal. This features an initial elastic region followed by a plastic region, followed by fracture.
<u>gearshift</u>	the lever used to engage or disengage any of a number of sets of transmission gears to a motor
<u>clutch</u>	any device for disconnecting rotating shafts, used especially in cars transmission systems. In a car with manual gearbox, the driver depresses this clutch when changing gears, thus disconnecting the engine from the gearbox.
<u>vent</u> Entlüftung	1: A small hole or opening to permit passage or escape, as of a gas. 2: A small triangular window or dashboard opening for letting air into the passenger compartment of a vehicle.
<u>speedometer</u>	A device, often combined with an odometer, attached to a motor vehicle etc. to indicate speed, as in miles per hour: it is usually connected to the transmission by a flexible drive shaft.
<u>voltmeter</u>	An instrument for measuring potential differences (voltage). It has a high internal resistance (so that passes only a small current) and is connected parallel with the component across which potential difference is to be measured.
<u>annealing</u> glühen	to toughen after fusion by exposure to continued and slowly diminished heat, as glass, steel etc. the sustained heating of a material, such as metal or glass, at a known high temperature, followed by gradual cooling of the material; a process carried out in order to reduce hardness or brittleness, to eliminate various stresses and weaknesses, or to produce other qualities
<u>tempering</u> tempern, anlassen	to bring (steel) to a suitable degree of hardness and elasticity or resiliency by heating it to the required temperature and immersing it, while hot, into some liquid, usually cold water. To soften and thus toughen hardened steel by reheating it to some temperature below the eutectic temperature. To heat and then cool glass in order to increase its strength and make it less brittle.
<u>quenching</u> abschrecken	the process of quickly cooling a material, such as steel, by immersion in a cold liquid or gas.

<u>quench hardening</u>	A hardening of many ferrous and a few non-ferrous alloys, occurring after rapid cooling; generally caused by martensitic transformation.
<u>martensite</u>	solid solution of carbon and iron, not in equilibrium.
<u>Materials science</u>	(materials science & engineering, MS&E) the scientific study of the structure, properties and performance of metals, ceramics, polymers and semiconductors
<u>electronics</u>	the study and application of the conduction of electric charges in various media, including vacuums, gaseous media and semiconductors
<u>sensor</u>	(sensing element) the component of an instrument that converts an input signal into a quantity that is measured by another part of the instrument and changed into a useful signal for an information gathering system
<u>active material</u> Funktionswerkstoff Leuchtstoff Aktivwerkstoff	(electronics) 1. the material within a storage battery that is capable of chemically to produce a flow of electric current. 2. the fluorescent coating, such as calcium tungstate, on the screen of a cathode-ray display
<u>semiconductor</u>	a crystalline material having intermediate levels of electric resistivity (in the approximate range of $10E-2$ to $10E9$ ohm-cm), between the values for metals and insulators; the resistivity usually strongly decreases with increasing temperature. Semiconductors are the basic materials for various electronic devices, used in telecommunications, computer technology, control systems and other applications.
<u>semiconductor device</u>	any of a variety of devices that employ the electrical properties of semiconductor materials, such as silicon, to control the flow of electrons; such devices include diodes, photocells and transistor
<u>semiconductor grade silicon</u>	a very pure form of silicon used in a photovoltaic cell of a solar energy system to convert light energy to electrical energy
<u>semiconductor junction</u> P-n-Übergang	the transitional region in a semiconductor that lies between materials with different electrical properties
<u>semiconductor memory</u>	computer technology; a type of memory that uses solid-state components on integrated circuit chips as memory cells also: semiconductor storage
<u>semiconductor laser</u>	optics; a laser in which a semiconductor lasing element such as gallium arsenide, emits a coherent beam of light; also: diode laser, laser diode
<u>alloy</u>	a mixture or compound of two or more metals or of metallic & Non-metallic elements; made by mixing molten metals and cooling them. Most alloys are

highly complex. The physical properties are mostly very different from the original substances
(aim: improvement of properties)
e.g. aluminium alloys are much stronger than Al and more resistant to heat.

brass

an alloy of copper and zinc

bronze

an alloy of copper and tin

cast iron

an iron-carbon alloy produced by remelting pig iron and scrap, with or without addition of alloying elements, in a cupola or other furnace and casting the metal into sand or metal moulds. The content of carbon is usually between 2 and 4%.
there are three main groups: grey iron, white or chilled iron and malleable cast iron

mould

a hollow container into which molten metal is poured to produce a casting of desired shape.
It is made in a variety of metals and may or may not be water cooled.

(mould) core

aseparabel part of a mould. The function of it is to enable a cavity (hollow space) of a desired shape to be formed within a casting. This part is made from the same kinds of sands that are used for making moulds, the bonding materials beeing clay or oil.

smelting

a pyromettalurgical process that consists in the fusion of a rich ore or concentrate to obtain a crude metal or matte.
Usually the process involves the reduction of the ore using a reducing agent (e.g. carbon and carbon monoxide in the iron blast furnace Process). The removal of the unwanted impurities is effected by adding a flux which forms with these impurities a fusible and liquid slag at the temperature of the furnace reactions.

skip

The term used to describe the container which carries the charge intended for the blast furnace to the top of the furnace whree the the contents of the container or skip (ore, fuel or limestone) are discharched on the double bell charching rrangeмент.

magnetite

naturally occuring magnetic oxide of iron. It's black and opaque with a marked metallic lustre.
Also known as magnetic iron ore.

haematite

a mineral consisting mainly of iron oxide correponding to iron content of about 70%. It is a valuable iron ore free from phosphorus and when crystallized it's often black. In crystallizes in the hexagonal system.

silica

a highly refractory substance which consists of silicon dioxide. It occurs in three crystalline forms (quartz, dridymite and crystoballite) an in the amorphous form (quartz glass). All forms of silica fuse at about 1710°C, but below this temperature become plastic and can be worked in various forms and blown like glass and drawn in fine threads (quartz fibre)

new words**Unit 6**

junction	Übergang, Verbindung
motorway junction	Autobahnauffahrt
cupola	Kupolofen
matte	Rohstein, Kupferstein, sulfidischer Aufschluss/ -Konzentrat
towing equipment	Abschleppzubehör
reluctant	zurückhaltend
to dress up	sich feinmachen, frisieren, zurechtmachen
to design for	vorsehen für
prolific	fruchtbar, produktiv
flamboyant	prunkvoll, prächtig, üppig
modest	bescheiden
diminished	vermindert, gedämpft, reduziert
token	Zeichen, Marke
emblem	Symbol, Sinnbild, Emblem
achievement	Errungenschaft, Leistung, Vollendung
cowl	Kaminkappe / Kutte, Kapuze
conduction	Leitung, Durchführung
semiconductor	Halbleiter
sensor	Sensor, Messfühler
active material	Aktiv-/Funktionswerkstoff/Leuchtsstoff
control system	Steuerungsanlage
integrated circuit	integrierter Schaltkreis
scrap	Schrott
grey cast iron	Grauguss
malleable cast iron	Temperguss
white/chilled c. Iron	Hartguss (weißer Temperguss)
clay	Lehm, Ton
bobby pins	Haarklemme, Haarnadel
ship hull	Schiffshülle
girder	Träger
framework	Tragwerk
to taint	verderben, beflecken
cementite	Zementit, Eisen(III)-carbid
ferrite	Ferrit
austenite	Austenit
allotropic modification	allotrope Modifikation
martensite	Martensit
cabling	Verdrahtung
heat sink	Hitzeschild
manufacturing operations	Arbeits-/Produktionsschritte
bulk	Massenprodukt
stray contaminant atoms	Fremdatome

delivery date	Lieferdatum
production shedule	Produktionsplan
data carrier	Datenträger
Pre-assembly station	Vormontageplatz
significant volume	bedeutender Umfang
however	jedoch
performance characteristics	Leistungsmerkmale /-profil
to translate into	umsetzen in
operating speed	Betriebsgeschwindigkeit
parasitic capacitance	Störwiderstand
switching devices	Schaltgeräte
to tailor to	zuschneiden für/auf
to compete	mithalten
stop	Haltevorrichtung, Anschalg
worktable	Maschinentisch
tactile sensor	Berührungssensor
bin	Behälter
fragile	zerbrechlich
strain gauge	Dehnmessstreifen
gripper	Greifer
defective	schadhaft, fehlerhaft
to set off	auslösen
transition elements	Übergangsmetalle, Nebengruppenelemente
pure state	reiner Zustand
native (mineral)	gediegen
specific gravity	spezifisches Gewicht; Dichte
desirable	wünschenswert
outdoor power lines	Überlandleitungen
controller	Steuergerät
to fashion into	formen zu
vat	Bottich
ornamental object	Ziergegenstände
extensively	weitreichend, umfassend
sheathing	das Verkleiden/Auskleiden
reverbatory furnace	Flammofen
yield	ergeben, liefern
both...and	sowohl... als auch
Monel Metal	Monel
gunmetal	Geschützbronze
German silver	Neusilber
rayon	Kunstseide
Paris green	Pariser Grün
Bordeaux mixture	Bordeauxbrühe
mere	bloß, nichts als, lediglich
smooth	reibungslos, glatt, flüssig
to convey	übertragen

conveyor belt	Förderband
platoon	Kolonne
to source out	auslagern
distribution	Vertrieb
entry level	Einstiegsniveau /-preis
custom production	Fertigung auf Kundenwunsch
crude metal	Rohmetall
double bell charging arrangement	Doppelglocke (Hochofenbeschickungs- einrichtung)
opaque	undurchsichtig
lustre	Glanz, Schimmer
silica	Kieselerde, SiO ₂
refractory	hitzebeständig- / Feuerfestwerkstoff
deposit	Ablagerung
Shot-blasting	Kugelstrahlen
Sand-blasting	Sandstrahlen
Refractory-lined	feuerfest ausgekleidet
crucible	Schmelztiegel
ingot	Gussblock / Bramme
considerably	beachtlich
Electro-chemical co-depositioning	elektrochemisches Abscheiden
interstitial solid solution	Einlagerungsmischkristall
Face-centered	Flächenzentriert
transition metal	Übergangsmetall
rivet	Niet
to rivet	etw. Vernieten
contact lead	Kontaktanschluss
to dope	dotieren
dopant	Dotierungsstoff
gangue	Gangart, Ganggestein, taubes Gestein
smelting process	Hüttenprozess
tuyeres	Windformen
scouring	das Scheuern
raw, crude	roh, unbehandelt
froth	Schaum
carbonization	Verkokung
irritable	gereizt
tilt and swivel stand	dreh- und kippbarer Standfuß
to distort	verzerrern
Duct / pipe	K(abelk)anal
crosstalk	Übersprechen, Kreuzrückkopplung
to corrupt data	Daten beschädigen, verfälschen, verschlechtern
principal use	Hauptanwendung
eventual	schließlich
actual	tatsächlich

extraction	Gewinnung
although	obwohl
however	dennoch
thus	somit
hence	folglich
a most ...	ein äußerst ...
the most ...	das meist / höchst ...
transmission line	Übertragungsleitung
transmitter	Sender
receiver	Empfänger
Side-by-side	nebeneinander
prone to sth	zu etwas neigen
insulation jacket	Isoliermantel
twisted pair	verdrillte Doppelleitung
sheath	Hülle, Ummantelung
stray signal	Streusignal
copper braid	Kupferlitze
waveguide	Wellenleiter
connecting flange	Verbindungsflansch
power flow	Energiefluss
cladding	Plattierung

parts of the car

<i>accelerator</i>	makes the car go faster when it's pressed
<i>alternator</i>	provides electricity
<i>battery</i>	stores electricity
<i>brake</i>	a device for applying frictional resistance to the motion of a body and thereby absorbing mechanical energy by transferring it into heat to retard a vehicle
<i>brake cylinder</i>	holds the brake fluid
<i>brake line</i>	transports the brake fluid, connects brake cylinder to brakes
<i>camshaft</i>	operates the valves of piston engines by means of the cams formed integrally with the shaft or keyed to it
<i>clutch</i>	disconnects the engine from the gearbox while the gears are changed
<i>differential</i>	ensures that the rear wheels turn at a different speed to each other when the car corners

new words

rayon	Kunstseide, Viskose, Zellwolle
spinneret	Spinndüse
bobbin	Spule, Haspel
reel	Garnrolle, Spule, Haspel
thread	Faden, Faser
dilute (acid)	verdünnt
rags	Lumpen
to reinforce	verstärken
to snap	zerspringen
Strength-to-weight ratio	spezifische Festigkeit
fierce	angespannt, heftig, grimmig, scharf
abrasive	abrasiv, abschleifend, Schleifmittel
biodegradable	biologisch abbaubar
nasty	unangenehm, widerlich, garstig, übel
horse latitudes	Rossbreiten
homogenous	homogen, gleichmäßig
fibre	(Struktur-) Faser
epoxy resin	Epoxidharz
filament	Filament, Endlosfaser, Sehne
negotiation	Verhandlung
humble	bescheiden
redeemer	Erlöser
czech	tschechisch
thermofill	Wärmeisolierung
vernier calliper	Messschieber
micrometer	Messschraube
ruler	Lineal
gauges	Lehre, Maß
meterstick	
speedometer	Tachometer
manometer	Manometer
lustrous	glänzend
intimate mixtures	innige Mischung/Verbindung
pleochroism	Pleochroismus
surveying	überblickend
skimming	überfliegend
scanning	überfliegend (gezielt)
exploring	suchend, erforschend
outstanding	herausragend
canopy	Kabinendach
trench	Graben
beam	Balken
screw thread	Gewinde

rubber seal	Gummidichtung
interested	interessiert
fond of	etw mögen / gerne tun
keen on	ILust zu etwas haben, auf etwas stehen
tyring	ermüdend
boring	langweilig
dull	matt, stumpfsinnig, geistlos, beschränkt, stumpf
rather	lieber, eher, ziemlich
tranquilliser	Beruhigungsmittel
stool	Hocker
advantage of sth. Over sth	Vorteil/Vorzug v etw ggüber etw
drawback	Nachteil
benefit	Vorteil
artificial	künstlich
crosslink	Vernetzung
curtail	kürzen, beschneiden
PCB	Leiterplatte, Platine
ABS	Acrylnitril-Butadien-Styrol-Kunststoff
urea	Harnstoff
mild steel	niedrig gekohlter Stahl
maize	Mais
a vicious circle	Teufelskreis
to become extinct	erlöschen, untergehen, aussterben
confidentiality	Vertraulichkeit, Schweigepflicht
soaking pit	Wärmesenke
blooming mill	Walzwerk
plate	Grobblech
sheet	Feinblech
billet	Knüppel
bloom	Bramme
mill	Mühle, Walzwerk, mech. Bearbeitung
serendipity	Spürsinn, glücklicher Zufall
decommissioning	Stilllegung, Außerbetriebsetzung

text: stainless steel

coherent	zusammenhängend
adherent	anhaftend
insulating	isolierend
regenerating	sich regenerierend, neubildend
harsh	rauh
utility goods	Gebrauchsgüter?
automotive trims	Automobil-Zarge/Dachlauf/Felge?
adequate	entsprechend
judicious	vernünftig, verständig, fachgerecht
precipitation	Ausscheidung
readily	leicht, bereit, bereitwillig
nevertheless	nichtsdestoweniger, dennoch, gleichwohl, immerhin
detrimental	nachteilig, unzutraglich
Free-machining stainless steels	rostfreie Automatenstähle?
halide	Halogenide
vicinity	Nachbarschaft, unmittelbare Nähe
dissolution	Zersetzung
depleted	verarmt, vermindert, abgeschöpft
propagation phenomenon	Ausbreitungserscheinung, Fortschrittsmechanismus
potency	Macht, Wirksamkeit, Stärke
solute	gelöster Stoff
severe	ernst, streng
particularly	besonders
offshore platform	Plattform vor der Küste
heavily alloyed steel	hochlegierter Stahl?
street furniture	Ausstattung/Beschläge im öffentlichen Raum (Zäune, Bänke usw)
salt de-icing	enteisen mit Salz
sensitisation	Sensitivierung /
hence	infolgedessen
exaggerated	überschätzt
weld decay	Schweißzerfall
remedy	Gegenmaßnahme, Abhilfe
vengeance	?
designation	Bezeichnung, Benennung
stabilised stainless steel	stabilisierter/beruhigter rostfreier Stahl
number density	Zahlendichte
adjacent	angrenzend
appropriate	dazugehörig, passend, entsprechend
extent	Ausmaß
persists	besteht, bleibt bestehen, dauert an
Of prime concern	von primärem Interesse
ambient teperature	Umgebungstemperatur
evident	klar, offenkundig, ersichtlich, augenscheinlich
preceded	vorausgegangen
proof strenght	Zugfestigkeit (mit einem Sicherheitsbeiwert, zB 0.9*Re)
architectural trim	?
appliance	Vorrichtung, Gerät
spinodal decomposition	?
susceptible	anfällig, empfindlich
cope	verkräften, klarkommen
highly sophisticated	hochentwickelt
solid solution strengthener	Mischkristallverfestiger
retaining ring	Sicherungsring
crevice corrosion	Spaltkorrosion
prone to	anfällig für, neigen zu
solidification cracking	Härterisse
archetypal	typisch
frequently confined	vielfach begrenzt