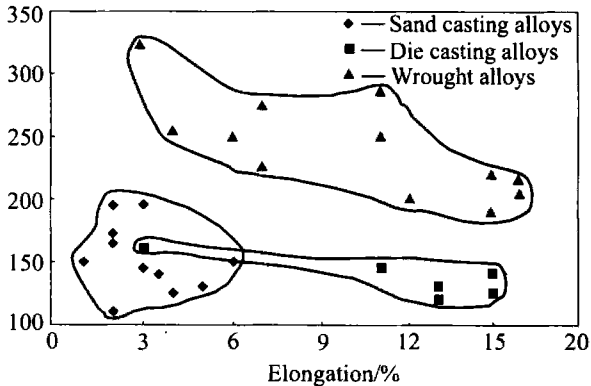
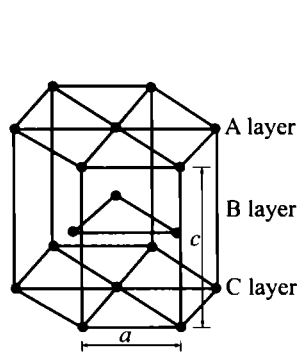
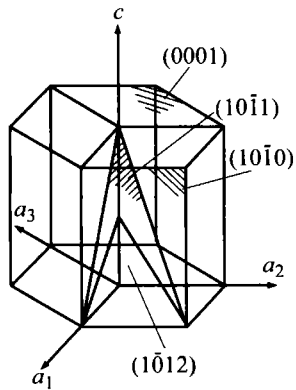


Tensile yield strength/MPa

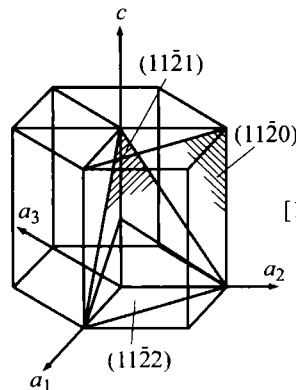




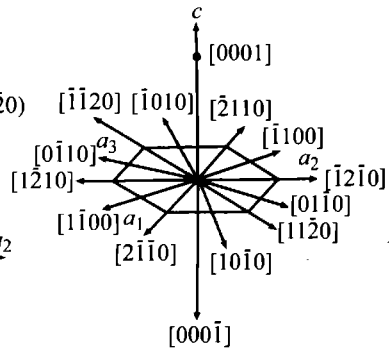
(a)



(b)



(c)

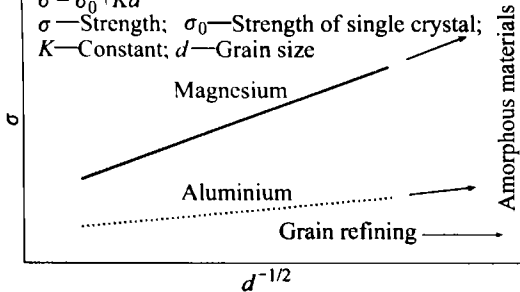


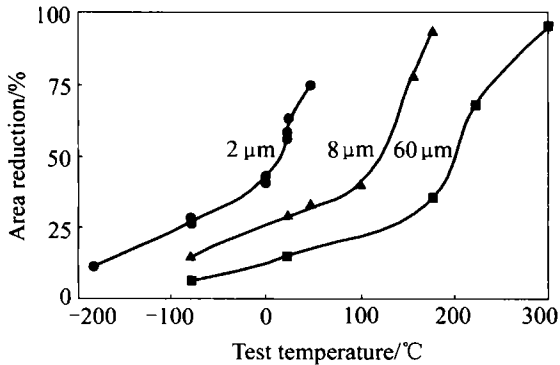
(d)

$$\sigma = \sigma_0 + Kd^{-1/2}$$

σ — Strength; σ_0 — Strength of single crystal;

K — Constant; d — Grain size





Challenge
↑

Outdoor sheet

Indoor sheet

Extrusions

Thixoforging
parts for Chassis

Complex thin
wall casting parts
for body

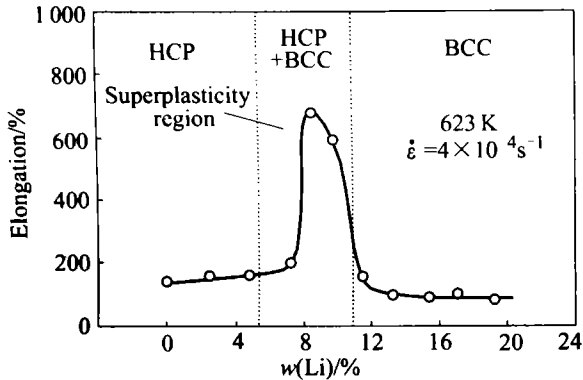
Castings with
improved creep and
strength properties

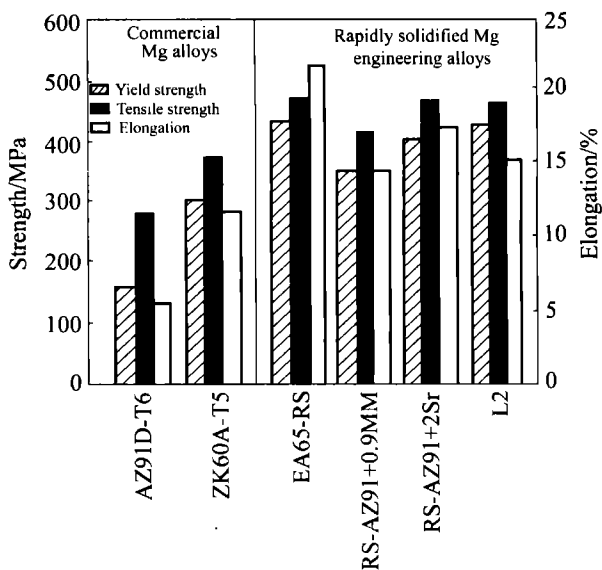
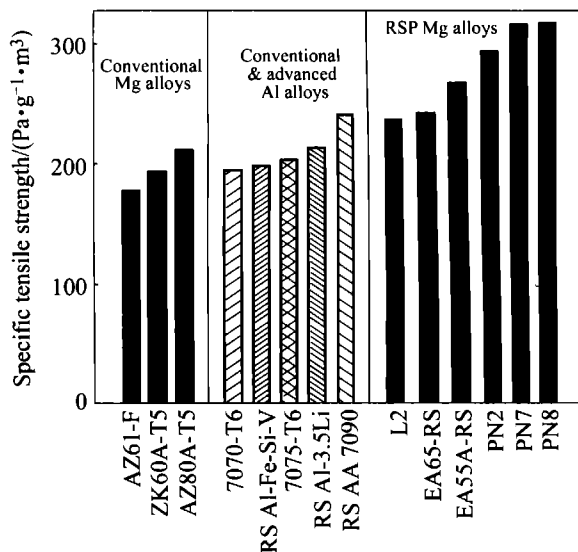
Engine block
Automatic
Transmission

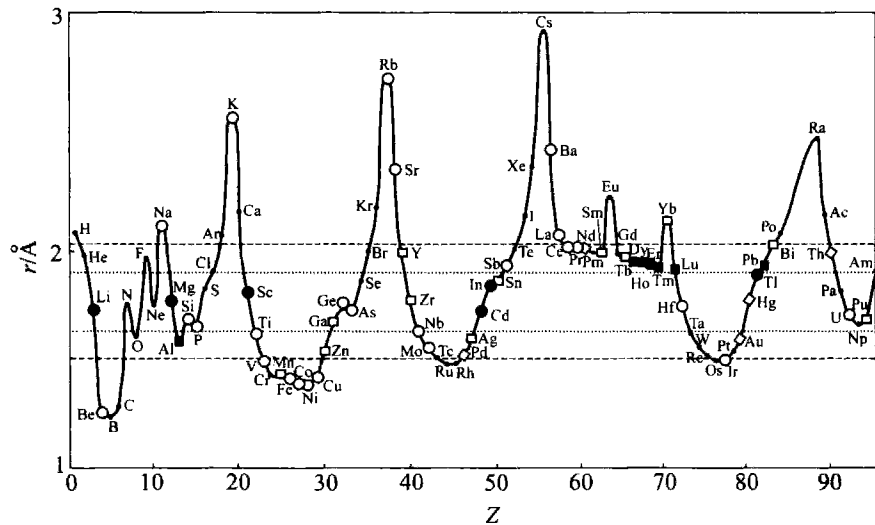
Conventional
castings

Gear box
Housings
Interior parts

→ Time







Electronegativity

3

2

1

● — Solubility > 5%

▲ — Solubility < 5%

C

Au

Mn

Ni

Fe

Cu

Ag

Sb

Bi

Be

Ge

Al

Ga

Zr

Sn

Pb

Zn

Mg

Ti

Cd

Li

In

Ca

Na

K

1.0

1.5

2.0

2.5

Atomic radius/Å

