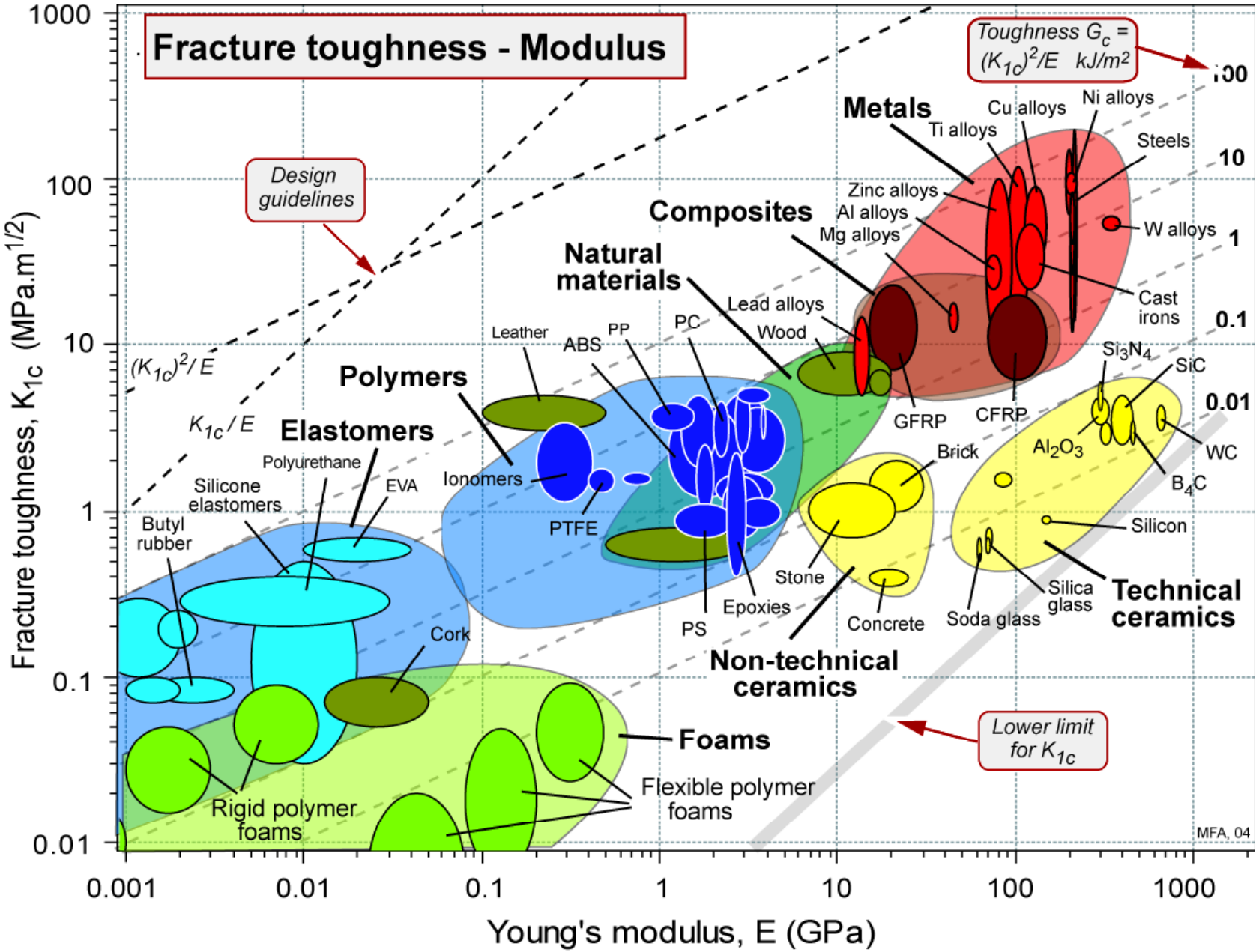
Fracture toughness - Modulus
Toughness G_c = $(K_{1c})^2/E$ kJ/m²
Design guidelines
$(K_{1c})^2/E$
K_{1c}/E
Metals
Ti alloys
Cu alloys
Ni alloys
Steels
Zinc alloys
Al alloys
Mg alloys
W alloys
Cast irons
Composites
Natural materials
Lead alloys
Wood
GFRP
CFRP
Leather
ABS
PP
PC
Polymers
Elastomers
Polyurethane
EVA
Silicone elastomers
Butyl rubber
Ionomers
PTFE
PS
Epoxies
Stone
Brick
Concrete
Cork
Non-technical ceramics
Si_3N_4
SiC
Al_2O_3
WC
B_4C
Silicon
Silica glass
Soda glass
Technical ceramics
Foams
Rigid polymer foams
Flexible polymer foams
Lower limit for K_{1c}
MFA, 04
Fracture toughness, K_{1c} (MPa.m$^{1/2}$)
Young's modulus, E (GPa)
1000
100
10
1
0.1
0.01
0.001
0.01
0.1
1
10
100
1000
100
10
1
0.1
0.01