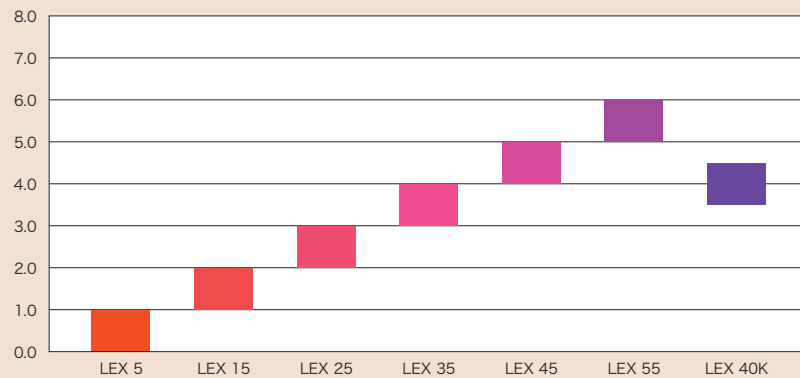




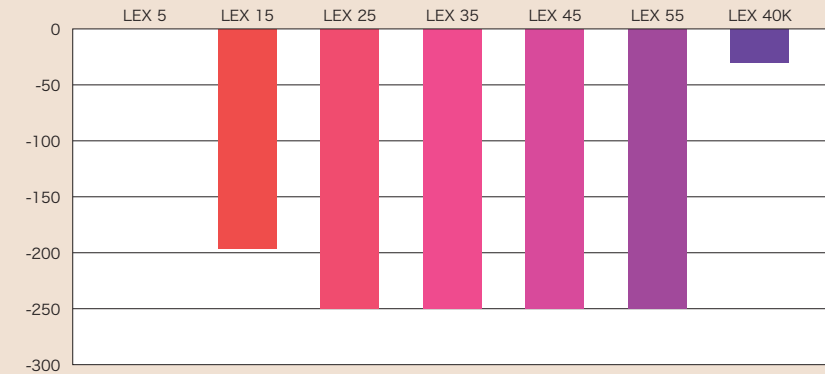
LEX Technical Note

High Carbon-type LEX

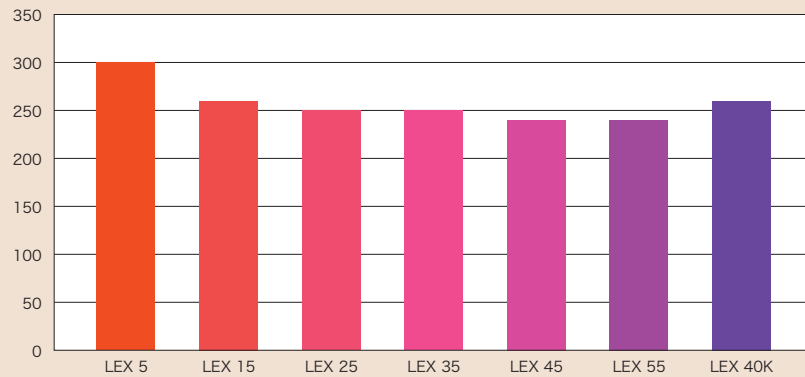
Mean coefficient of thermal expansion [$\times 10^{-6}/^{\circ}\text{C}$]



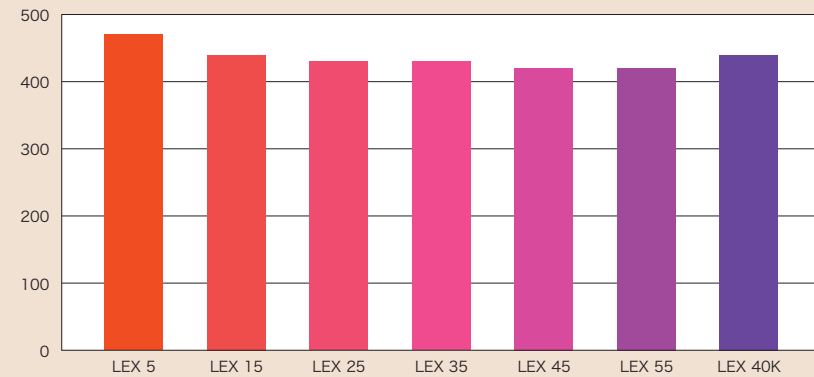
Applicable lower limit temperature [$^{\circ}\text{C}$]




0.2% yield strength [MPa]



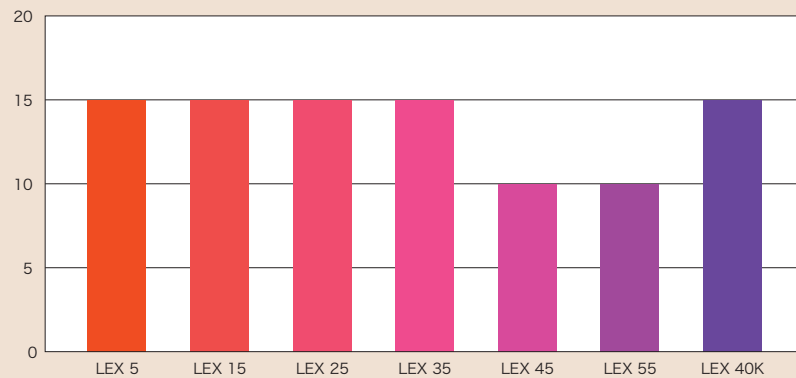
Tensile strength [MPa]



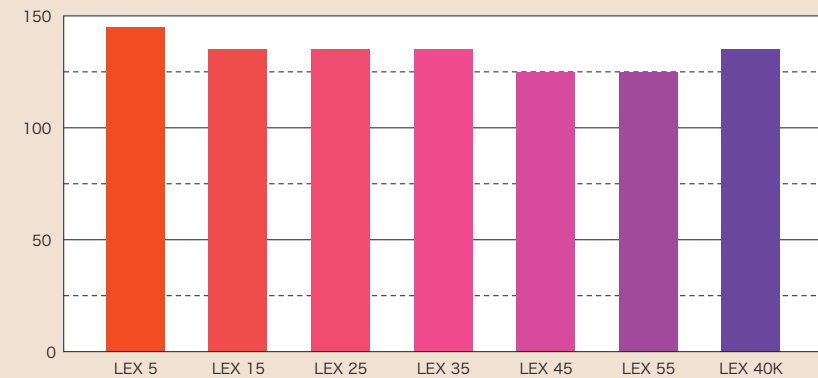
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High Carbon-type LEX

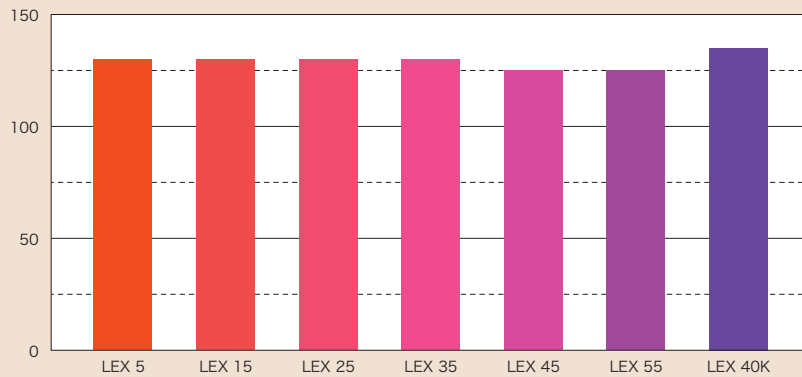
Elongation [%]



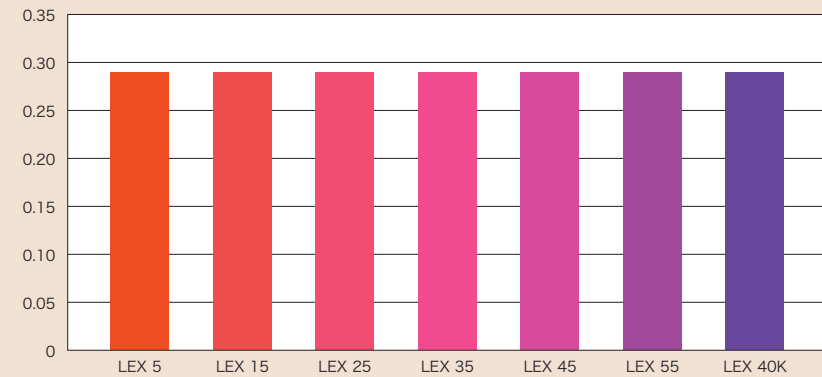
Hardness HB



Young's modulus (bending resonance method) [GPa]

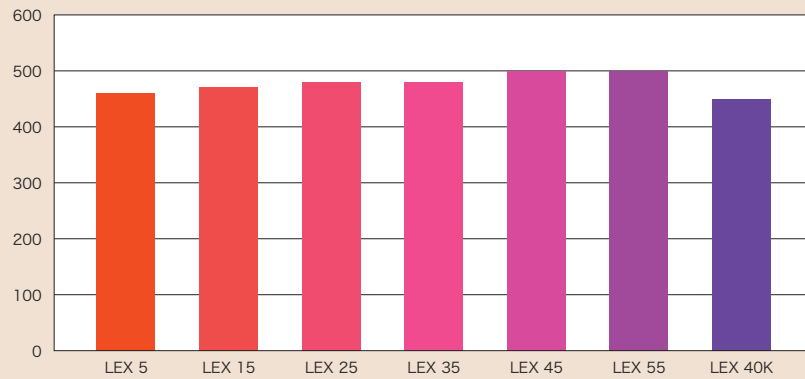


Poisson's ratio

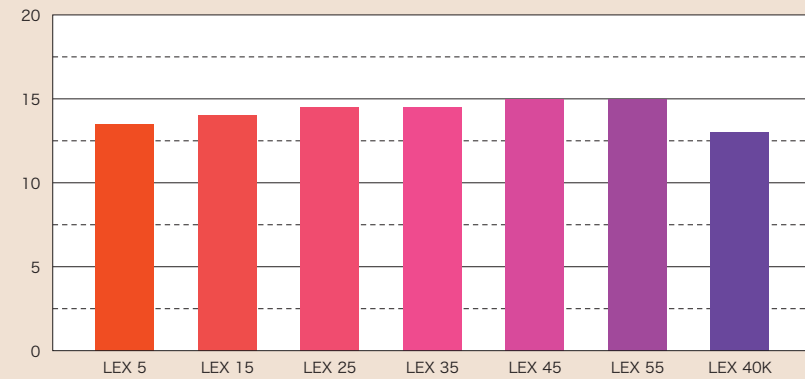


High Carbon-type LEX

Specific heat [J/kg°C]

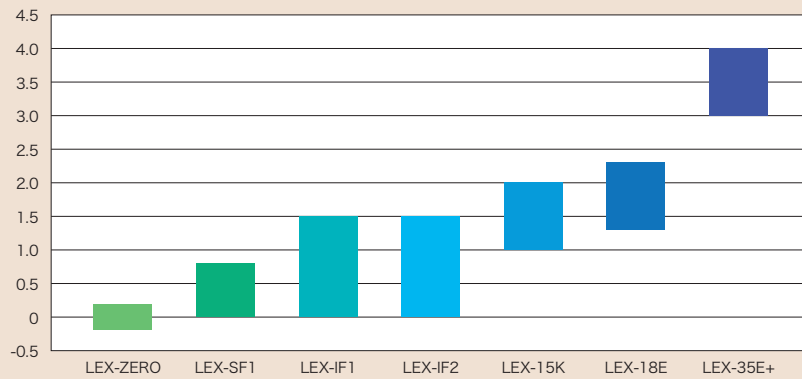


Thermal conductivity [W/m°C]

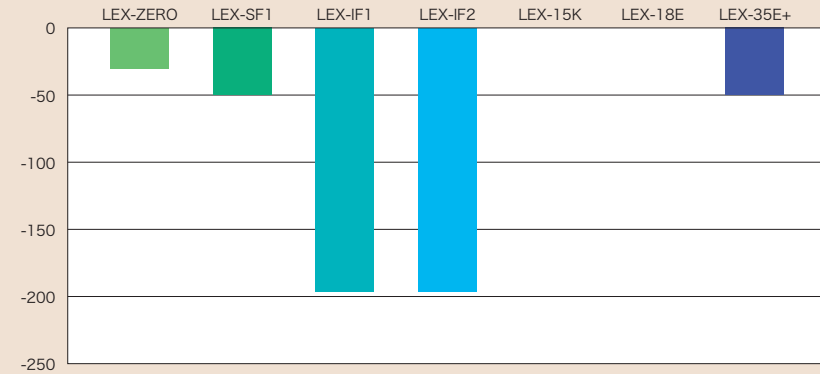


Low Carbon-type LEX

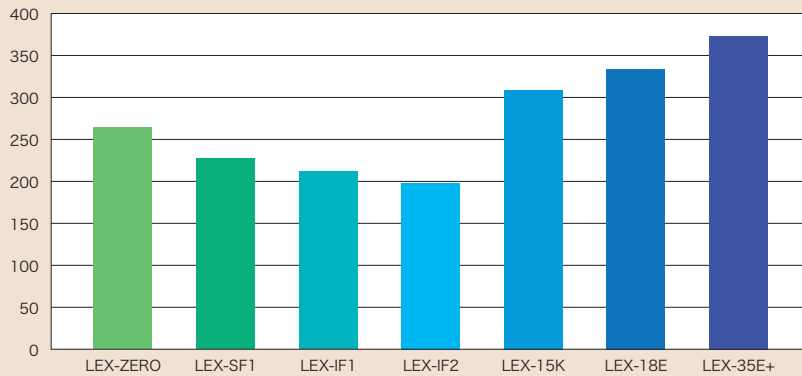
Mean coefficient of thermal expansion [$\times 10^{-6}/^{\circ}\text{C}$]



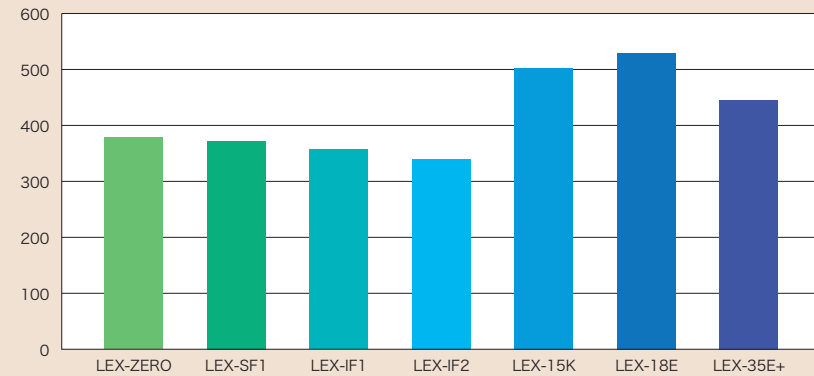
Applicable lower limit temperature [$^{\circ}\text{C}$]



0.2% yield strength [MPa]



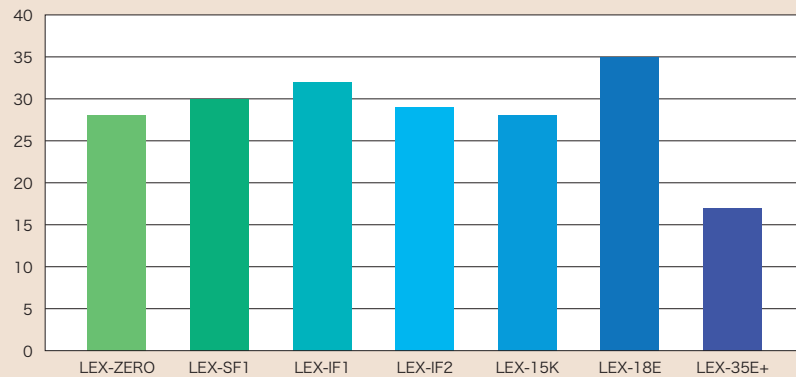
Tensile strength [MPa]



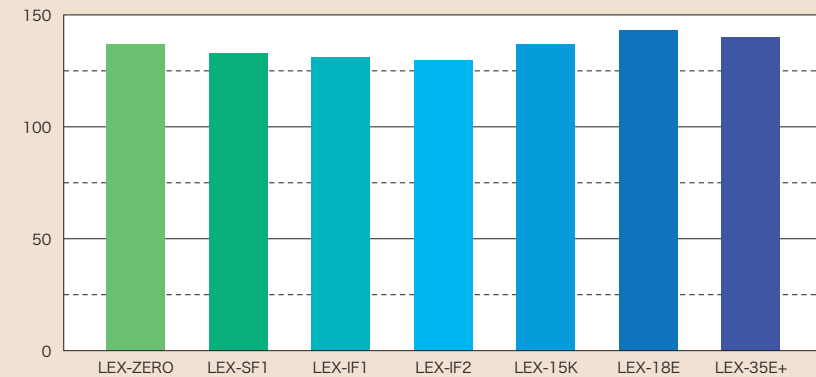
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Low Carbon-type LEX

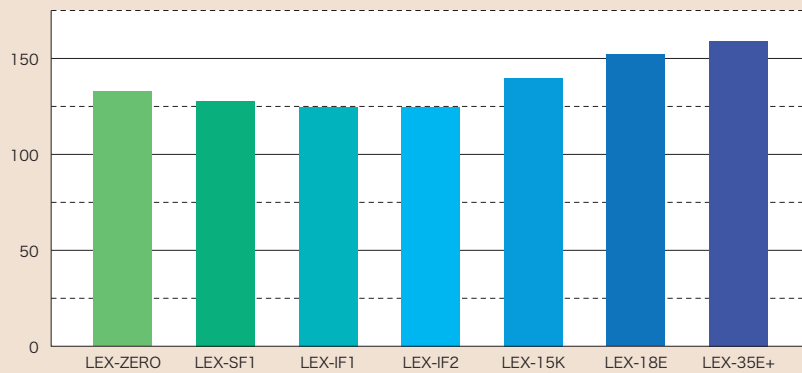
Elongation [%]



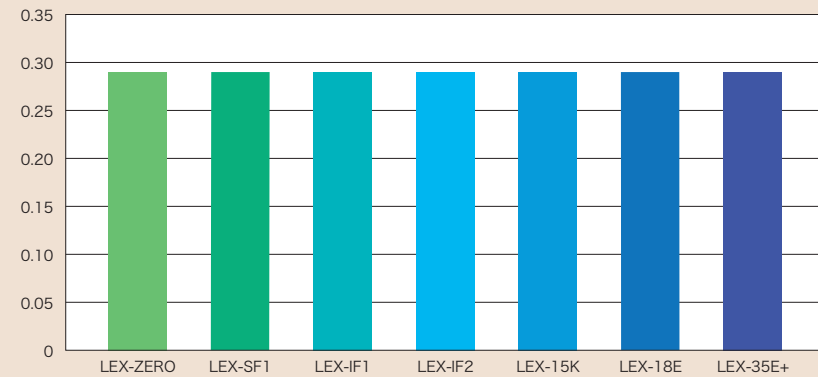
Hardness HB



Young's modulus (bending resonance method) [GPa]

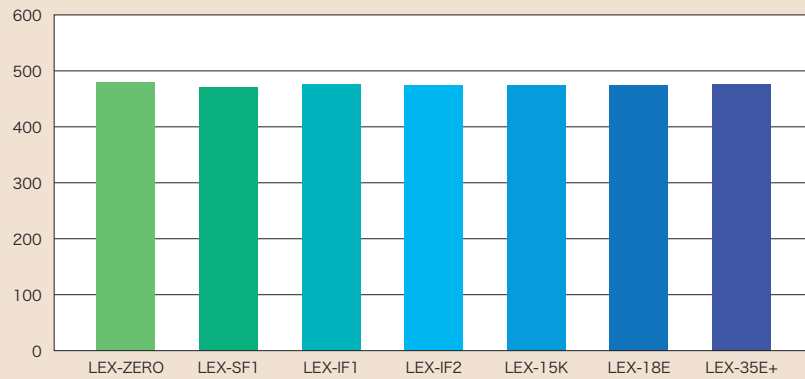


Poisson's ratio

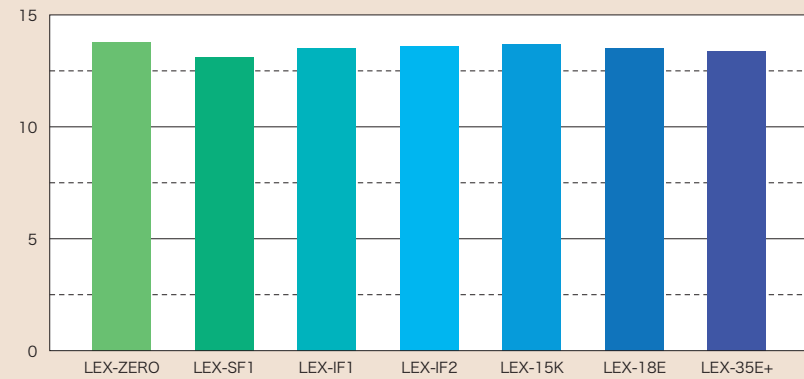


Low Carbon-type LEX

Specific heat [J/kg°C]

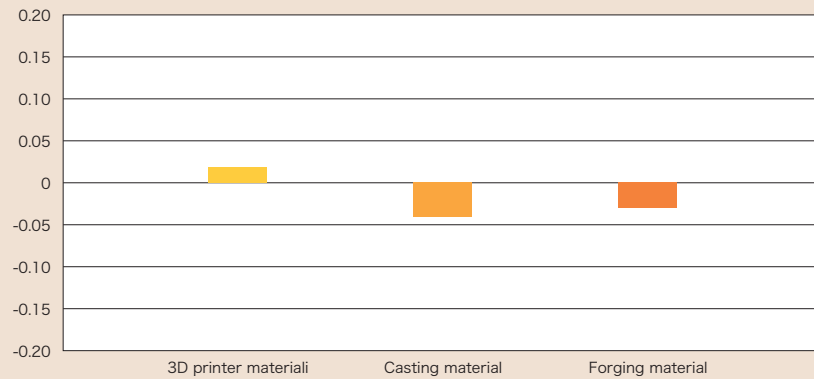


Thermal conductivity [W/m°C]

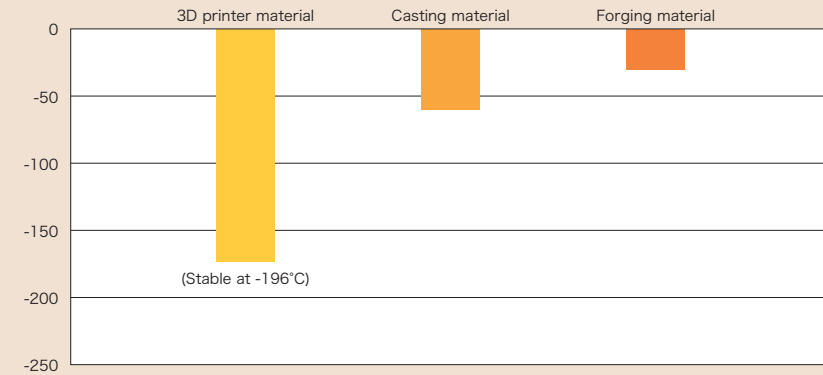


LEX-ZERO®

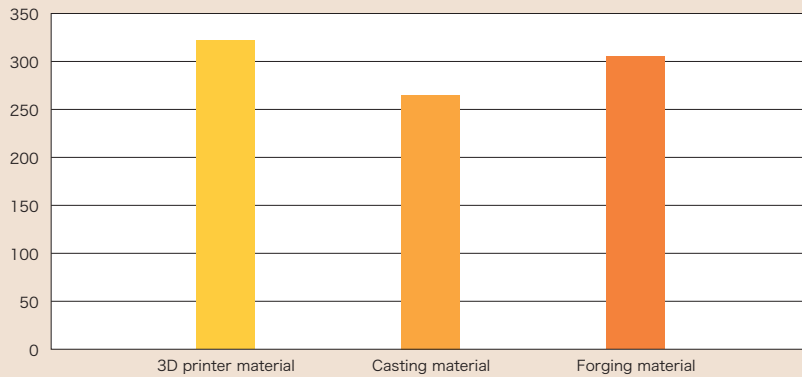
Mean coefficient of thermal expansion [$\times 10^{-6}/^{\circ}\text{C}$]



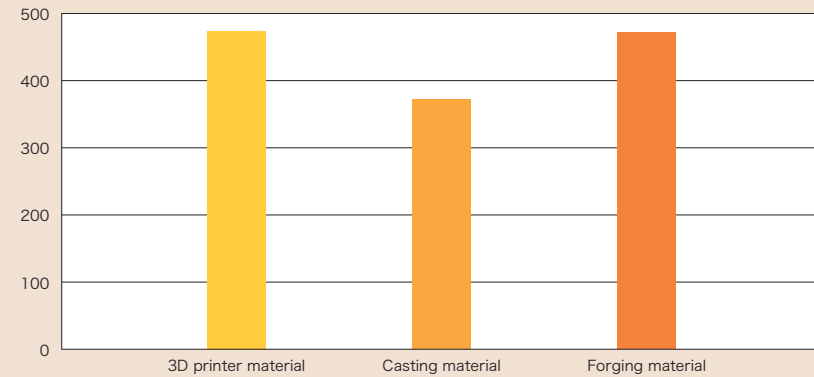
Applicable lower limit temperature [$^{\circ}\text{C}$]



0.2% yield strength [MPa]



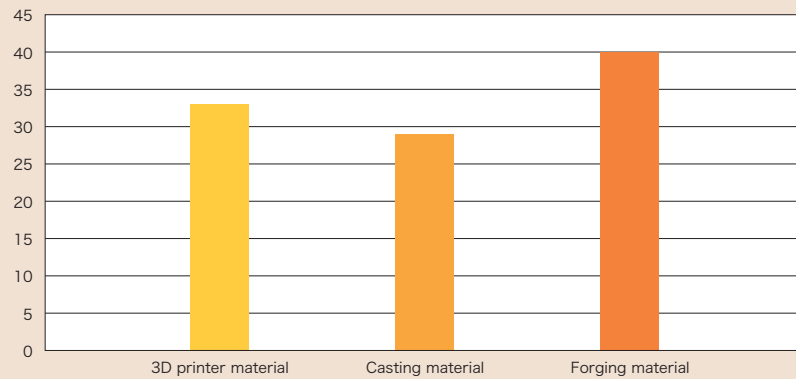
Tensile strength [MPa]



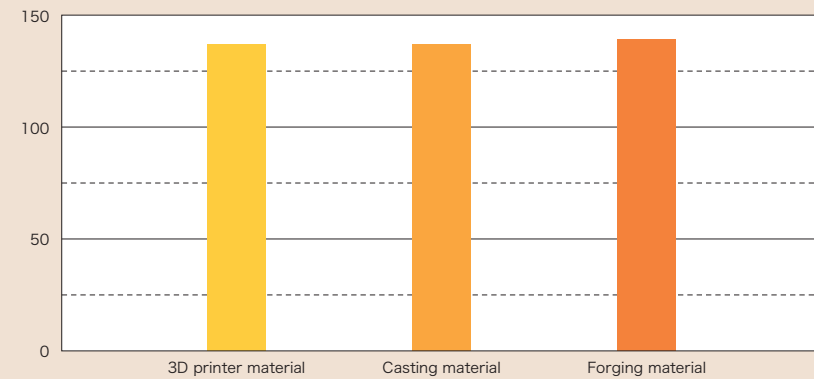
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LEX-ZERO®

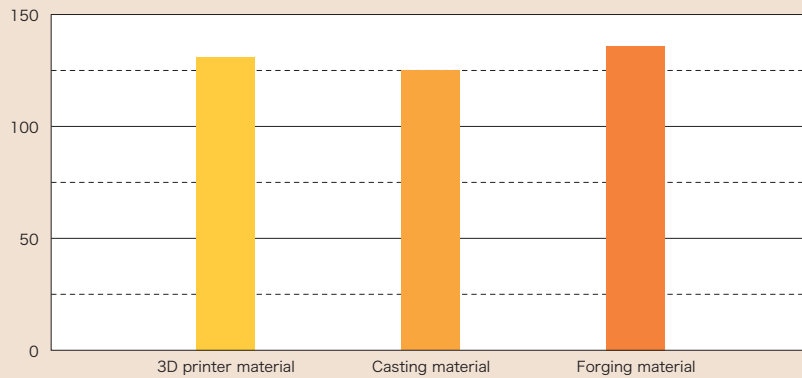
Elongation [%]



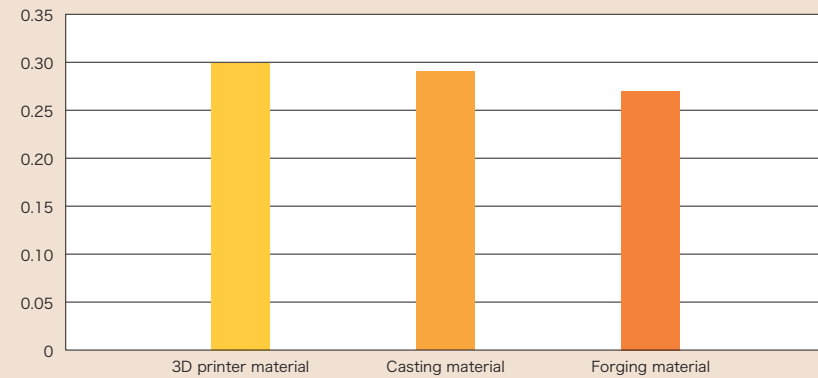
Hardness HB



Young's modulus (bending resonance method) [GPa]

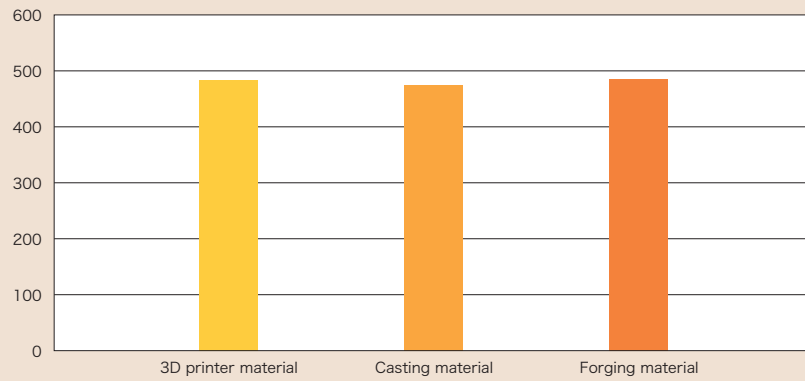


Poisson's ratio

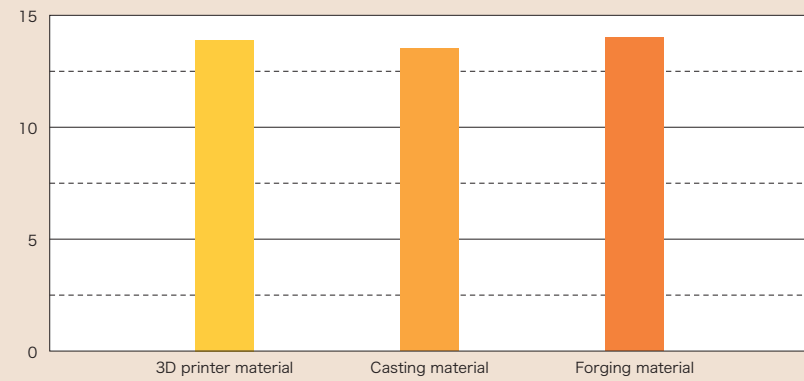


LEX-ZERO[®]

Specific heat [J/kg°C]

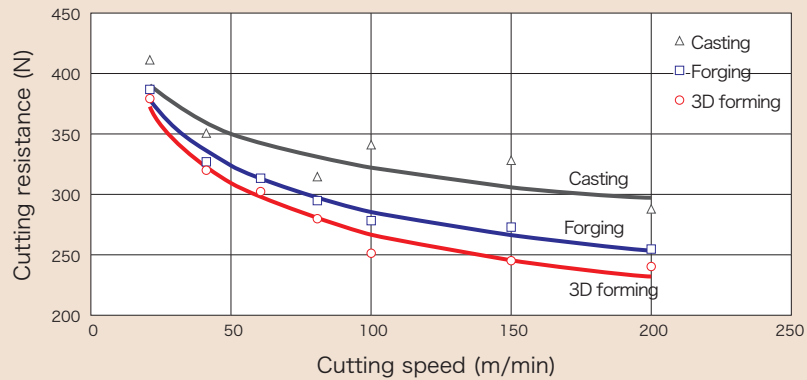


Thermal conductivity [W/m°C]



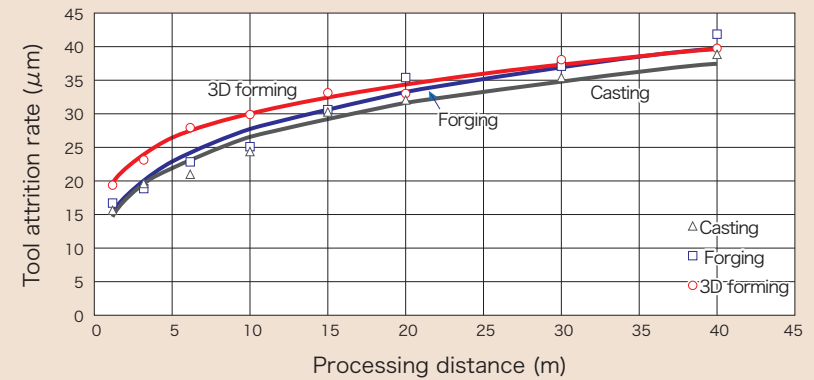
LEX-ZERO®

LEX-ZERO® Cutting Resistances for Manufactured Goods (End Mills)



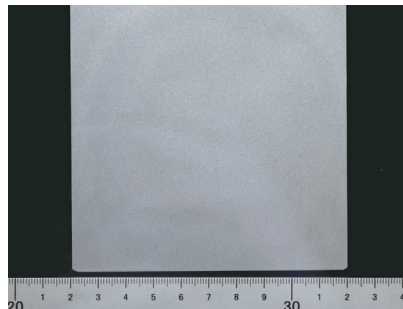
10mm diameter 4-blade end mill with 30mm protrusion
 Tool: VQMHVD1000
 Depth of cut: 5mm in axial direction (ap)
 1mm in radial direction (ae)
 Feed rate: 0.05mm/tooth
 Wet process

LEX-ZERO® Tool Attrition Rates for Manufactured Goods (End Mills)

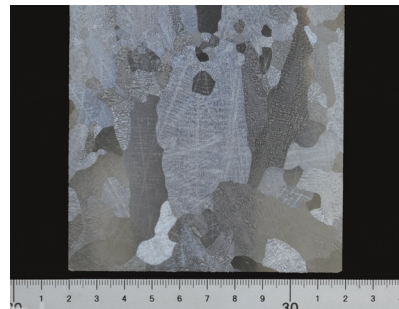


10mm diameter 4-blade end mill with 30mm protrusion
 Tool: VQMHVD1000
 Cutting speed: 100m/min
 Depth of cut: 5mm in axial direction (ap)
 1mm in radial direction (ae)
 Feed rate: 0.05mm/tooth
 Wet process

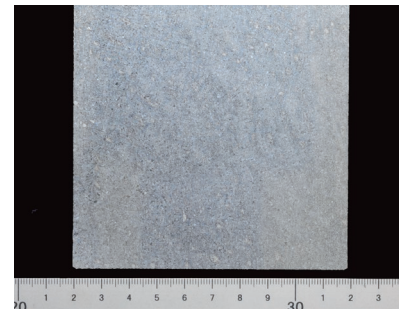
3D forming macro structure



Casting macro structure

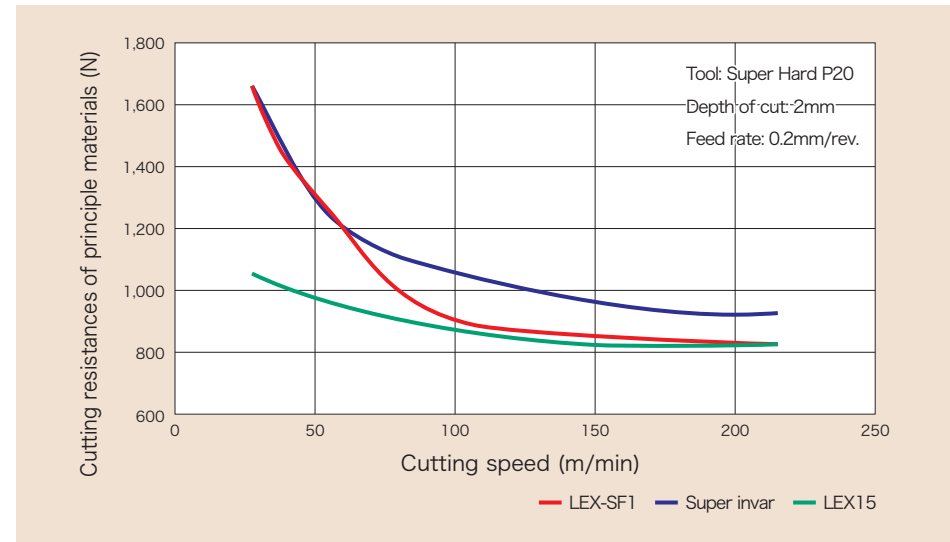
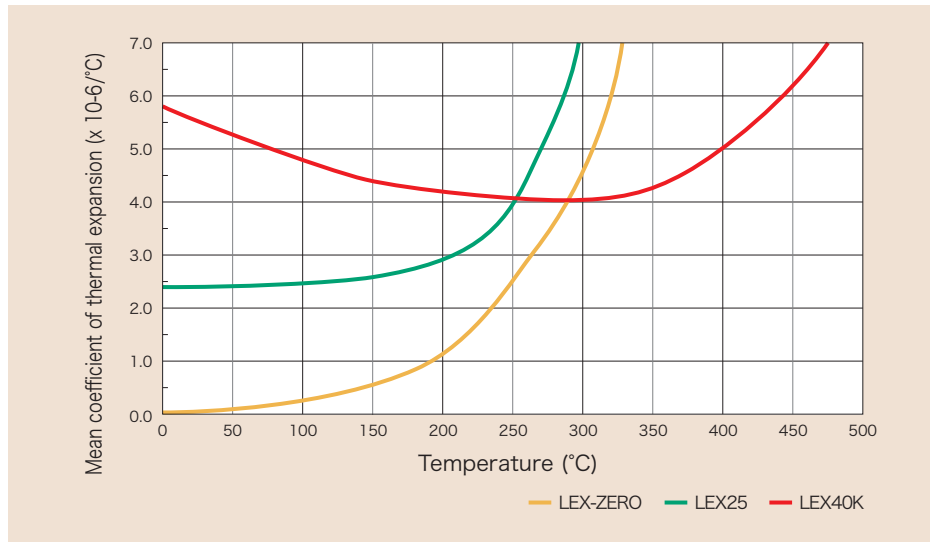


Forging macro structure



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Temperature Dependability, Machinability and Material Comparison for Coefficient of Thermal Expansion



Materials used by customers	Coefficient of thermal expansion (x 10 ⁻⁶ /°C)	Nippon Chuzo's suitable materials	Aptitude areas
Silicon nitride	3.2	LEX 25	Engineering ceramics
Silicon carbide	4.1	—	Semiconductors, precision instruments
LiO ₂ -Al ₂ O ₃ -SiO ₂	≒0	LEX-ZERO	
Quartz glass	0.5	LEX-SF1	CFRP
Graphite	5.0	LEX 55	
Aluminum	7.0	LEX 75	Semiconductors, precision instruments
Cordierite	≒0	LEX-ZERO	Automobile exhaust purifiers
Invar	1~2	LEX-IF1, LEX 15	Semiconductors, precision instruments
Super invar	≦1	LEX-SF1	
Super invar cast iron	3~4	LEX-35E+	

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Example of Surface Treatment

Electroless Nickel Plating



Before plating



After plating

Black electroless nickel plating
and black chrome plating also available.

*In addition to plating, thermal spraying also is possible.

*Other finishes can be prepared in accordance with customer requests.



For inquiries, please contact : **JFE SHOJI ELECTRONICS CORPORATION**

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<https://www.nipponchuzo.co.jp>