

Lead-free low-carbon ultra-high-speed cutting steel

ASK-2600R

The ASK-2600R achieves machinability equivalent to conventional leaded free-cutting steel without containing lead.

It is the industry's first Pb-free super free-cutting steel.

Pb-FREE

No
Lead (Pb)
Added

ASK-2600R
Product
Features

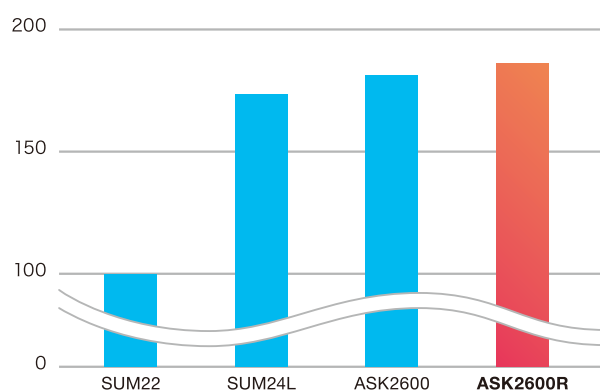
Excellent
Machinability

Since it does not contain lead (Pb) as a free-cutting element, it fully complies with various environmental regulations.

Example: RoHS Directive – lead content in steel is less than 0.1%.

The addition of bismuth (Bi) enables precise, high-speed, and long-duration machining.

◇ Machinability Index



Cutting conditions

- ① Test material : $\phi 10.00$
- ② Cutting tool : VP15TF(Mitsubishi)
- ③ Depth of cut : 1.0mm
- ④ Feed rate : 0.07mm/rev
- ⑤ Cutting speed : 150m/min

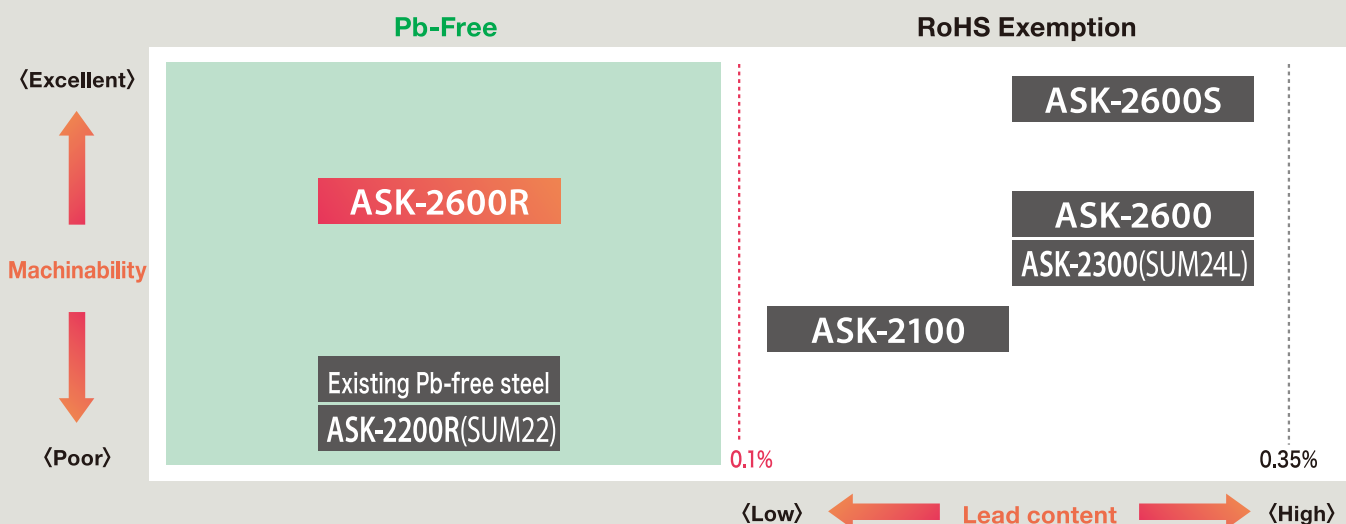
*The machinability index is compared to the cutting resistance value of SUM22, which is set as 100. A
*Higher index indicates better machinability.

◇ Chemical Composition / Physical Properties

| (wt%) | | | | | |
|-------|-------|-----------|-------|-----------|-----------|
| C | Si | Mn | P | S | Bi |
| ≤0.15 | ≤0.30 | 1.10~1.40 | ≤0.09 | 0.35~0.48 | 0.10~0.35 |

| Basic Mass g/cm ³ | Young's Modulus KN/mm ² | Poisson's ratio | Linear Expansion Coefficient(average) 10 ⁻⁶ ·°C | Thermal Conductivity W/m·°C | Specific Heat Capacity J/g·°C | Electrical Resistivity Ωm×10 ⁻⁸ |
|---------------------------------|---------------------------------------|-----------------|--|--------------------------------|----------------------------------|---|
| Normal temp. | Normal temp. | Normal temp. | 0-100°C | 20-100°C | 0-100°C | Normal temp. |
| 7.7 | 207 | 0.29 | 12.1 | 56 | 0.50 | 19 |

◇ Lead content and Machinability



◇ Chips (cutting debris)



SUM22



SUM24L



ASK-2600



ASK-2600R

◇ Magnetic Properties

| | Before Magnetic Annealing | | After Magnetic Annealing | |
|-----------|-----------------------------------|-------------------------------|-----------------------------------|-------------------------------|
| | Residual Magnetic Flux Density Br | Coercive Force (coercivity)Hc | Residual Magnetic Flux Density Br | Coercive Force (coercivity)Hc |
| ASK-2600R | 8,392 G (0.84 T) | 6.8 Oe (541 A/m) | 11,690 G (1.17 T) | 3.4 Oe (271 A/m) |
| SUM24L | 8,772 G (0.88 T) | 5.9 Oe (470 A/m) | 10,710 G (1.07 T) | 2.9 Oe (231 A/m) |
| ASK-2600 | 8,636 G (0.86 T) | 5.8 Oe (462 A/m) | 10,330 G (1.03 T) | 2.7 Oe (215 A/m) |
| ASK-2600S | 10,050 G (1.01 T) | 6.5 Oe (517 A/m) | 10,160 G (1.02 T) | 3.1 Oe (247 A/m) |

※Magnetic annealing(850°C)

