

密封件所使用的主要橡膠種類與特性 (Type and features of rubber for oil seals)

| 橡膠種類 (Rubber type) | 天然橡膠 (NR) | 合成天然 橡膠 (IR) | 丁腈橡膠 (NBR) | 氫化丁腈 橡膠 (HNBR) | 乙烯、丙烯 橡膠 (EPDM) |
|--|--------------|-----------------|---------------|-------------------|--------------------|
| 可能JIS的硬度範圍 Scale of JIS hardness | 10~100 | 20~200 | 15~100 | 55~90 | 30~90 |
| 張力強度 Tension strength | ◎ | ◎ | ◎○ | ◎ | ◎○ |
| 反彈性 Rebounding | ◎ | ◎ | ○ | ○ | ○ |
| 生裂 Breaking | ◎ | ◎ | ○ | ○ | △ |
| 耐磨耗性 Antifriction | ◎ | ◎ | ◎ | ◎○ | ○ |
| 耐彎曲龜裂性 Anti-bending | ◎ | ◎ | ○ | ○ | ○ |
| 耐熱性℃最高使用溫度 Heat resistance | 70 | 100 | 100 | 150 | 125 |
| 耐寒性℃(脆化溫度) Cold resistance | -20~-50 | -20~-55 | -20~-55 | -40 | -40~-55 |
| 耐老化形 Aging resistance | ○ | ○ | ◎ | ◎ | ◎ |
| 耐光性 Light resistance | ○ | ○ | ○ | ○ | ◎ |
| 耐臭氧性 Ozone resistance | × | × | △ | ◎ | ◎ |
| 耐焰性 Fire resistance | × | × | × | × | ×△ |
| 零絕緣性(Ωcm) 體積固有電阻 Insulation: solid volume with resistance | 10^{10-15} | 10^{10-15} | 10^{2-10} | 10^{2-10} | 10^{10-15} |
| 耐氣體透過性 Osmore resistance | ○ | ○ | ○ | ○ | ○ |
| 耐放射線性 Ration activity resistance | △○ | △○ | △○ | △○ | × |
| 耐化學藥品性 Chemical resistance | × | ○ | △○ | ○ | ◎ |
| 耐油性 Oily resistance | × | × | ◎ | ◎ | × |
| 密水性 Water resistance | ◎ | ◎ | ○ | ○ | ◎ |
| 耐酸性 Acid resistance | △○ | ○ | △ | ○ | ◎◎ |
| 耐鹼性 Alkaly resistance | △ | ◎ | ○ | ◎ | ◎ |
| 耐水蒸氣性 Steam resistance | × | △○ | × | △○ | ◎ |
| ◎優 excellent ○可 good △尚可 fair ×差 poor | | | | | |

化成橡膠的物理性質與特性

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(Type and features of rubber for oil seals)

| 橡膠種類 (Rubber type) | 亞克力橡膠 (ACM) | 硅矽橡膠 (SI) | 氟橡膠 (FPM) | 全氟橡膠 (FFPM) | 聚四氟乙烯 (PTFE) |
|--|--------------------|---------------------|---------------------|---------------------|---------------------|
| 可能JIS的硬度範圍 Scale of JIS hardness | 40~80 | 30~90 | 50~90 | 75~90 | 89~96 |
| 張力強度 Tension strength | △ | × | ◎○ | ◎○ | △× |
| 反彈性 Rebounding | △ | ◎ | △ | △ | △○ |
| 生裂 Breaking | △ | ×△ | ○ | ○ | ○ |
| 耐磨耗性 Antifriction | ○ | ×△ | ◎ | ◎ | ◎ |
| 耐彎曲龜裂性 Anti-bending | ○ | ×△ | ○ | ◎ | △ |
| 耐熱性℃最高使用溫度 Heat resistance | 150 | 225 | 232 | 320 | 280 |
| 耐寒性℃(脆化溫度) Cold resistance | 0~-15 | -60~-100 | -26~-40 | -10~-20 | -100 |
| 耐老化形 Aging resistance | ◎ | ◎ | ◎ | ◎ | ◎ |
| 耐光性 Light resistance | ◎ | ◎ | ◎ | ◎ | ◎ |
| 耐臭氧性 Ozone resistance | ◎ | ◎ | ◎ | ◎ | ◎ |
| 耐焰性 Fire resistance | ×△ | ×△ | ◎ | ◎ | ◎ |
| 零絕緣性(Ω cm) 體積固有電阻 Insulation: solid volume with resistance | 10 ⁸⁻¹⁰ | 10 ¹¹⁻¹⁵ | 10 ¹⁵⁻¹⁸ | 10 ¹⁵⁻¹⁸ | 10 ¹²⁻¹³ |
| 耐氣體透過性 Osmore resistance | ○ | △ | ◎ | ◎ | ◎ |
| 耐放射線性 Ration activity resistance | ○ | △○ | △○ | ◎ | ◎ |
| 耐化學藥品性 Chemical resistance | × | ◎○ | ◎ | ◎ | ◎ |
| 耐油性 Oily resistance | × | △○ | ◎ | ◎ | ◎ |
| 密水性 Water resistance | ◎ | ○ | ○ | ◎ | ◎ |
| 耐酸性 Acid resistance | △ | △ | ◎ | ◎ | ◎ |
| 耐鹼性 Alkaly resistance | × | △ | ◎ | ◎ | ◎ |
| 耐水蒸氣性 Steam resistance | × | △○ | △○ | ◎ | ○ |
| ◎優 excellent | ○可 good | △尚可 fair | × | 差 poor | |

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