

# **KEPITAL Resistance to fuels and chemicals**

A thermoplastic material may show changes in mechanical properties and dimensions in environments in contact with specific chemicals. Temperature and soaking time have an influence on those properties.

KEPITAL displays the outstanding resistance to fuels and a variety of neutral organic and inorganic chemicals.

## 1. Fuel resistance

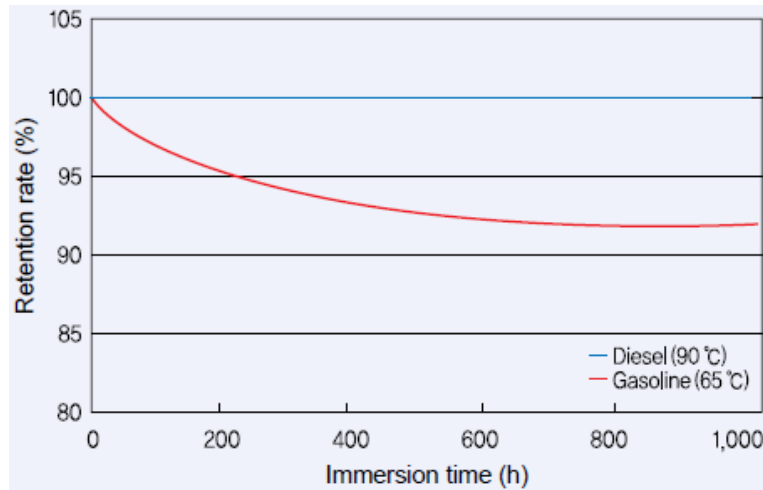


Figure 1. Changes of KEPITAL F20-03 in tensile strength

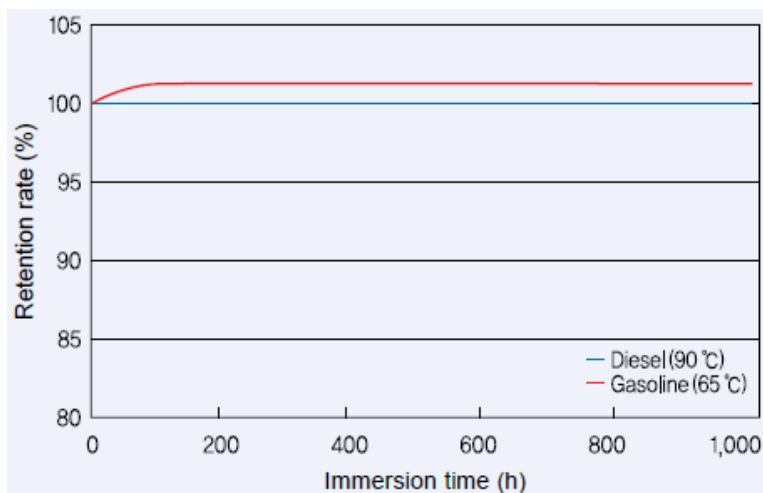


Figure 2. Changes of KEPITAL F20-03 in weight

Automotive fuels in gasoline and diesel diversify their compositions upon regions and OEM's specification.

To promote consistent tests with respect to differences in composition, testing fuels have been selected and used.

KEPITAL F20-03 has distinctive resistance with respect to various testing fuels, including gasoline and diesel.

The test results of F20-03 to gasoline and diesel are shown in Figures 1 and 2.

KEPITAL has good stability in terms of mechanical properties and dimensions in contact with fuels even at evaluated temperature.

Therefore, KEPITAL has been used in various automotive fuel applications.

## 2. Chemical resistance

KEPITAL exhibits good resistance to the following chemicals;

- Organic solvents: Alcohols, Esters, Ketones, Aliphatic and Aromatic hydrocarbons
- Automotive fluids: Washer fluid, Oils and Coolant, etc.

However, strong acids, oxidizing agents and halogens are strongly recommended to be kept away from KEPITAL since those break up the chemical structure of KEPITAL.

The changes in physical properties to various chemicals are illustrated in Table 1.

Table 1. Chemical resistance of KEPITAL after immersion in various chemicals

Chemical	Immersion time (h)	Temperature (°C)	Measurements		
			Retention rate (%)		
			Tensile strength	Weight	Length
Fuel C	360	60	95	102	102
SME20	5,040	90	93	100	100
Iso-octane	19,680	23	97	100.1	100.2
Gasoline	1,000	65	92	101	100
Diesel	1,000	90	100	100	100
Methanol	8,760	50	88	102	101
Ethanol	8,760	50	89	102	101
Acetone	8,760	23	83	104	102
Toluene	8,760	50	90	103	102
Benzene	6,600	60	90	104	102
Carbon tetrachloride	8,760	23	98	102	100
Ethylene glycol (100%)	480	120	89	—	—
Acetic acid 1%	8,760	23	101	100	100
Sulfuric acid 1%	4,320	23	100	100	100
Hydrochloric acid 10%	960	40	100	99	100
Sodium hydroxide 10%	552	23	102	100	100
Sodium hypochlorite (Effective chlorine 3 ppm)	552	23	100	100	—
One-Luber No. 2	2,400	100	105	100	100
Dow Corning FS-44MA	2,400	100	106	100	100
Cosmo Limax No. 2	2,880	120	101	99	99
Cutting fluid Yushiro EE56	552	23	100	100	100
Silicon oil	3,120	130	106	100	99
Food grade salad oil	1,920	80	104	—	—
Copy diazo development solution SD	552	23	96	—	—
Photographic development solution	1,200	50	101	102	101
Photographic fixing solution	960	40	101	100	100
Hot water	1,000	85	103	100	100
Anti-freeze	5,000	23	103	—	—
Engine oil	5,000	23	105	—	—
Gear oil	5,000	23	103	—	—

Please consider making practical tests with application under real circumstances to make sure that part will last for a certain period without failure as the above result will change by testing conditions, temperature, the concentration of chemical and immersion period, etc. and unexpected effects.

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