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Technical Literature D-02

High-temperature Wear/friction Properties of AURUM®

1. Testing Conditions

Testing equipment:	Suzuki-type friction/wear tester with furnace
Test specimen:	Resin rings
Lubricant:	No lubricant
Counterpart metal:	Stainless steel SUS 304
Time:	7 hrs

2. Results of Friction/Wear Test

(1) Atmospheric temperature: 23ºC, P = 50 kg/cm^2, V = 12 m/min

Sample	Wear coefficient (10^{-10} cm^3/kgfm)	Dynamic wear coefficient (-)	Wear (g)	
			Resin	Counterpart metal
JCL3030 (AURUM®) (noncrystalline)	170	0.15	0.012	<0.001
Wear/friction material (PEEK)	70	0.14	0.005	<0.001
SP-21 (VESPEL)	150	0.23	0.011	<0.001
4301 (TORLON)	Failed			

(2) Atmospheric temperature: 100ºC, P = 50 kg/cm^2, V = 12 m/min

Sample	Wear coefficient (10^{-10} cm^3/kgfm)	Dynamic wear coefficient (-)	Wear (g)	
			Resin	Counterpart metal
JCL3030 (AURUM®) (noncrystalline)	350	0.12	0.026	<0.001
Wear/friction material (PEEK)	180	0.17	0.013	<0.001
SP-21 (VESPEL)	350	0.12	0.027	<0.001
4301 (TORLON)	Failed			

(3) Atmospheric temperature: 150ºC, P = 50 kg/cm^2, V = 12 m/min

Sample	Wear coefficient (10^{-10} cm^3/kgfm)	Dynamic wear coefficient (-)	Wear (g)	
			Resin	Counterpart metal
JCL3030 (AURUM®) (noncrystalline)	260	0.07	0.019	<0.001
Wear/friction material (PEEK)	Failed			
SP-21 (VESPEL)	570	0.06	0.043	<0.001

(4) Atmospheric temperature: 200ºC, P = 50 kg/cm^2, V = 12 m/min

Sample	Wear coefficient (10^{-10} cm^3/kgfm)	Dynamic wear coefficient (-)	Wear (g)	
			Resin	Counterpart metal
JCL3030 (AURUM®) (noncrystalline)	280	0.08	0.020	0
SP-21 (VESPEL)	290	0.07	0.021	<0.001

(5) Atmospheric temperature: 250ºC, P = 50 kg/cm^2, V = 12 m/min

Sample	Wear coefficient (10^{-10} cm^3/kgfm)	Dynamic wear coefficient (-)	Wear (g)	
			Resin	Counterpart metal
JCL3030 (AURUM®) (noncrystalline)	Failed			
SP-21 (VESPEL)	270	0.05	0.019	<0.001

* The PEEK wear/friction resin failed at 200ºC and 250ºC.
* TORLON failed in the entire temperature range.