Anti-galling selftapping screw for Aluminum

ALUMITITE®

Outline of ALUMITITE

It is a trend of current industrial scene to change their material from steel to **Aluminum** or **Magnesium** for the purpose of lightening of goods. It is needless to say that this trend aims better gas mileage of automobile and portability of every appliance.
But such light metal has some problems relates to be fastened by screws. They are;

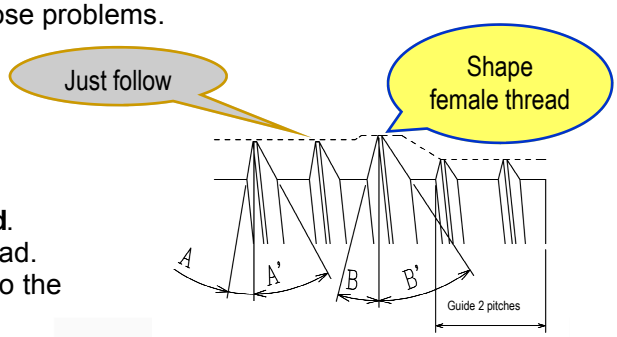
- Screws are very easy to stall by galling with aluminum.
- Screws are easy to loose due to difference of coefficient of thermal expansion between steel and aluminum.

ALUMITITE has been developed to be a solution for those problems.

Features

Special design to minimize friction between thread and mated part.

ALUMITITE is consist of **Asymmetrical angle of thread**.
Slightly bigger designed first pitch shapes female thread.
Little bit smaller designed following pitches can go into the thread with less friction.

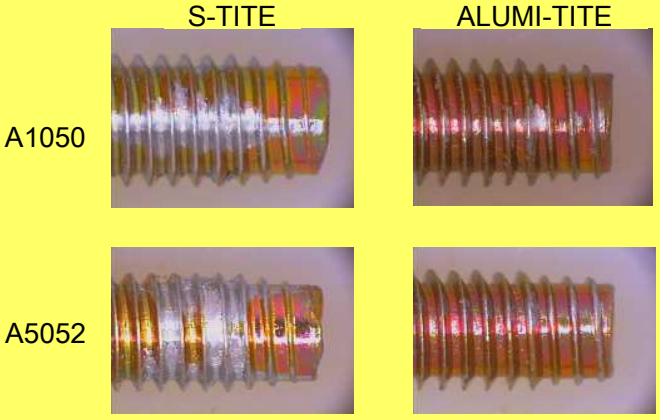


Character

1. Stable & lower installation torque
2. Anti-galling
3. Loose-proof effect
   (Loose-proof effect can be accelerated by vibration and temperature changing.)
4. Repeatability
5. Less generation of metal chips

Anti-Galling effect

●Pictures after vibration test.



☐Condition of vibration test

Acceleration	4.5G
Amplitude	2㎜
Frequency	33.3Hz
Time	2hours

Application

1. ***Exposure to Vibration***
   Automobile, Electric tools,
   Air-conditioner,
   OA appliance, Computers,
   Mobile communication appliance,
   Farm machines

2. ***Exposure to Temperature changing***
   Automobile engine,
   Hot water supply system,
   Computers,
   Mobile communication appliance

If you are interested in to use our ALUMITITE for your concrete application, please send actual work pieces to our fastener laboratory. We can provide you more detailed data for your best fastening by examination.

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Performance of ALUMITITE

1. Torque curve of ALUMITITE

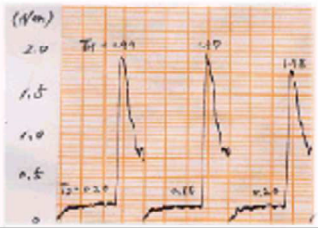
Fastening condition

Screw size	: ALUMITITE ϕ 3
Thread engagement depth	: approx 3 mm
Liner	: SPCC Plain Washer (t 0.5 x 6 x 3)
Work piece	: Aluminum (A2024W-0)

Unit : N·m

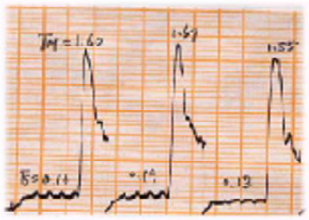
Pilot Hole Dia.		Data					Average	TS max / TM min	Drive-to-strip torque ratio	Proper Tightening Torque : Tf (TSmax X 1.5 ~ TM min X 0.65)
		1	2	3	4	5				
ϕ 2.70	TS	0.20	0.18	0.20	0.21	0.18	0.194	0.21	8.00	Tf= 0.32~1.09
	TM	1.94	1.97	1.78	1.83	1.68	1.840	1.68		
ϕ 2.75	TS	0.16	0.15	0.16	0.15	0.15	0.154	0.16	9.68	Tf= 0.24~1.01
	TM	1.55	1.57	1.64	1.61	1.55	1.584	1.55		
ϕ 2.80	TS	0.16	0.19	0.13	0.15	0.14	0.154	0.19	7.10	Tf= 0.29~0.88
	TM	1.60	1.67	1.55	1.50	1.35	1.534	1.35		

※ TS : Installation torque TM : Stripping torque



Pilot Hole Dia. ϕ 2.70

Pilot Hole Dia. ϕ 2.75



Pilot Hole Dia. ϕ 2.80

※ Data shows ALUMI-TITE's less installation torque & higher breaking torque

2. The loosening torque (TR), friction torque on thread (TRs) and loosening ratio (η min = TR min / Tf) x 100 %)

Condition of test : Tested after exposure at 80 degrees Celsius X 1h + room temp. X 1h

Pilot Hole Dia.			ϕ 2.70		ϕ 2.75		ϕ 2.80	
Drive Torque (Tf)			0.6 N·m		0.6 N·m		0.6 N·m	
Loosening torque (TR)			TR	TRs	TR	TRs	TR	TRs
Room temp.	TR(N·m)	1	0.39	0.355	0.425	0.21	0.460	0.285
		2	- - - - -	- - - - -	0.450	0.19	0.410	0.276
		Average	0.39	0.355	0.438	0.20	0.435	0.281
	η min (%)		65	59.1	70.8	31.6	68.3	46
Leaving at High Temp.	TR(N·m)	1	0.57	0.055	0.57	0.025	0.500	0.085
		2	- - - - -	- - - - -	0.55	0.135	0.530	0.065
		Average	0.57	0.055	0.56	0.080	0.515	0.075
	η min (%)		95	9.1	91.6	4.1	83.3	10.8

※ Data shows loosening torque has raised after heat exposure.

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