NEWS LETTER

SAK Industries Pvt. Ltd. | TOPLINE *Let the sparks fly...*

DEPARTMENT OF RESEARCH & DEVELOPMENT - SAK ABRASIVES LTD, CHENNAI

MESSAGE FROM CEO

For last 15 years it was an excellent journey for all of us together. TOPLINE has this 15 years history of being a dependable, ethical and a reliable supplier of quality Abrasives Products. The company has been managed by very capable people who have brought it to where it is today. The foundation for building SAK Abrasives into a high performance business has been laid and the responsibility of carrying it forward has been handed over to us – a group of professional managers, to accelerate the process of TOPLINE's business growth. Customer satisfaction, with performance driven, inspired people with passion for Innovation are our ultimate aims. We set the ball rolling with our first issue of our quarterly technical magazine " TOPLINE News" to strengthen the relationship between us. From now on your response will provide us the renewed vigor and enthusiasm to maintain our high standards.

We assure you that we will stand up to your expectations. We have many more plans for the coming year to develop our business and also to strengthen our relationship. We assure you of an exciting association with us.

We are happy to receive your feedback and suggesting at **sumanpal@sakabrasives.com**

Raghu R

TRIAL CAPS

CUSTOMER: TATA MOTORS LTD, JAMSHEDPUR

COMPONENT: CRANKSHAFT

MATERIAL TYPE: ALLOY STEEL

WHEEL SIZE: 750 * 32.94 * 304.8

Parameters	Regular	Trial
Wheel Grade	CUMI,DA601J5V2018/60/ DA543K4V2018/60	SAK ABRASIVE ,82A543K5/ 82A601J5RS2
Wheel Life	650 nos	732 nos
Dressing Frequency	Single	Single

LOW TEMPERATURE BONDED SIC WHEEL

ABSTARCT

Silicon carbide grinding wheel is one among the tools that are boon to mankind. A vitrified grinding wheel includes a matrix of in-organic ceramic bond and abrasive grains are dispersed in this vitrified bond materials. In many of its industrial uses, however SIC is heated to very high temperature at which , the rate of oxidation is very significant. In this case of development new low temperature bond was developed and the mechanical properties of this bond was compared with regular high temperature bond by hardness test.

This study is intended to observe the performance of existing refractory bond and newly developed low temperature bond used in the particular grade of grinding wheel. The performance of the bond in the grinding wheel was compared to standard bond in three testing methods such as grinding test, bursting speed and young's modulus.

EXPERIMENTAL WORK

The ingredients of raw materials were mixed at different proportions and optimized by fusion test at low temperature. Using this newly prepared bond in the wheel of particular grade vitrification was successfully done at a much lower temperature. The new bond characteristics were tested by fusion test, hardness results and TGA results and were compared to standard high temperature bond.

Wheel was making with low temperature bond fired at low temperature. It was compared with regular high temperature bond wheel by following tests.

- Density
- Bursting speed
- Performance
- Young's modulus

RESULTS AND DISCUSSIONS

Comparative study of low temperature bond with standard bond:

FUSION TEST RESULT

Standard bond dimension: 9.04x9.05x9.11
Low temperature bond: 13.2x13.11x7.11

From the (table 1) results of hardness value of low temperature bond was nearly same as the standard high temperature bond it was determined by Vickers micro hardness tester.

Table – 1

Std High temperature bond				Low Temperature Bond			
200gf	300gf	500gf	1000gf	200gf	300gf	500gf	1000gf
922	1032	753 (crack)	Busted	922	1021	841(crack)	Busted
896	1022	1187	Busted	912	985	1185	Busted
988	1044	1168	Busted	878	1002	1142	Busted

Loss on ignition of low temperature bond was same as the standard high temperature bond as shown in TGA graph. From these results we can conclude the strength of the wheel will not going to be decreased with low temperature bond.

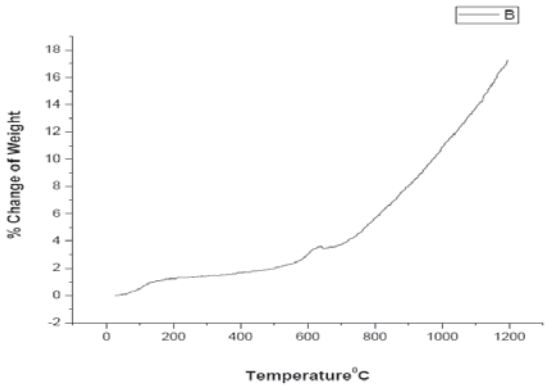


Fig 1 Low temperature Bond

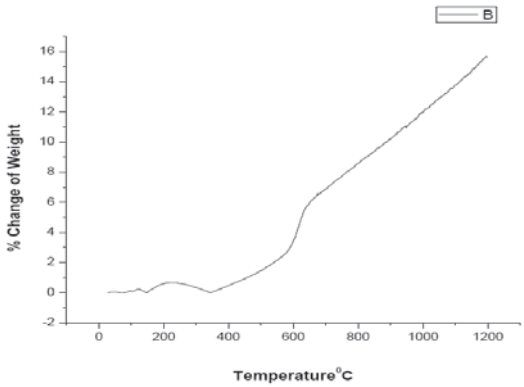


Fig 2 High Temperature Bond

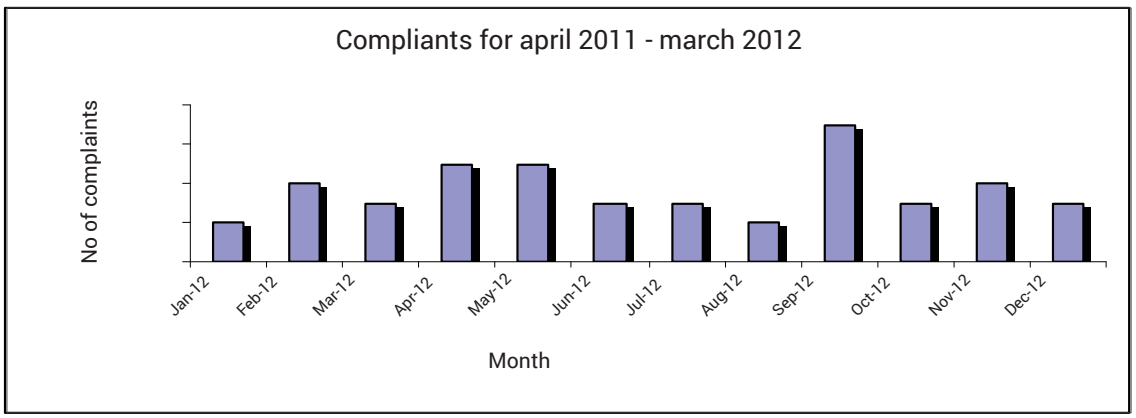
Table – 2

Temperature	Wheel Size	YM	Density	GR	MRR	GE	S.E	B.Speed
Std high temp	320*17*127	34.5	28.8	0.22	20.07	0.58	0.39	126
Low temp	320*17*127	38.2	28.2	0.42	23.82	13.7	0.04	130.6

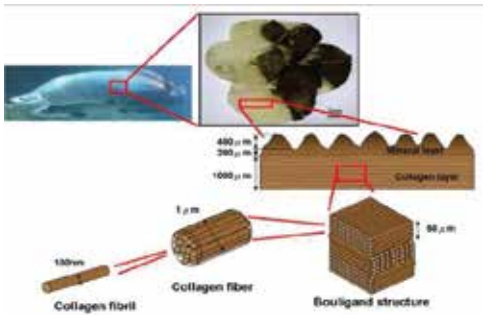
ADVANTAGES

1. Less Fuel consumption
2. Less Time consumption
3. Reduce firing defects grinding wheel

Q - WATCH



NEWS FROM SCIENCE WORLD



Fish insights from the structure of the arapaima's scales could provide ideas for engineering new materials, such as flexible ceramics. The structure of the scale is combination of a mineralized outer layer with a clever and tough internal design. This tough inner layer has collagen fibers stacked in alternating directions "like a pile of plywood." Each scale has an exterior that is "corrugated."Ceramic surfaces of constant thickness are strained when forced to follow a curved surface. The corrugations allow the scales to 'be bent more easily without crack. The arapaima's design should serve as bioinspiration for lots of things that need to be both tough and flexible, for example body armor, fuel cells, insulation and aerospace designs.

TO MEET OUR PEOPLE

MR K. KAMALAKANNAN (PLANT HEAD)

Quick – witted, friendly and always with a ready smile, Kamalakannan the Plant Head comes across as a team playing and a very accessible leader from last 15 years. He was excellently played 18 years in CUMI, which he left for the lack of challenge in that job. Kamalakannan just ratted off words like flexible, hard working, multi skilled and good human relationships. A model plant under a model leader.

MR. SUMAN PAL (DGM, TECHNOLOGY)

Suman joined us in last December ' 2011. He is a Ceramic Engineer with a PGDMM, having 23 years of Industrial Exposure to many fields in Ceramics like Refractories and Super Refractories / Whitewares Ceramic Frits, Glazes, / Abrasives / Bio-Ceramics, Nanotechnology in Cos like Carborundum Universal, GE, IFGL, Tata Refractories, His contribution is there in R&D, Techinal & QA in terms of developing new products, new bonds, technology/process and complaint management system.

VOLUME – 1 (APRIL 2012 TO JUNE 2013) PREPARED AND ISSUED BY MR. SUMAN PAL