

EK-38 Ömer Halisdemir Üniversitesi Sanayiye Yönelik Ar-Ge Çalışmaları

1) Projeler

	Proje Adı	Firma	Başvuru
1	Gönen Madencilik Agrega (Bazalttaşı) Üretim Kapasitesinin Geliştirilmesi	Cemal Gönen Madencilik Ltd.Şti.	KOSGEB Kobigel (başvuru yapıldı)
2	Plastik Sektöründe Poliolefin Bileşiklerde Kullanılacak Mikronize Kalsitte Optimum Tane Boyutu ve Kaplama Oranının Tayini	MERTAŞ A.Ş.	KOSGEB Ar-Ge İnovasyon (başvuru yapıldı)
3	Dikey Karıştırmalı Değirmende Mekanokimyasal Yüzey Modifikasyonu ile Kaplı Kalsit Üretilmesi ve Ürün Özelliklerinin Geliştirilmesi	NIĞTAŞ Ltd.Şti.	TÜBİTAK 1501
4	Plastik Sektöründe Poliolefin Kompaundlarda Daha Fazla Mikronize Kalsit Katkısına Olanak Sağlayan Stearik Asit Dışındaki Yüzey Etkinleştiricilerin Araştırılması	NIĞTAŞ Ltd.Şti.	TÜBİTAK 1501
5	Stearik Asidin Atık Meyve Tohumlarından Elde Edilmesi ve Mikronize Kalsitin Yüzey Modifikasyonunda Kullanılması	Anadolu Mikronize A.Ş.	TÜBİTAK 1501

2) Firma Ziyaretleri

Aşağıda belirtilen firmalar ziyaret edilmiş, birlikte çalışılabilecek konular tespit edilmiş, konuların bir kısmı yüksek lisans tez çalışması şeklinde bir kısmı da proje çalışması şeklinde yürütülmesine karar verilmiştir. Ziyaret edilen firmalar şunlardır:

- MİKRON'S Mikronize Mineral Endüstrisi Ticaret A.Ş.
- Anadolu Mikronize San. ve Tic. A.Ş.
- MERTAŞ A.Ş.
- NIĞTAŞ Ltd.Şti.
- HTO Mineral Bentonit A.Ş.



MERTAŞ A.Ş. ziyaretinden görüntü (18.04.2016)

3) NÜHAM- HTO Mineral Bentonit A.Ş. ortak AR-GE işbirliği toplantısı:

NÜHAM bünyesinde NÜHAM- HTO Mineral Bentonit A.Ş. ile HTO Mineral Bentonit Madencilik faaliyet alanı kapsamında, bölge endüstriyel hammaddelerin endüstriye kazandırılması için yapılabilecek ortak çalışma alanları belirlemek için HTO Mineral Bentonit A.Ş.'de toplantı yapılmış ve toplantıdan sonra Niğde ilinde işletmede bulunan maden işletme sahası gezilmiştir. Toplantı oldukça verimli geçmiş ve aşağıda belirtilen kararlar alınmıştır.

Toplantı yeri: HTO Mineral Bentonit A.Ş. Saruhan Mahallesi Doktor Hakkı Altan Cad. Elif Apt. No:10/B /NIĞDE (23-03-2016)

Toplantıda bulunan NÜHAM tarafı:

Doç. Dr. Ahmet BİLGİL (NÜHAM Müd.)

Doç. Dr. Orkun ERSOY (NÜHAM Yönetim Kurulu Üyesi)

Toplantıda bulunan Firma tarafı:

Hamit TİLKİLİ, Firma Sahibi

Regaib TAŞDEMİR Maden Mühendisi (İşletme sorumlusu)

Fabrika Müdürü Sn. Hamit TİLKİLİ'den firma hakkında ayrıntılı bilgi alındı. Firmanın İnşaat sektöründe ve madencilik sektöründe faaliyet yürüttüğünü Madencilik sektöründe halihazırda Çimento fabrikalarına hammadde tedarik ettiğini ve şu anda firmada 15'e yakın çalışan olduğunu belirtmiştir. Ayrıca madencilik sektöründe ihracata yönelik çalışmalarının devam ettiğini bu hususta yoğun dış taleplerin olduğunu belirtmiştir.

Tesisler gezildikten sonra yetkililerle yapılan görüşmelerde şu sorunlar tespit edilmiştir:

- 1- Maden sahasında konumdan konuma madenlerin kimyasal yapılarında farklılıklar gözlemlendiğini, bazen yüksek oranda tuf içerdiğini, dolayısıyla maden sahasında farklılıklar olduğu belirtilmiştir.
- 2- Çimento fabrikalarına gönderilen hammaddede homojenlik arandığını ve hammadde sürekliliğinin önemli olduğunu, bazen farklı kimyasal yapıda hammadde gittiğinde sorun yarattığı, homojen şekilli olmasının üretim tesisi parametreleri için tercih edildiği,
- 3- Hammaddede silis oranının standartlarda % 90 larda olması gerekirken bazen %70'lere düştüğü ve sorun oluşturduğu,
- 4- Çimento üreticilerinin haricinde de farklı alanlarda kullanılması için detaylı kullanım alanlarının belirlenmesi gerektiğini belirtmiştir.

Araştırılması gereken konu başlıkları şu şekildedir:

- 1- Çimento fabrikalarına gönderilecek ürünün homojenliğinin sağlanması için maden sahası alanında detaylı bir incelemenin yapılarak maden yatağı kimyasal yapı haritasının çıkartılması
- 2- Maden işletme alanında önemli bir kısmının %99,9 oranında silis içerdiğini silisin özellikle güneş panellerinin üretiminde kullanılıp kullanılmayacağı hususunda çalışması yapılabileceği,
- 3- Maden yatağında özellikleri değişen endüstriyel hammaddeler için yapı sektörü için kullanım alan çalışması yapılabilirliği,





HTO Mineral Bentonit A.Ş. saha ziyaretinden görüntüler

Sonuç;

- 1- Yakın tarihte tekrar bir araya gelerek, teknik konular ve araştırma alanları netleştirilecektir.
- 2- Bitirme tezi, yüksek lisans tez konularının yukarıda bahsedilen sorunlara çözüm sağlayacak konulardan seçilmesi sağlanacaktır.

4) Akademik Çalışmalar

Uçak gövdesinde kullanılmaya hazırlanan volkanik kül içeren polifenilin sülfür kompozitlerin üretilmesi, termal, mekanik ve aşınma özelliklerinin tesbiti (Kocaeli Üniversitesi Sivil Havacılık Yüksek Okulu ile ortak)

Possible Use of Volcanic Ash as a Filler in Polyphenylene Sulfide Composites: Thermal, Mechanical, and Erosive Wear Properties

Egemen Avcu,¹ Onur Çoban,² Mustafa Özgür Bora,² Sinan Fidan,² Tamer Sinmazçelik,³ Orkun Ersoy⁴

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³Kocaeli University, Mechanical Eng. Dept., 41380 Kocaeli/Turkey

⁴Nigde University, Geological Eng. Dept., 51245 Nigde/Turkey

It is a common practice to use particle materials as fillers to improve engineering properties of polymer composites and to lower the cost of final products. There is an obvious cost advantage of compounding volcanic ash (VA) in polymers, either to replace traditional fillers. This study is concerned with thermal, mechanical, and erosive properties of VA-filled polyphenylene sulfide (PPS) composites. Composite samples containing VA particles at various concentrations (0, 2.5, 5, 10, 15, and 20 wt%) were manufactured by twin screw extruder and investigated by thermogravimetric and dynamic mechanical analysis methods. Erosive wear properties were investigated by performing solid particle erosion tests at 30° and 90° impingement angles. The mechanical properties such as flexural strength and modulus of unnotched samples and residual strength and modulus of notched composite samples were determined by three-point bending tests. Results show that thermal, mechanical, and residual mechanical properties of the PPS composite were significantly improved by adding VA, although erosion resistance was decreased markedly. It was concluded that VA can be used as a reinforcement in PPS composites to improve thermal and mechanical properties and to reduce the cost of the PPS composites. POLYM. COMPOS., 00000-000, 2014. © 2014 Society of Plastic Engineers

INTRODUCTION

Volcanic ash (VA), which is deposited at the surface during volcanic activity, is readily accessible and has the advantage that it can be economically mined, with

enormous benefits of low cost and limited negative environmental impact compared with traditional open pit quarry-type clay mining [1]. VA particles and fly ash are pozzolanic materials, because of their reaction with lime (calcium hydroxide) liberated during the hydration of cement. These materials can also improve the durability of concrete and the rate of gain in strength [2]. VA, known as mesoporous material, which usually has high specific surface area, significant porosity, and an appropriate pore structure, which enhances their ability to control the humidity in the environment. The main component of the weathered VA soil is allophane. With specific properties, allophane can be used to produce porous ceramics that are low-cost with well-defined porosity, low density, and high thermal stability [3].

Hossain and Lachemi [2] reported that the meaningful use of volcanic materials can not only transform them into natural resources to produce low-cost construction materials but also lead to sustainable development. VA is used as a filler in polypropylene and rubber composites to reduce cost and achieve a cloth-like appearance by automotive engineers. Trinidad et al. [4] investigated mechanical behavior of ceramic and polymer composites reinforced with VA. They manufactured VA-reinforced thermoset matrix (epoxy resin and polyester resin) composites and reported that VA can be used to manufacture composite materials that can be used in structural and mechanical applications, or as a technological value in the industrial sector to make components and coating of pieces [4]. On the other hand, mechanical properties of VA-reinforced thermoplastic composites have not been reported yet. Furthermore, thermal and erosive wear properties of both VA-reinforced thermoset and thermoplastic composites have not been studied in literature.

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POLYMER COMPOSITES—2014

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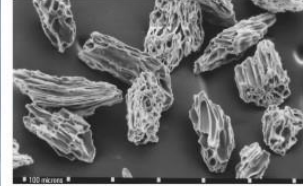
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INTRODUCTION

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POLYMER COMPOSITES—2014

Diyatomitin tarım zararlılarını öldürmedeki potansiyelinin araştırılması

Insecticidal Potential of Native Diatomaceous Earth against *Strophilus granarius* (Coleoptera: Curculionidae)

Muhammed SALİM, Muhammed Nadir NAQQASHP, Orkun ERSOY, Esra ÇETİ and İhsan GÖRCEK
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INTRODUCTION The granary weevil, *Strophilus granarius* L. (Coleoptera: Curculionidae) is a major pest of stored rice in many developing countries. They attack wheat, corn, oats, rye, barley, sorghum, dried beans and cereal. It causes economic losses and seed viability. Diatomaceous earth (DE) is a natural product. Because it can cause damage to insect cuticle, it has been used as insecticide. The nanoparticles of DE can be applied directly to the grain. Advantages of these nanoparticles include: 1. Non-toxic to mammals, 2. they can be easily removed from the product during processing, 3. they are very effective against a wide range of pest species, 4. it is a physical control method without residual concern, and 5. no insecticide resistance occurred.

OBJECTIVE

- Insecticidal potential of local diatomaceous earth against *S. granarius*
- Weight loss in treated grains due to *S. granarius*
- Adult emergence after given period of time

MATERIALS AND METHODS

- The insecticidal potential of DE, obtained from Niğde Province, Turkey, was tested against adults of the *S. granarius* under laboratory conditions (25°C, 60-65% RH). DE was applied to wheat grains at rates of 0.18, 0.25, 0.30, 0.45, 0.75, 1.00, 1.50 and 2.00 g/kg. Adult mortalities were recorded after 7, 14 and 21 days.
- Grain weight loss was also determined after 21 days.
- The grains were also observed for offspring adult emergence for a period of 15 days.

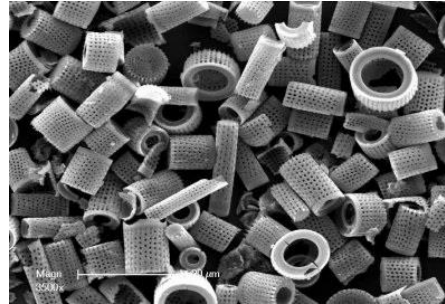
RESULTS

1. Higher mortality were observed with increasing dosage and length of exposure. Significantly higher mortality (89.75±3.50%) after one week occurred in grains treated with the highest dosage (2.00g/kg). At the highest dosage (2.00g/kg), the mortality reached as high as 100% after 2 weeks, while the lowest significant percent mortality (11.64±3.94) was recorded in the control one week after exposure and only increased to 3.53±0.96% after 3 weeks.
2. A significantly higher percent weight loss (7.2940%) was found in the control, while no weight loss was observed in grains treated with the highest dosage (2.00g/kg).
3. More than 99% reduction in adult emergence was recorded at dosages of 1.50 and 2.00 g/kg. Conversely, the highest number of adults emerged at a dosage of 0.18 g/kg and in the control (11.67±1.12 and 11.83±1.66 adults, respectively).

CONCLUSION

1. DE could effectively control *S. granarius*.
2. Similar studies can be carried out for other stored-product pests.
3. For a comprehensive understanding of the long term effect, it is necessary to expand the present study based on life table. Only then can we predict and extend the shelf life of grains.

References:
 Turner, D. I. 1978. Probit analysis. Cambridge University Press, Cambridge.
 Chi II (1997) Computer program for the probit analysis. http://40.120.197.173/ecology/



Yerli hammaddeler kullanarak dış duvar kaplama panellerinin yanmazlık özelliklerinin artırılması



iv.Kalsit minerali kullanarak mühendislik kompozitlerinde kullanılmak üzere lifsi minerallerin sentezi

