



UZUNOĞLU FIRE BRICK

UZUNOĞLU FIRE BRICKS PRODUCTION MINERAL IMPORT & EXPORT

1) HISTORY

1) Our Company **UZUNOĞLU ATEŞ TUĞLA İMALAT SANAYİİ TİCARET İTHALATVE İHRACAT** , has been taking place among the most prominent Turkish Companies involved in refractory field.

The activities of our Company , under the trade title of **UZUNOĞLU SERAMİK VE ATEŞ TUĞLA** , were started in Ankara in 1968.

The plant , on the coming dates , has also entered in the production of boilers and rendering support services.

With a view to meet the demands of refractory market which recorded a progress in the course of 1980s, this Company has succeeded to transfer its activities towards the medium and heavy industry fields. By setting up a factory at in the year 1987, it has been possible for it to enlarge the scope of heavy industry activities , and also improve its technological capability for the modern facilities located in the organized industrial zone , it is presently conducting its production activities through this center while its marketing activities are being carried out by its center located in Ankara.

The production capacity of our Company according to its plants , is 7.000 - 12.000 tons/year for the shaped refractories and 12.500-35.000 tons / year for the monolithic refractories.

UZUNOĞLU ATEŞ TUĞLA has been presently rendering its services in various fields such as iron-steel, non-ferrous metals (aluminum, galvanize,zinc,lead,etc) earth products industry (cement, lime, gypsum, ceramics, bricks) petro-chemical products industry, chemical products industry, oil refinery (thermal power plants and steam power plants of various sectors) wood industry and glass industry.

CUSTOMER SERVICES

- Technical knowledge about products and applications
- Support on the selection of suitable material
- Designing of refractory installation
- Calculation of insulation details
- Determination of heating and drying regime
- Increasing undercoat performance
- Offering application and supervisory services





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UZUNOĞLU ATEŞ TUĞLA , by exchanging knowledge with its each customer one-to-one, enables the optimum cost and the selection of refractory which is considered to be most appropriate for the enterprise.

2)QUALITY POLICY

During the course of production process , after checking thoroughly all quality factors, the control parameters and standards have been developed. These control systems are kept under the permanent recording phase.

The production phases such as the intake of raw materials, preparation of blends, shaping, drying and baking of bricks and final checks before the packaging cycle, are being handled regularly.

Our Company, in the year 2012, has obtained an ISO 9001 Quality Certificate. Our company, in the manufacture of high quality Fire Bricks and grouts, performs chemical and physical analysis in the world-class. The x-ray spectrometer used in our laboratory has been calibrated and x-ray spectrometer is being used per 20 seconds by using a high sensitivity device making qualitative and quantitative analysis. If the previous is made, the chemical analysis are being subject to new wet chemical analysis.

For the physical analysis, the endurance test is conducted in two same procedures as measured samples and free samples.

All manufactured products are analyzed for raw material mixture and products are tested at the end of manufacturing.

All of the physical and chemical analyses are being made in our company, and analysis of new products and manufacturing Quality Assurance Works continue.

3) REFERENCE LIST

Since our company is working with the principle of following up technological and industrial progresses closely, the sectors and companies which are primarily worked with are presented below

3/1) Turkey Iron Factories

- İsdemir A.Ş Erdemir A.Ş
- Erdemir A.Ş

3/2) Turkey Iron & Steel Mills

3/3) Turkey Thermal Power Plants

- Kangal Thermal Power Plants
- Seyit Omer Thermal Power Plants
- Kütahya Thermal Power Plants etc.





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3/4) Turkey Petroleum Refineries

- Kirikkale Petroleum Refinery
- Izmir Petroleum Refinery
- Izmit Petroleum Refinery
- Batman Petroleum Refinery, etc.

3/5) Turkey Trent Manufacturing Indusrty

- Tüdemsas DDY Factories
- Tüdemsas High Foundry Plant

3/6) Uçak Sanayi A.ş

- Döküm İmalat San. A.ş
- Azerbeycan Uçak San. A.ş

3/7) All Manufacturing Foundry Collection Plants Across Turkey

3/8) All Lime Factories Across Turkey

3/9) Asphalt Manufacturing and Furnaces Across Turkey

4) ÜRÜNLER / PRODUCTS

SHAPED PRODUCTS

- Kieselghur and Fireday (Chamot) insulated refractory bricks whose operating temprature varies up to 1350 °C
- Acid and abrasion resistant semi-silica bricks
- Fireday Quality 35 to 50 grade Alumina Bricks,
- 51-85 grade high Alumina Bricks

Be brought to finished product warehouse via forklifts on pallets.

2- Each palet will be weighted separately on the weigh in the finished product warehouse in accordance with the standards and weighing results will be written on labels which will be posted on the palet.

3- Each palet weighted will be registered by the scale operator and this information will be transferred to related page by the warehouse officer fort he purpose of tracking the be shipped to the related company.

4- Circled and stretch film coated pallets will be taken to warehouse stock area to be shipped to the related company.

5- Insulated bricks will be stacked maximum 4 pallets on each other.

6- Grouts will be stacked maximum 2 pallets on each other.

7- Products will be placed suitable locations as to be collected according to their usage sectors, gaps will be left between pallets to read information on pallets.

8- All bricks and grouts expected to be left in stock for a long time will be stored to covered warehouse area.

9- Insulated bricks and grouts will definitely be stored in the covered storage.





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L- Packkaging Operatios

1-Unless otherwise specified in the order, bricks will be stacked on wooden pallets with 80x120 cm or 60x90 cm regularly. 2- Pallet height in Standard bricks will be maximum 85 cm, and in insulated bricks, it will be 105 cm. 3- Insulated bricks will be placed in carton boxes on wooden pallets. 4- Grouts will be placed in graff bag or bigbag as per the product in it. It is placed in cage palet with 80x120x110 cm sizes in bags. 5-Pallet weights, unless otherwise specified in the sal esip issued in accordance with the contract, will be maximum; 5.1-200 kg for high alumina bricks. 5.2-1500 kg for fireclay bricks. 5.3-1200 kg for fireclay instulated bricks. 5.4-650 kg for Kieselghur bricks. 6- On each weighted pallet, the LABEL containing information on

6.1- Owing company, 6.2- Pos no, 6.3- Quality, 6.4- Number of items, 6.5- Weight and 6.6- Production date. Will be posted. 7- Grout palltes weighted and labelled are taken to the stock are by wrapping with to layers of stretch film to protect from outer impacts. Brick palettes are taken to stock are as 3' circles put longitudinally and transversely for those to be shipped via wagon; Circled pallets will be wrapped in a 2-layer strech film. M- Loading and Delivery Operations

1- Materials with packaging completed are taken to the loading (stock) area 2- Under the terms specified in the contract, loading shall be made upon vehicle loading order from marketing directorate either to vehicles sent by the customer or the vehicles provided by our company. 3-Forklift operators shall move slowly while loading materials to trucks , they absolutely shall not make speed. No shock shall be responded while moving. 4- Pallets shall be placed slowly, not dropped roughly while loading. 5- No load over the capacity shall be put on the vehicle. 6- Bricks and grouts shall be loaded as 2 pallets maximum. 7- Loading control personnel shall make loading in accordance with the loading lis to be given by the storage officer, incorrect loading in accordance with the loading list to be given by the storage officer, ,incorrect loading shall be avoided. 8- No vehicle shall be allowed without covering the canvas as per article 7 of the packaging instructions, so the safety of loaded product shall be provided during the shipment. 9- All sales of products shall be ex-works factory area or storage area. 10- Products ready to be shipped are delivered upon the customer's approval and acceptance 11- Any products which are not paid to our company's account shall not be shipped in any way; no shipment shall be made before the payment is completed even if partial payment of failure to make payment.



UZUNOĞLU FIRE BRICK

N- INSTRUCTIONS FOR USE.

INSTRUCTIONS FOR USE BRAID MORTARS which is used for braiding of Alumina Silicate Refractory 0- Provided ready-to-use by adding water in 0.063 mm chamotte, or 50 kg or 1-ton bigbags, provided for service as packed in craft paper bags.

PRECAUTIONS FOR USE : - Breeding mortar should be mixed thoroughly before as dry. – Well mixed mortar (until the consistency to stick on the surface of brick) is added clean water slowly while mixing process should continue. – The prepared mortar should be placed between bricks with.

PREPARATION

The amount of water to be used during the preparation of cast monolithic materials changes according to the materials's property.

Amount of water to be used:

Dry materials in weight:

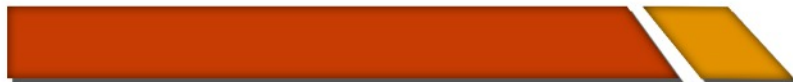
- 5-7% in low cement (with vibrations)
- 7-14% in normal cement
- 35-42% in insulated casting refractory

Water, is the leading factor that directly affects the performance of casting refractory material. Therefore , water amount should be adjusted carefully.

Excess Amount of Water:

Use of water more than necessary shall increase the freezing time of casting refractory materials, and shall have very negative effects on porosity, thus the strength during drying and cooking. The most important among these negativness is the formation of large cracks.

5- FAALİYET ALANLARI/FIELDS OF ACTIVITY a- Iron and steel industry b- Cement and lime industry c- Glass industry d- Energy e- Engineering services / engineering services – Consulting of refractory selection and recommendation – Technical support on specifications – Manufacturing drawings – Design of process furnaces – Drying programs – Commissioning / operating instructions 8- **FACTORY A-AREA** Our Factory has an area of twenty thousand square meters with three thousand and five hundred square meter of covered area and laboratory and administrative building. B-**CAPACITY** Our company has facilities with production capacity of 7-12 thousand tons/ year refractory brick 12 thousand 500-35 thousand tons / year of manufacturing the grout. When needed, the capacity of our factory may be increased in triple size.





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C- EQUIPMENT Our factory has grinding units and five automation system presses and three cooking unit in various capacities and also a monolithic preparation unit. D- Number of employees 1) Four- management administrative staff 2) Three engineers 3) Ten foremen 4- Twenty-three employees , F- Laboratory / Device Information In our company, quality control devices are calibrated which are high sensitivity devices with low error margin. G- TESTS Raw materials taken to our company are processed through chemical analyses and the physical and chemical tests are performed in the laboratories of our plant. These processes are described in detail in the quality control article H- IMAGES I-R&D Our company spends 4% of the annual budget to the R&D studies. It is the only manufacturer of several classes of refractor products in Turkey J- FUTURE GROWTH Our company is working with two Turkic Republics and three Arab countries, other than Turkey, and continues its wide range of Works in order to have more share in the manufacturing and marketing of refractor through all world by strengthening these Works. K- Warehousing and Storage Operations 1- Products after being produced and passed through quality control will. Shaped refractories are being built by applying the process of dry, semi-wet pressing and the methods of table and extrusion.

Shaped refractories , according to their utilization purposes, are being built by the contribution of zircon, phosphate, barium oxide, borax, etc.

Refractory materials constitute a raw material inlet to all these industries, but become a very important auxiliary operating material. As known, since refractory materials are currently the most heat resistant materials in the world, they are used in the protection of furnaces and facilities where high temperatures occurs for above industries and for many more and various processes are performed. Without these, the manufacture of many items we use in daily life would be impossible.

After stating the importance of refractory materials , we would like emphasize the contribution to the economy of the country by listing the sectors they are being used.

- | | |
|-----------------------------|---|
| 1- Iron & steel industry | 8- Cement industry |
| 2- Foundries | 9- Lime industry |
| 3- Aluminum industry | 10- Energy production plants |
| 4- Raw materials | 11- Ceramics industry |
| 5- Refineries | 12- Any kind of boiler and furnace producing plants |
| 6- Petrochemical facilities | 13- Glass industry |
| 7- Chemistry | |





UZUNOĞLU FIRE BRICK

As seen, with area of activity covering nearly all industries of the country , it shall continue with its activities with meticulously, with new products and keeping customer satisfaction primary as before.

MONOLITHIC PLASTICS

Max. 2 mm thickness and they should be bonded to each other. – This thickness, which will be joint upon bonding, should always be avoided to be more than 2 mm.

APPLICATION METHODS : Dipping, Trowel, brush or spray application methods are available. The most commonly used are trowel and dipping methods are available. The most commonly used are trowel and dipping methods. 1. Trowel Method : after preparing brick for braid in one hand, sufficient amount of mortar is taken with other hand, applied to braiding section of the unit. The brick rate held ready at hand is put on this mortar without losing time. Water mixing ratio :20-25% at 39%55 A12O3. Brick should not be moved after being put in the braid : especially when time passed, it should never be moved. If the brick with dry mortar is required to be moved, the mortar should be cleaned thoroughly and the same procedure should be repeated with new mortar. 2. Dipping Method : Brick to be put on braiding is held by hand in suitable position. The mortar prepared as explained above is taken to a container. The brick is dipped to his mortar (to stick sufficient amount of mortar on the bottom surface). It is put in place without losing time. Water mixing ratio: 20-25% at 39-55% a1203, 45-50% at 55-80% A12O3

INSTRUCTIONS FOR USE OF MONOLITHIC REFRACTORY Castable refractory (fireconcrete) is composed of sinter and specific binding materials. They are named according to binding type (hydraulic ,chemical,etc.) In general, special binding materials and sinter are mixed very well during the production. Especially casting grouts required for long stocking are given in the same bag with sinter and binder, but packed seperately in accordance with request of the customer in order to avoid disruption of binding feature by being impacted from moisture. During the use of these products packaged seperately in a single bag, it should be considered to use in the same ratio based on the amounts within the bag and mixing these two materials very well.

9-SUBSIDIARIES AND AFFILIATES A- UZUNOĞLU TEKNİK ATEŞ TUĞLA İMALAT SANAYİİ İÇ İTHALAT VE İHRACAT B- MINING TÜRE MINING Fire brick , refractory material , raw materials minig (TÜRE MINING)





UZUNOĞLU FIRE BRICK

C- LABORATORY RAY NEW AND HIGH TECHNOLOGIES, spectro-chemical heat meters, all element estimation devices and electro-meteology devices RAY NEW AND HIGH TECHNOLOGIES D FOREIGN TRADE UZUNOĞLU IMPORT AND EXPORT
E- CHEMICALS DESTAN SANAYİ TİCARET CHEMICALS PRODUCTION AND TRADE

(Heat ora ir-cured forning supplies)

CONCRETE (CASTABLE (bulk material)

LOW CEMENT VIBRATION APPLIED CONCRETE

SPRAY AND SURFACE APPLIED MATERIALS

INSULATION REFRACTORIES

BONDING GROUTS

SHAPE REFRACTORIES SPECIAL TO MONOBLOCK STRUCTURE

REFLEKTOR CHIMNEYS FOR NATURAL GAS AND ALL BURNERS

- Concretes of classical, medium and low cement
- Advanced Technology Concretes; Concretes of Ultra Low Category Cements (ULCC), self consolidating (SLF+VIB)
- Injection Grouts
- Insulation Concretes
- Plastic and forged mortars (ceramic and chemical bonded)
- Braided mortars and plastering mortars for refractory (dr yor ready to use)
- Precast Forms

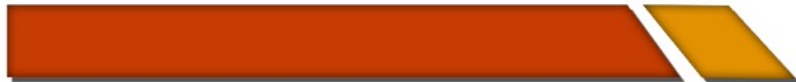
In order to streghten all concrete buildings, it is allowed to use steel and polyfiber components.

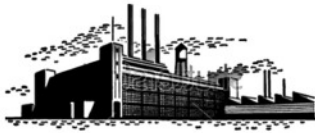
Our company, depending on the purpose of utilization, has been drying its specially shaped precast products under the temprature of 400°C and sinterising them under high temperatures, and then offering the to its customers.

UZUNOĞLU ATEŞ TUĞLA, in the course of monolithic applications, has been suc-cesfully applyng the steel and ceramic anchors.

INSTRUCTIONS FOR USE OF MONOLITHIC REFRACTORY

The mixture consisting of sinter and special bonding materials is bagged by mixing thotoughly during the manufacture. In general, bonders and addivites are put in the same bag. Bags ar efor 25 or 50 kg. If monolithic materials (ready fire-clay) are required for long stocking, the bonder and sinter materials should be put in sepearate bags within one big bag in order not to be impacted from the en-vironment. It should be cared to use in the same ratio based on the amounts within the bag and mixing these two materials very well.





GENERAL OVERVIEW OF REFRACTOR MATERIALS

Technological definition of refractor, meaning "Obstinate" in general, can be made as "resistance through high temperatures and physical and chemical effects of gas, liquid and solid bodies at high temperatures" As can be understood hereon materials are used at all thermal treatment kilns our stoves and various heavy industry kilns.

Kiln type, manufacturing technology and the process used in them according to the type of manufacturing change and each process requires different type and quality of refractor. Therefore many types of refractors are manufactured. Considering this, it is specified on the British Standard numbered 3446, published in 1962, that there were 52 different types of refractor.

CLASSIFICATION OF REFRACTORS

Although abovementioned British Standard says that there were 52 different types of refractor, it doesn't give any classification for those. It is really difficult to classify the refractors, as criteria, to be considered for such a classification, varies. Because there are so many criteria for consideration and some classes are very close-set in many classifications.

To provide a certain idea regarding refractors in spite of those problems, four different classification are shown hereinbelow.

CLASSIFICATION OF CHEMICAL STRUCTURE

- | | |
|-------------------------------|---------------|
| 1-Silicic Bases | (quartz) |
| 2-Alumina Silicates | (shamot) |
| 3- Magnesium Bases | (magnezite) |
| 4- Cromite Bases | (cromite) |
| 5- Carbon Bases | (graphite) |
| 6- Zircon Compounds | (zirconoxide) |
| 7-Carbide, silist and nitries | |
| 8- Other Oxides | |

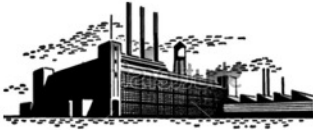
Main substance, which gives refractivity is based as criteria in this classification.

CLASSIFICATION OF CHEMICAL CHARACTER

- | | |
|---------------------|-------------|
| 1-Acidic Refractors | (silica) |
| 2-Neutral | (cromite) |
| 3-Basic Refractors | (magnazite) |

This classification is specifically important for metallurgy industry. Refractor should be chosen in accordance with chemical character of the slag, which would arise in kilns of mentioned industry. Otherwise refractor will easily face with corrosion.





UZUNOĞLU FIRE BRICK

CLASSIFICATION OF RAW MATERIAL ORIGIN

- 1- Natural refractors
- 2- Synthetic refractors

Some refractors like Berylliumoxide silicium carburet , are manufactured as only synthetic and some as both synthetic and natural like in magnesites.

CLASSIFICATION OF POINT OF FUSION

- 1- Normal service refractors
(Point of Fusion is between 1580-1780°C)
- 2- Heavy service refractors
(Point of Fusion is between 1780-2000°C)
- 3- Super service refractors
(Point of Fusion is over 2000°C)

GENERAL INFORMATION ABOUT OUR PRODUCTS

Our manufacturing is two types in the factory, dry and wet system. Strength of dry system produced bricks in cold temperatures are high and porosities are low in comparing with plastic system. Therefore they are much resistant through friction and compression.

DRY SYSTEM PRODUCED BRICKS

Chamot Bricks

a) Higher Alumina Bricks

80-85

70-75

60-65

55-60

50-55

b) Alumina Bricks

AA

A

A1

Siliceous Bricks

Silica Bricks



UZUNOĞLU FIRE BRICK

PLASTIC SYSTEM PRODUCED BRICKS

Chamot Bricks strength to higher temperatures

AA

A

A1

Semi-Silica

-High Porosity Isolate Bricks preventing heat conducting

Kyzelgur Isolation

Chamot Isolation

- Asidic Brick ,resistant through any types of acids

- Klinger Brick,resistant through friction , used in lower temperatures

Pipe Bricks, used at shaft and roads

Any types and quality of mortars required for such bricks are also manufactured here.

Those are;

HH

H

H1

Kizelgur

Acid

Silica mortars

Special mortars (upon request)

USAGE AREAS OF OUR PRODUCTS

A) Bricks :

80-75 :Iron steel melting furnaces and all high temperature furnaces,etc.

70-75 :Iron steel melting furnaces and cement processing furnaces ,etc.

60-65 :Sintering process of rotary cement kilns and Tunel kilns

55-60 Alumina :Sintering process of rotary cement kilns and Tunel kilns

50-55 Alumina :Calcification area of rotary cement kilns and Tunel kilns

AA Quality : Mixers , Boshes of blast furnace, rotary cement kilns, broiler furnaces

A Quality : Tampering furnaces, Hearth of blast furnace, base of camaras, dolomite kilns, steal kilns, calcification furnaces, etc.

A1 Quality : Bascets, aynd kids of boilers , steal furnaces, etc.

Semi silica : Cupole furnaces, casting furnaces and stoves

Pipe : As road and shaft bricks

Clinger : Any eraes, resistant to friction and not facing with high temperatures, calcifulation furances, central heating systems, etc.

Isolate : Back of each fire bricks, used for isolation

Acid : Any operations working with hot or cold asid

Silica : Tampers of steal and electrical furnaces. Glass furnaces, coke





UZUNOĞLU FIRE BRICK

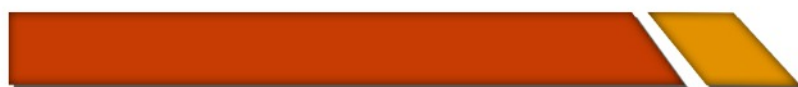
b) Morters

- HH : for bricking higher aluminas bricks
H : for bricking AA and A Quality bricks
H1 : for bricking A1 Quality bricks
Kyzelgur : for bricking Kyzelgur isolation bricks
Special mortars special places upon request
Points to be considered in choosing Fire Bricks

Bricks are manufacered in accordance with usage areas in the industry, considering their types, quality and characteristics. Therefore bricks to be used should e chosen pursuant to the usage area and should be prevented from excessive costs. In general, type and quality of the bricks, used in considering the following criteria should be chosen:

- Operational temperature
- Strenght to pressure (hot and cold temperatures)
- Heat conducting
- Getting smaller during operation
- Strenght to the effects of slag
- Strenght to sudden temprature changing
- Strenght to friction

However, manufacturing bricks, meeting same quliaty and conditioned mentioned hereinabove, is impossible, Therefore the conditionsi which are more important with respect to operational specialty, showld be taken into consideration.





UZUNOĞLU FIRE BRICKS



Description

- **GROG RAFACTORY BRICKS** : It is one of our Standard refractory bricks, and differentiates according to its formatting method and its Al_2O_3 compound content. It is used as fire brick on all kinds of ferrous and non-ferrous metal industry furnaces.

- **BAUXITE REFRACTORY BRICKS** : Our high level bauxite produced bricks are chemically bound, and is very commonly used on torpedo carts, aluminum smelting and holding furnaces, tundishes, pig iron and steel iron pots, preliminary heating and cooling regions of cement revolving furnaces, lime shaft furnaces, cast iron pots and tundishes.

- **CORUNDUM REFRACTORY BRICKS** : Our high aluminum content bricks maintain perfect resistance against flux formation due to its high density and low porosity characteristics. It is very commonly used on high temperature furnaces, bottom sections of pushing type furnaces, waste incineration furnaces, carbon black reactors.

- **SILLIMANITE REFRACTORY BRICKS** : Our bricks, which work with perfect efficiency under high thermal pressure, have a wide usage range with various firing temperatures and various type binders. It has a wide usage area on waste incineration furnaces as master material under abrasive tension and thermal shock on the furnaces resistant till 1500 C.

- **SILICONE CARBIDE REFRACTORY BRICKS** : Our special bricks, working with high efficiency, are produced with selected systems, and resistance increasing, cordierite constituents are made on binding matrix. It is commonly used on aluminum and copper industry furnaces, urban waste boiling pipes, zinc refinement, copper and zinc shaft furnaces.

- **SPECIAL REFRACTORY BRICKS** : Special refractory bricks, except our above usage areas and specifications mentioned bricks, are within our product portfolio.





UZUNOĞLU FIRE BRICKS



Kalınlık (mm)	Rulo Boyu (mm)	Rulo Genişlik (mm)	Kaplama Alanı (m ²)	Kullanım Sıc. (C)	Yoğunluk (gr/cm ³)
6	28.800	610	17,56	1260 ve 1430	96 ve 128
13	14.400	610	8,78	1260 ve 1430	96 ve 128
20	7.200	610	4,39	1260 ve 1430	96 ve 128
25	7.200	610	4,39	1260 ve 1430	96 ve 128
50	3.600	610	2,20	1260 ve 1430	96 ve 128

Description

Material Specifications

- Our products show perfect resistance and endurance against thermal shock (rapid heating and colling) under high temperatures.
- It has mininum shrinkage values on high temperatures and is not loosing isolation feature. Our products are also a good vioce isolation material.
- It is absolutely not being affected by water and water vapor from all chemicals, except Phosphoric and Hydrofluoric acid.
- They save maximum energy as they store lesser amount of heat in their structure according to fire and isolation bricks.
- It absolutely does not include asbestos.
- Our products facilitate installation and repair applications with their flexible and light structure.

Application Areas and Sectors

- It is very commonly being used in petro chemistry, cement, iron- steel, power plants, cogeneration units, casting, ceramic, glass, mosaic, vessel, automotive, enamel and household devise, thermal processing plants.

Besides;

- Protection against fire,
- On cauldron, pipe and shaft isolations,
- High temperature industrial furnaces walls, ceilings, bottoms and doors,
- For thepurpose of heat isolation and on vapor and gas turbines



Description

Usage Temperature : 1260 C

It has two different types ;

FX : 2kg

Kleber 1000 : 15 kg

Material Specifications

It is a silicate based material and resistant against 1300 C.

Fx and Kleber 1000 products are produced in form of ready to use.

Fx and Kleber 1000 are appropriate for spraying and brushing as a result of mixtures, made with a special mixer

Although drying periods are generally 2 hours, it varies according to applied thickness and application areas.

It is unfavorable to freeze products under storage conditions.

Applications areas

Ceramic fiber based all kinds of isolation materials (blankets, board, paper, felt,etc.) are attached bot to each other and refractory bricks and stainless sheet like hard materials.

Besides, it is also used as adhesive between layers for the purpose of increasing strength of the ceramic fiber modulles.

It is preferred as heat resistance increasşng adhesive material within various binding mixtures.



UZUNOĞLU FIRE BRICK

High Alumina Bricks

FİZİKSEL ÖZELLİKLER - PHYSICAL PROPERTIES							
Hacim Ağırl. B. Density gr/cm ³	Görünür Porozite Apparent Porosity %	S.B.D. C.C.S. kg/cm ² min	Y.A.R. R.U.L. [°C T _s]	Refrakterlik Refractoriness S.K.	Ter. Şok Ther. Shock 950 °C Water min.	Ter. İlet. Ther. Con. Kcal / M °C.h 1000 °C min.	Ter. Lin. Gen. Ther. Lin. Exp. %1200 °C min.
2,65 - 2,80	19 - 23	600	1550	39 - 40	30	1,8 - 1,9	0,85 - 0,95
2,60 - 2,75	18 - 23	600	1530	38 - 39	30	1,8 - 1,9	0,85 - 0,95
2,50 - 2,70	17 - 22	600	1500	37 - 38	25	1,7 - 1,8	0,80 - 0,90
2,50 - 2,65	18 - 21	550	1480	36 - 37	25	1,6 - 1,7	0,75 - 0,85
2,40 - 2,60	17 - 21	550	1470	35 - 36	25	1,5 - 1,6	0,70 - 0,80
2,40 - 2,55	18 - 20	500	1460	34 - 35	25	1,3 - 1,4	0,65 - 0,75
2,35 - 2,50	18 - 20	500	1450	34 - 35	20	1,2 - 1,3	0,60 - 0,70
2,20 - 2,45	17 - 19	450	1435	33 - 34	20	1,1 - 1,2	0,55 - 0,65

Fireclay Bricks

FİZİKSEL ÖZELLİKLER - PHYSICAL PROPERTIES							
Hacim Ağırl. B. Density gr/cm ³	Görünür Porozite Apparent Porosity %	S.B.D. C.C.S. kg/cm ² min	Y.A.R. R.U.L. [°C T _s]	Refrakterlik Refractoriness S.K.	Ter. Şok Ther. Shock 950 °C Water min.	Ter. İlet. Ther. Con. Kcal / M °C.h 1000 °C min.	Ter. Lin. Gen. Ther. Lin. Exp. %1200 °C min.
2,20 - 2,35	16 - 18	450	1420	32 - 33	20	1,0 - 1,1	0,5 - 0,6
2,15 - 2,30	18 - 20	400	1405	31 - 32	20	1,0 - 1,1	0,5 - 0,6
2,05 - 2,20	20 - 22	300	1330	30 - 31	15	1,0 - 1,1	0,5 - 0,6
2,00 - 2,20	20 - 22	300	1300	29 - 30	15	1,0 - 1,1	0,5 - 0,6
2,10 - 2,20	10 - 16	500	1280	26 - 28	15	1,0 - 1,1	0,5 - 0,6

Insulating Bricks

FİZİKSEL ÖZELLİKLER - PHYSICAL PROPERTIES							
Hacim Ağırl. B. Density gr/cm ³	Görünür Porozite Apparent Porosity %	S.B.D. C.C.S. kg/cm ² min	Refrakterlik Refractoriness S.K.	Termal İletkenlik Thermal Conductivity Kcal / M °C.h			
				400	600	800	1000
0,9-1,1	55-60	30-70	20-30	0,37	0,38	0,42	0,45
1,1-1,3	50-55	40-80	25-30	0,40	0,43	0,47	0,50
1,2-1,4	45-50	50-90	25-35	0,45	0,50	0,54	0,60
0,5-0,7	65-70	10-20	15-20	0,20	0,21	0,23	0,25
0,7-0,9	60-65	15-30	15-25	0,25	0,26	0,28	0,30
0,8-1,0	55-60	20-40	15-30	0,28	0,30	0,31	0,32



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UZUNOĞLU FIRE BRICK

Castables

FİZİKSEL ÖZELLİKLER - PHYSICAL PROPERTIES								
Hacim Ağırl. B. Density (110 °C) gr/cm ³	S.B.D. C.C.S. kg/cm ² min		Refrakterlik Refractoriness S.K.	Tane Boyutu Grain Size mm	Çalışma Sıc. Working Tem. °C	Ter. İlet. Ther. Con. Kcal / M °C.h 1000 °C min.	Ter. Lin. Gen. Ther. Lin. Exp. % 1000 °C min.	Karışım Suyu Water Req. %
	(110 °C)	(1000 °C)						
2,40 - 2,50	450	450	36	0 - 5	1700	1,6 - 1,7	0,85 - 0,95	7,0 - 9,0
2,35 - 2,45	400	300	35	0 - 5	1650	1,5 - 1,6	0,85 - 0,95	7,5 - 9,0
2,30 - 2,40	400	300	34	0 - 5	1600	1,4 - 1,5	0,80 - 0,90	8,0 - 10,0
2,25 - 2,35	350	300	33	0 - 5	1550	1,3 - 1,4	0,75 - 0,85	8,5 - 10,5
2,20 - 2,30	350	300	32	0 - 5	1500	1,2 - 1,3	0,70 - 0,80	9,0 - 11,0
2,15 - 2,25	300	250	30	0 - 5	1450	1,1 - 1,2	0,65 - 0,75	9,5 - 11,5
2,10 - 2,20	300	250	25	0 - 5	1400	1,0 - 1,1	0,60 - 0,70	10,0 - 12,0
2,05 - 2,15	250	200	20	0 - 5	1350	0,9 - 1,0	0,55 - 0,65	10,5 - 12,5
2,00 - 2,10	250	200	15	0 - 5	1300	0,8 - 0,9	0,50 - 0,60	11,0 - 13,0
2,00 - 2,10	200	150	14	0 - 5	1100	0,8 - 0,9	0,50 - 0,60	11,0 - 13,0
2,20 - 2,30	400	250	7	0 - 5	1000	0,8 - 1,0	0,50 - 0,70	10,0 - 12,0

Insulating Refractory Castables

FİZİKSEL ÖZELLİKLER - PHYSICAL PROPERTIES								
Hacim Ağırl. B. Density (110 °C) gr/cm ³	S.B.D. C.C.S. kg/cm ² min		Refrakterlik Refractoriness S.K.	Tane Boyutu Grain Size mm	Çalışma Sıc. Working Tem. °C	Ter. İlet. Ther. Con. Kcal / M °C.h 1000 °C min.	Ter. Lin. Gen. Ther. Lin. Exp. % 1000 °C min.	Karışım Suyu Water Req. %
	(110 °C)	(1000 °C)						
0,9 - 1,0	30	20	12	0,5	1200	0,5 - 0,6	0,45 - 0,55	30 - 40
0,8 - 0,9	25	15	11	0-5	1100	0,4 - 0,5	0,40 - 0,50	30 - 40
0,7 - 0,8	20	10	10	0-5	1000	0,3 - 0,4	0,35 - 0,45	30 - 40

Low Cement Castables

FİZİKSEL ÖZELLİKLER - PHYSICAL PROPERTIES								
Hacim Ağırl. B. Density (110 °C) gr/cm ³	S.B.D. C.C.S. kg/cm ² min		Refrakterlik Refractoriness S.K.	Tane Boyutu Grain Size mm	Çalışma Sıc. Working Tem. °C	Ter. İlet. Ther. Con. Kcal / M °C.h 1000 °C min.	Ter. Lin. Gen. Ther. Lin. Exp. % 1000 °C min.	Karışım Suyu Water Req. %
	(110 °C)	(1000 °C)						
2,5 - 2,8	450	400	39	0-5	1800	1,9 - 2,1	0,95 - 1,2	5 - 7
2,5 - 2,8	450	400	39	0-5	1800	1,9 - 2,1	0,95 - 1,2	5 - 7
2,5 - 2,8	500	350	38	0-5	1800	1,9 - 2,0	0,95 - 1,1	5 - 8
2,5 - 2,8	700	800	38	0-5	1800	1,9 - 2,0	0,95 - 1,1	4 - 6
2,4 - 2,7	600	900	37	0-5	1800	1,8 - 1,9	0,95 - 1,1	4 - 6
2,3 - 2,7	950	500	37	0-5	1750	1,8 - 1,9	0,95 - 1,1	4 - 6
2,6 - 2,8	1300	520	36	0-5	1750	1,7 - 1,8	0,95 - 1,0	6 - 9
2,5 - 2,7	500	500	36	0-5	1700	1,6 - 1,7	0,85 - 0,95	5 - 7



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THE USING INSTRUCTION FOR LAYING THE PAVING PLASTERS

That are used during paving of Alumina Silicate Refractors. The production technology of plaster: Is provided by adding the refractory chat that has binding qualification on the refractory material that is ground in powder grade. It is packed in craft paper bags with volumes 25 or 50 kg.

POINTS TO BE CONSIDERED DURING USE

- They must be mixed thoroughly before adding of water.
- The plaster that shall be paved over the brick up to the maximum thickness of 2 mm. Water shall gradually be added until it becomes sufficiently liquefied to stick to bricks into each other. The mixing procedure shall be continued during the interim.

APPLICATION METHODS:

The methods whose implementation is most widespread are as follow:

1.Hand Stock Method

Plaster is stick on one of the bricks that shall be layed with a hand stock and not exceeding 2 mm thickness. The other brick that is requested to be stuck is placed into said brick carefully and regularly with no time delay and thereby they are securely stuck to each other. In this method.

The percentage of water that shall be added:

For 39-55% Al_2O_3 'da %20-25 water,

55-80% Al_2O_3 'da %35-40 water should be used.

The bricks that is stuck each other with plasters certainly must not dislodge. If necessary, sticking procedure must be repeated similarly after cleaning and separating well.

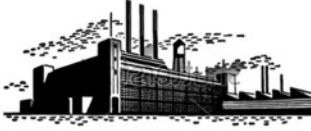
2.Layer Method:

In this method, one of the brick must be layered inside of plaster that is prepared in a tank and provide to stick on the Wall which is been paved.

The percentage of water that shall be added:

For 39-55% Al_2O_3 'da %25-30 water,

For 55-80% Al_2O_3 'da %45-50 water should be used. Again the widths of the sealings should not exceed 2 mm.



UZUNOĞLU FIRE BRICK

INSERTION

After the mixing procedure is completed the monolithic material becomes ready to apply. After the molds that are prepared according to the point of application are altered, the monolithic material (fire concrete) is poured into these molds rapidly. They are placed into the molds according to their place of application.

In the material that is inserted:

Reaction starts in 3-5 minutes time,

Casting starts in 3-5 minutes time,

The material should be kept in the minimum of 95% relative humidity. Said condition may be furnished by laying a nylon cover on it order to keep it at 35C for 24 hours.

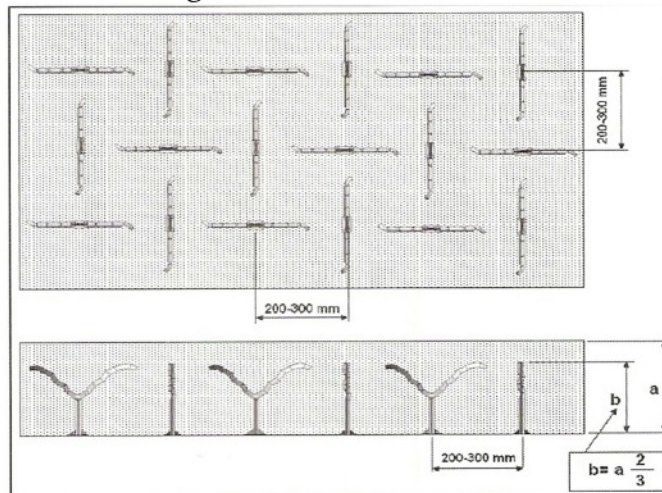
Or said environment may be furnished by spraying water on the material.

However, if it is not kept as moist, then heat shall be produced because of the reaction and the increased heat shall lead to the cracking of the concrete.

ANCHORAGE SYSTEM

An appropriate anchorage system that is compatible to the environment and that shall be located within the concrete in mobile, plain walls or floor concrete should be applied. The anchorages are made by stainless steel and in Y or V designs. The thickness of the concrete that shall be cast is 2/3 of their lengths. Their thickness may be in diameters of 6,8,10,12 etc according to the conditions of the concrete. For lower temperatures of applications, the anchorages may also be constructed by iron.

Anchors are placed in opposite and across each other with a distance of 200 and 300 mm from each other and they are attached and assembled into the iron plate either by welding or by screws. The anchorage method is illustrated in the Picture below.

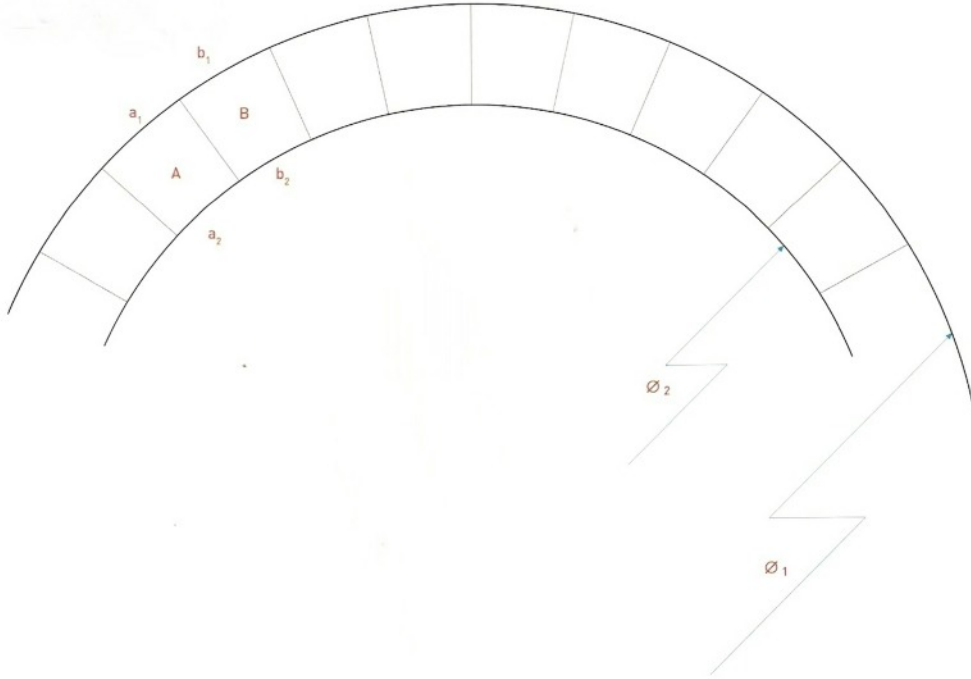


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UZUNOĞLU FIRE BRICK

RING CALCULATING FOR CONIC BRICKS



Calculation of brick number in one ring

$$a_1 \cdot x + b_1 \cdot y = \pi \cdot \varnothing_1$$

$$x = \frac{\pi \cdot [b_2 \cdot \varnothing_1 - b_1 \cdot \varnothing_2]}{[a_1 \cdot b_2 - a_2 \cdot b_1]}$$

$$a_2 \cdot x + b_2 \cdot y = \pi \cdot \varnothing_2$$

$$y = \frac{\pi \cdot [a_2 \cdot \varnothing_1 - a_1 \cdot \varnothing_2]}{[a_2 \cdot b_1 - a_1 \cdot b_2]}$$

X= Number of A brick in one ring

Y= Number of B brick in one ring

Ø₁ : Outer diameter of the ring

Ø₂ : Inner diameter of the ring

A : A bricks

B : B bricks

a₁ : Conic long edge of A brick of outer diameter

a₂ : Conic short edge of A brick of inner diameter

b₁ : Conic long edge of B brick of outer diameter

b₂ : Conic short edge of B brick of inner diameter



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Refractory material forms a raw material input within all of these industries, but has a very important operation material position. As well-known, as refractor materials are currently the highest resistant materials to heat worldwide , they are being used for protecting furnaces and plants, where various processes are implemented and very high temperature figures are obtained in the above mentioned industries and various others. Thus, it is also not possible to produce various tools and equipments, which are used by us daily.

After underlying the importance of the refractory material in this way, UZUNOĞLU shall list the currently serving sectors, and we want to underline its contributions to the country's economy.

- 1- Iron-steel sector
- 2- Smelter
- 3- Aluminum sector
- 4- Raw materials
- 5- Refineries
- 6- Petro chemistry plants
- 7- Chemicals sector
- 8- Cement sector
- 9- Lime sector
- 10- Power generation plants
- 11- Ceramic sector
- 12- All kinds of cauldron and furnace manufacturing plants
- 13- Glass industry

As can be seen, UZUNOĞLU shall continue with its marketing policy, which puts customer satisfaction to the front and its new products by means of its scrupulous activities from now on as it performed before and its interest area, which nearly covers all of the country industry.

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UZUNOĞLU FIRE BRICK

OUR PRODUCTS

ALUMINUM SILICA BASED MONOTHHLITIC

- PLASTICS
(CAST MATERIALS, WHICH HARDENS WITH HEAT OR AIR)
- CONCRETES (CASTABLE MATERIAL)
- VIBRATED APPLIED CONCRETES WITH LOW CEMENT
- SPRAY AND PLASTER APPLIED MATERIALS
- ISOLATED REFRACTORIES
- ADHESIVE PLASTERS
- SPECIAL SPAHED REFRACTORIES WITH MONOBLOCK STRUCTURE
- REFRACTORY SHAFTS FOR NATURAL GAS AND ALL BURNERS

TURNKEY REFRACTORY APPLICATION AND ENGINEERING SERVICES

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Description

CENTRAL SYSTEM NATURAL GAS HEATING SHAFTS

Natural gas is a gas mixture with unstable structure, of which internal energy level is high and including methane (CH₄) with a rate of 80 – 98 %. Around 19 % of the burning products, obtained as a result of burning natural gas, include water vapor. The thing that must be done is to remove damage, to be created on the shaft by the water vapor, condensing around 580C. In case of failure to select the right shaft, events, jeopardizing life and properties of the people and such as plaster fell off from internal and external surfaces of the shaft, white stains on the external surface of the shaft, water leakage from the base of the shaft and shaft collapse during shaft cleaning, are occurring. Shaft sections are not effective as thought during the problems, occurred during usage of the natural gas. Main problem is to maintain isolation and seal on the shafts.

SPECOFOCATIONS OF THE SHAFTS

- Refractory pipes and isolated covers with a unit height of 30 cm are easy to install due to being prefabricated.
- Refractory material is resistant against thermal shocks thanks to its structure, and cannot be deformed.
- Condensing water vapor is minimal by means of low thermal conducting isolated cover.
- Easy suction is maintained by means of smooth internal structure.
- It endures to very high temperatures (10000C).
- It is resistant against blows and vibrations.
- It does not suck water & water vapor, and does not affect from burning products.
- Prefabricated water collection chamber and discharging system are available.
- When applied into the structure, it can be perfuse without requirement for external cover.
- It is made up of natural material, and absolutely does not harmful for human health and environment.



Description

APPLICATION OF PLASTIC REFRACTORIES

The most important characteristic of the plastic materials is to get any shape due to being soft. Shortness of the application period of the plastic refractory materials compared to other refractory materials is an advantage at their application locations.

Although requested shape can be given while implementing their applications via pneumatic guns, they can also be shaved. As they are attached to their usage locations with various anchorages, they constitute a solid structure. They are also a good isolation material.

STORAGE OF THE MATERIAL

Plastic materials are packaged in nylon bags so as not to lose their moisture and within cardboard boxes. They should be kept in closed and cool places with min. +30C. If they are being kept in open air, pallets should be kept very close and they should be covered with a canvas or similar cover.

A plastic material, which is frozen during storage, can be reused. But, freezing should be thawed without disturbing its package. They can be applied in frozen form in case of emergency. But in these cases, a different hardening and sintering cure is applied. In these cases, starting temperature of the cure is 25-350C.

Heat hardened plastic materials lose their natural moisture via vaporization. Therefore, these kinds of plastics should be kept moist during their storages. A plastic, which loses its moist, become hardened and crumbles, and cause problems during application. Storage periods of heat hardened plastics generally vary between 6 and 12 months.

Storage periods of air hardened plastics are generally max. 6 months. Start of hardening on these kinds of materials is due to reaction within instead of losing their moisture.

Materials should always be checked during their storage periods.

TOOLS AND EQUIPMENTS, REQUIRED FOR APPLICATION

Manually used pneumatically operated pressing (hammering) gun with 1200 hits/min. is the main tool for plastic refractory application. Gun is preferably connected to ¾" air hose. These hoses are connected to a central air manifold, where multiple guns are used.

a-) Distribution manifold is a central distribution board, used for operation of multiple guns. When gun is broken or air hose is torn, connecting valve shall be closed and required measures can be taken.



Description

b-) Air need, required for hammering guns, is 0.648 m³/min at 90-100 PSI. If 4-6 guns shall operate simultaneously, required air shall be 4 m³/min. Longer the air hose connected to gun more air pressure needed.

PLASTIC APPLICATIONS OF SIDEWALLS

Material is taken out of its package and its layers are separated, and these layers are located side by side where they shall be used. Hammering gun is always operates with being 90° perpendicular to these layers. Pressing process continue until operator thinks that material is pressed enough. Plastic material is generally being produced 1.5 – 2 mm longer than the wall thickness, referred on the project, and used as shaving share for the purpose of maintaining smooth wall surface. After hammering the material till two anchorage line heights in general, shaving process is implemented.

PLASTIC HAMMERING VIA MOULDS

For the various shaped locations, such as arcs, burning cells, input and output gates, manhole, etc., wooden or sheet moulds, prepared according to the features of the location, are placed. Internal surfaces of the moulds should be previously greased in order not to let them to adhere. Even if one mould shall be used for multiple times, a thick lubricated paper layer should be wrapped onto the lubricant, applied to the mould, and this should be re-greased.

De-installation of moulds is optional. But prior to passing to heating cure, they should be removed after losing some of material moisture so as not to disturb the shape.

PLASTIC APPLICATION OF THE CEILINGS

Plastic hammering process is performed with using moulds on the ceilings. Firmly supported woods or panels from bottom can be used as moulds. Because the most important factor, which should be considered during hammering process, is to press material sideways instead of from bottom to top independent from area and height. Otherwise, it can conclude as impending or breaking.

Plastic layers shall be located vertically into the moulds and hammering process is performed with 90° perpendicular guns to material, same as wall system

Hammering process is continued with continual shifting moulds and panels according to the surface area of the applicable area. In this case, mould shall not be de-installed before minimum two anchorage lines hammering process is completed. And internal surfaces of the moulds are lubricated again in order to prevent them to adhere.



Description

ANCHORAGE APPLICATIONS

Various types and shapes steel hooks or attachment bricks are used for the purpose of attaching plastic material to the location, where it shall be used. Locations, where material shall be attached to the wall, are referred on the project. Welding works of the hooks and connectors are implemented previously and then while continuing to the hammering process, attachment bricks are also attached to the connectors. In order to maintain burial of the teeth of these bricks in to the hammered plastic, bricks should be hammered via wooden or plastic hammer so as not to damage the bricks. After positioning a series of attachment hooks, new hammering work commences with the filling of the gap between attachment bricks, and work goes so on.

SHAVING OF THE PLASTIC

Shaving is referred for removal of the excessive parts in order to have requested thick and form plastic. Paddle, spatula or hand tools, made for this work, are used for this work. As material is appropriate for getting all kinds of shapes, there is no need for a huge strength in order to shave or hand shaping. One should note that shaving process should have the same direction with hammering process. No shiny surface should be obtained during hammering and shaping work. Otherwise, moisture within the structure cannot exit and breakings and cracks might occur on the material afterwards.

EXPANSION SEAMS

As all refractors' structure, plastic refractor structures are also thermally expanding. Therefore, expansion seams are constructed during application. Locations and widths of the seams are referred on the project. Polystyrene layers or glass fibers like materials are used as expansion seams. Usage aims of these materials are to vanish with burning during work or to maintain gap for refractor expansion with shrinking. One of the most important structural characteristics of the plastic is surface cracks, which might occur during drying. In case of these cracks are not wider or deeper than 8-10 mm, there is no problem. Otherwise, these cracks are removed with filling fine plasters into them. In case of abnormal and deep cracks, works should be reconstructed. Existences of these cracks are due to reasons, such as failure to perform material hammering well and delay of heating cure.

HEATING CURE OF THE PLASTICS

Although all kinds of plastics have unique characteristics, they also have unique drying and baking techniques according to their usage locations, aims and construction formats. Heating cures vary according to physical characteristics. Life of a plastic, which is well hammered and well cured, shall be very long.

Prior to the curing process on the air drying plastic types, dry layer on the surface shall be watered and spillages shall be prevented. Uncontrolled and rapid heating cure causes unwanted results.





Description

APPLICATION OF CONCRETE REFRACTORS

Concrete refractor packaging palettes are stored in dry and moisture free environment on condition to put maximum two palettes onto each other.

All tools and equipments, to be used for mixing plaster, should be clean. During mixing and application of the plaster, climate temperature and used water's temperature should be min. +5°C and max. +40°C. Mixable plaster amount should be arranged so as to be used within maximum 30 minutes. After mixing with water, as there shall be hardening on the plaster after 30 minutes, this shall also affect its strength after usage. The most ideal method for plaster mixing process is plaster mixing machine. If there is no plaster mixing machine available, mixing process is implemented with a rake or shovel within a clean wooden or sheet basin. If wooden basin shall be used, basin should be previously watered in order not to suck the water. Dry plaster shall be put to the location, where it shall be mixed, and mixed in dry condition for a period of 1 minute in order to maintain a homogenous mixing.

Afterwards, water, of which amount is predetermined, shall be added into plaster slowly and mixed thoroughly for a period of 3 minutes. While adding water to the plaster, one should note that there should be no flocculation.

Plaster shall be poured to its location after mixing process. Internal surfaces of the moulds, employed at the locations where plaster shall be used, should be previously lubricated. Lubrication shall also assist wooden basin not to suck water or not letting material to stick to the mould. An exothermal reaction commences on the plaster, to which water is added. This reaction appears via heating 3-4 hours after water adding. Warming plaster like this causes it to be prematurely switched.

In order to prevent this, plaster is checked by hand, and when warning commences, a damp canvas shall be covered onto the plaster and mould shall be externally watered.

This process continues till plaster cools down. Mould, in which plaster is poured, shall not be de-installed for 24 hours. After de-installation of the mould, material shall be left alone for air drying for a period of 48 hours.

We can list the factors, which should be considered during pouring plaster, as follows:

1) Plaster should be poured with a maximum height of 1 meter. If it shall be poured from a higher location, chutes should be employed. Otherwise, coarse particles shall be at the bottom and fine particles shall be at the top, and negatively affect the strength of the plaster.





UZUNOĞLU ATEŞ TUĞLA

Description

2) In order to fit plaster to the mould thoroughly, it should be rod or mould should be hammered externally. If a vibrator shall be used, plaster should be vibrated with short period of time.

3) Surface of the poured plaster shall be corrected with a wooden spatula. As correction with steel spatula shall shine the surface of the plaster, and cause hindering removal of water from its structure during heating, it is not used. Otherwise, cracks occur on the structure and surface breakings exist.

4) If plaster applied unit is a unit, constructed on the ground and to be erected afterwards, it shall be moved after 48 hours of air drying period.

5) Attached heating diagram shall be strictly complied with after application, and heating cure should be implemented.



Description

APPLICATION OF ISOLATED CONCRETE REFRACTORS

All tools and equipments, to be used for mixing plaster, should be clean. During mixing and application of the plaster, climate temperature and used water's temperature should be min. +50°C and max. +400°C

Mixable plaster amount should be arranged so as to be used within maximum 30 minutes. After mixing with water, as there shall be hardening on the plaster after 30 minutes, this shall also affect its strength after usage.

The most ideal method for plaster mixing process is plaster mixing machine. If there is no plaster mixing machine available, mixing process is implemented with a rake or shovel within a clean wooden or sheet basin. If wooden basin shall be used, basin should be previously watered in order not to suck the water.

Dry plaster shall be put to the location, where it shall be mixed, and mixed in dry condition for a period of 1 minute in order to maintain a homogenous mixing.

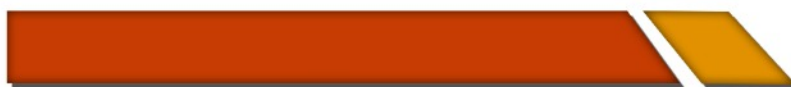
Water amount, to be mixed with the plaster, is put into the plaster mixing basin or machine previously. Mixable plaster amount is divided into two equal parts, and first part shall be into plaster slowly first and second part shall be added slowly afterwards, and mixed continually. Mixing period continues for approximately 5 minutes. After finishing the mixing process, material is left at its place for resting about 10 minutes. And then it is mixed for about 2 minutes again and afterwards it is poured into the mould. Internal surfaces of the moulds, employed at the locations where plaster shall be used, should be previously lubricated. Lubrication shall also assist wooden basin not to suck water or not letting material to stick to the mould.

An exothermal reaction commences on the plaster, to which water is added. This reaction appears via heating 3-4 hours after water adding. Warming plaster like this causes it to be prematurely switched.

In order to prevent this, plaster is checked by hand, and when warning commences, a damp canvas shall be covered onto the plaster and mould shall be externally watered. This process continues till plaster cools down. Mould, in which plaster is poured, shall not be de-installed for 24 hours. After de-installation of the mould, material shall be left alone for air drying for a period of 48 hours.

We can list the factors, which should be considered during pouring plaster, as follows:

- 1) Plaster should be poured with a maximum height of 1 meter. If it shall be poured from a higher location, chutes should be employed. Otherwise, coarse particles shall be at the bottom and fine particles shall be at the top, and negatively affect the strength of the plaster.
- 2) In order to fit plaster to the mould thoroughly, it should be rod or mould should be hammered externally. If a vibrator shall be used, plaster should be vibrated with short period of time.





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