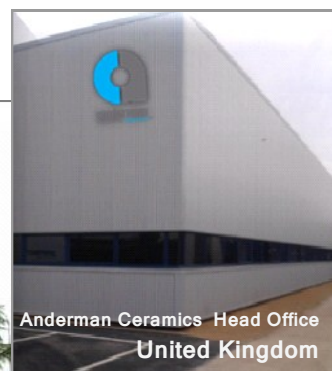


CONTAINER GLASS



*Developing and distributing a range of
Advanced Refractories worldwide,
for improved performance in the
Glass Industry*

ANDERMAN CUMI Technical & Commercial Partnership



Anderman Industrial Ceramics

Anderman was founded in 1947 as a ceramics importer into the United Kingdom. The company has undergone many changes through the years but one thing has remained, Industrial ceramics. The company employs a highly technical and multi-lingual workforce that can understand and respond to customers requirements.

Anderman has a number of strategic specialist manufacturing partners around the world for both Ceramic and refractory products.

In 2012 a co-operation agreement between CUMI and Anderman was established. Since that time Anderman has introduced new technology to CUMI based on the requirements of the international Glass and metal industries.

Together the two companies have developed improved manufacturing methods and new materials to better service the international glass market.



CUMI Super Refractories

CUMI's refractory division was started in 1965, pioneering the manufacture of Silicon Carbide, Mullite, High Alumina, Insulation bricks and low cement castable in India. Today, the company's state-of-the-art plants in India and overseas manufacture a wide range of fired, monolithic and precast products for ceramics, glass, carbon black, ferrous and non ferrous industries., with exports to major countries across the globe.

Product innovation and value engineering define the division's customer centric focus and total solutions work culture. Besides the capability to manufacture customized complex shapes for critical applications, CUMI's Super Refractories division also offers technical expertise and application engineering support that is customised to suit the varied needs of different user industries.



CUMI Super refractories Plant 11 in Ranipet India—Office and testing facility

EXPERIENCE

- ◆ 48 Years experience in Super Refractories
- ◆ 2 State of the art production plants in Ranipet India
- ◆ In-house production of electro fused grains for:
 - Mullite
 - Zircon Mullite
 - Fused Alumina
- ◆ ISO 9001 (2008) approved quality and procedures
- ◆ Products approved by Corning and Saint Gobain
- ◆ Wide range of products

FACILITIES

Capacity for Fired product

- ◆ **7,500 Tons per year**

Eight advanced shuttle Kilns

100 Metre Square, Granite floored layout area

Extensive in-house inspection and testing facilities

Capacity for Monolithic product

- ◆ **40,000 Tons per year**

CUMI has been an active supplier of refractory parts to the Glass industry for over 30 years. With over 40 projects completed successfully since 2006 the glass industry has become a major part of the companies growth.

Supplying mainly to the domestic and Asian markets CUMI have established a reputation for on time and quality products.

Anderman has personnel with more than 40 years of experience in making and supplying refractory materials to the European and international markets around the world with over 50 projects completed.

Together we are able to take the best of both technologies now integrated in one manufacturing site and offer a comprehensive supply solution.



FIRED PRODUCTS

- ♦ **Silicon Carbide**
- ♦ **Nitride Bonded Silicon Carbide**
- ♦ **Mullite/Sillimanite**
- ♦ **High Alumina**
- ♦ **Insulation Firebricks (IFBs)**
- ♦ **Zircon**
- ♦ **Zircon Mullite**
- ♦ **Fused Silica**

MONOLITHIC PRODUCTS

- ♦ **Conventional Castables**
45% to 96% Al₂O₃; 1500 to 1800 deg C
- ♦ **Low Cement Castables (LCC)**
43% to 95% Al₂O₃; 1600 to 1800 deg C
- ♦ **Insulating Castables**
30% to 94% Al₂O₃; 1100 to 1800 deg C
- ♦ **No Cement Easy Flow Castables**
- ♦ **Ramming Masses**
Al₂O₃/Zircon/SiC
- ♦ **Laying Mortars**
- ♦ **Gunning Castables**

By forging a partnership we have experience in supplying high quality refractory products for over **100** Glass industry installations worldwide in the last **10** years.

Material Data Sheet

CUMILOX 55C

MATERIAL

Silimanite

Originally designated as AS1, CUMILOX 55C is an industry recognised **Silimanite** based material with many years of proven performance in the Glass industry.

This material has been introduced into the CUMI range by the technology transfer with Anderman Industrial Ceramics together with the manufacturing processes necessary to meet the exacting standards of the Glass industry.

Ideal for a wide range of applications where performance and long life are a pre-requisite.

PRODUCT DATA

Product Definition	Typical Value
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Max. Hot Face Temperature (⁰ C)	1500
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Bulk Density (Kg/m ³)	2140
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Cold Crushing Strength (Kg/cm ²)	408
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Apparent Porosity (%)	25
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Permanent Linear Change (%)	0.2
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Chemical Analysis (%)	
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Al ₂ O ₃	55
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SiO ₂	41
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Fe ₂ O ₃	0.4
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APPLICATIONS

PRODUCT	
MELTER	Superstructure
DISTRIBUTOR & FOREHEARTH	Superstructure
	Cover blocks
	Channels
	Burner blocks

The physical and chemical properties represent values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice.

Material Data Sheet

CUMILITE 76C

MATERIAL

Mullite

Originally designated as ASSM6, CUMILITE 76C is an industry recognised **Mullite** based refractory material with many years of proven performance in the Glass industry.

This material has been introduced into the CUMI range by the technology transfer with Anderman Industrial Ceramics together with the manufacturing processes necessary to meet the exacting standards of the Glass industry.

Ideal for a wide range of applications where Thermal Shock performance and long life are a pre-requisite.

PRODUCT DATA

Product Definition	Typical Value
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Max. Hot Face Temperature ($^{\circ}\text{C}$)	1750
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Bulk Density (Kg/m^3)	2560
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Cold Crushing Strength (Kg/cm^2)	612
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Apparent Porosity (%)	20
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Permanent Linear Change (%)	- 0.1
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Chemical Analysis (%)	
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Al_2O_3	78
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SiO_2	20.5
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Fe_2O_3	0.35
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APPLICATIONS

PRODUCT	
MELTER	Superstructure
DISTRIBUTOR & FOREHEARTH	Superstructure
	Cover blocks
	Channels
	Burner blocks

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Material Data Sheet

CUMIZITE 30C

MATERIAL

Zirconia/Mullite

Originally designated as AZ7, CUMIZITE 30C is an industry recognised **Zirconia/Mullite** based refractory material with many years of proven performance in the Glass industry.

This material has been introduced into the CUMI range by the technology transfer with Anderman Industrial Ceramics together with the manufacturing processes necessary to meet the exacting standards of the Glass industry.

Ideal for use in areas where resistance to alkaline vapour attack, high load bearing capability, high refractoriness and high hot strength are a pre-requisite.

PRODUCT DATA

Product Definition	Typical Value
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Max. Hot Face Temperature ($^{\circ}\text{C}$)	1750
--	------

Bulk Density (gm/cc)	2.78
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Cold Crushing Strength (Kg/cm^2)	400
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Apparent Porosity (%)	26
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Permanent Linear Change (%)	+/- 0.6
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Chemical Analysis (%)	
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Al_2O_3	50
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ZrO_2	28
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Fe_2O_3	0.15
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APPLICATIONS

PRODUCT	
MELTER	Port Burner Block
	Dog House Arch
DISTRIBUTOR & FOREHEARTH	Channels

The physical and chemical properties represent values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice.

Material Data Sheet

CUMILITE W & WHF

MATERIAL

Mullite

CUMILITE W

CUMILITE W is a MULLITE refractory based on 76% Alumina, Fused mullite with a secondary mullite bond.

CUMILITE WHF

CUMILITE WHF is the same composition but high fired to produce an even stronger product.

PRODUCT DATA

	CUMILITE W	CUMILITE WHF
Product Definition	Typical Value	
Max. Hot Face Temperature (°C)	1760	1760
Bulk Density (gm/cc)	2.60	2.65
Apparent Porosity (%)	19	17.5
Cold Crushing Strength (Kg/cm²)	950	1000
Modulus of Rupture		
At room temperature (Kg/cm²)	175	175
At 1350 °C (Kg/cm²)	100	100
Reheat Change %		
After heating at 1450 °C for 6 hrs.	-	-
Thermal Conductivity (W/m °K)		
At 800 °C Hot Face Temp.	1.68	1.68
At 1000 °C Hot Face Temp	1.61	1.61
At 1200 °C Hot Face Temp	1.74	1.74
Chemical Analysis (%)		
Al ₂ O ₃	77.47	77.42
SiO ₂	20.64	21.01
Fe ₂ O ₃	0.21	0.19

APPLICATIONS

PRODUCT	
MELTER	Crown for Borosilicate Furnace
REGENERATOR	Rider Arch
	Side & Partition Walls
DISTRIBUTOR & FOREHEARTH	Cover blocks
	Burner blocks

The physical and chemical properties represent values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice.

Material Data Sheet

CUMILITE 60A & 60A SPL

MATERIAL

Sillimanite

CUMILITE 60A

CUMILITE 60A is a MULLITE refractory based on 60% Alumina, Andalusite mullite with improved purity levels

CUMILITE 60A SPL

CUMILITE 60A SPL is the same composition but high fired to produce a lower porosity, stronger product with high hot strength and high creep resistance.

PRODUCT DATA

	CUMILITE 60A	CUMILITE 60A SPL
Product Definition	Typical Value	
Max. Hot Face Temperature (°C)	1550	1550
Bulk Density (gm/cc)	2.55	2.55
Apparent Porosity (%)	16	15
Cold Crushing Strength (Kg/cm ²)	600	650
Modulus of Rupture		
At room temperature (Kg/cm ²)	65	90
At 1350 °C (Kg/cm ²)	40	50
Reheat Change %	+ 0.2	+ 0.17
After heating at 1450 °C for 6 hrs.		
Chemical Analysis (%)		
Al ₂ O ₃	61	60.50
SiO ₂	33.5	35.50
Fe ₂ O ₃	0.85	0.75

APPLICATIONS

PRODUCT	
MELTER	Sub Paving
REGENERATOR	Rider Arch
	Spanner Tiles
	Side & Target Walls
DISTRIBUTOR & FOREHEARTH	Distributor Cover and Blocks

The physical and chemical properties represent values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice.

Material Data Sheet

CUMILITE 65A & 65A SPL

MATERIAL

Sillimanite

CUMILITE 65A

CUMILITE 65A is a Sillimanite refractory based on Andalusite grains.

CUMILITE 65A SPL

CUMILITE 65A SPL is based on Andalusite grains but has better purity and higher strength.

PRODUCT DATA

	CUMILITE 65A	CUMILITE 65A SPL
Product Definition	Typical Value	
Max. Hot Face Temperature (°C)	1550	1500
Bulk Density (gm/cc)	2.55	2.60
Apparent Porosity (%)	19	19
Cold Crushing Strength (Kg/cm ²)	600	750
Modulus of Rupture		
At room temperature (Kg/cm ²)	75	90
At 1350 °C (Kg/cm ²)	50	50
Reheat Change %	-	-
After heating at 1450 °C for 6 hrs.		
Thermal Conductivity (W/m °K)		
At 800 °C Hot Face Temp.	-	1.64
At 1000 °C Hot Face Temp	-	1.53
At 1200 °C Hot Face Temp	-	1.72
Chemical Analysis (%)		
Al ₂ O ₃	66.02	66.5
SiO ₂	33.05	32.50
Fe ₂ O ₃	0.85	0.85

APPLICATIONS

PRODUCT	
REGENERATOR	Crown
	Rider Arch
	Spanner Tiles
	Side, Partition & Target Walls
DISTRIBUTOR & FOREHEARTH	Covers for Soda-Lime applications

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MATERIAL

ZIRCON REFRACTORIES

CUMIZON

CUMIZON and CUMIZON 65G are Zircon based refractories. The 65G is a higher strength version with a slightly higher Zirconia content.

PRODUCT DATA

	CUMIZON	CUMIZON 65G
Product Definition	Typical	Value
Max. Hot Face Temperature (°C)	1600	1600
Bulk Density (gm/cc)	3.55	3.70
Apparent Porosity (%)	20.5	16.50
Cold Crushing Strength (Kg/cm ²)	600	800
Reheat Change % After heating at 1450 °C for 6 hrs.	+ 0.1	+ 0.1
Chemical Analysis (%)		
ZrO ₂	65.20	65.50
SiO ₂	32.60	32.10
Fe ₂ O ₃	0.40	0.40

APPLICATIONS

PRODUCT

MELTER

Sub Paving

Buffer layer in superstructure

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MATERIAL

ZIRCON/MULLITE REFRACTORIES

CUMIZITE (For CUMIZITE 30C—see separate data sheet)

CUMIZITE ZM is based on fused alumina and Zircon Silicate.

CUMIZITE ZM 2 HF SPL is based on high purity fused zircon mullite material and has excellent thermal shock and corrosion resistance.

PRODUCT DATA

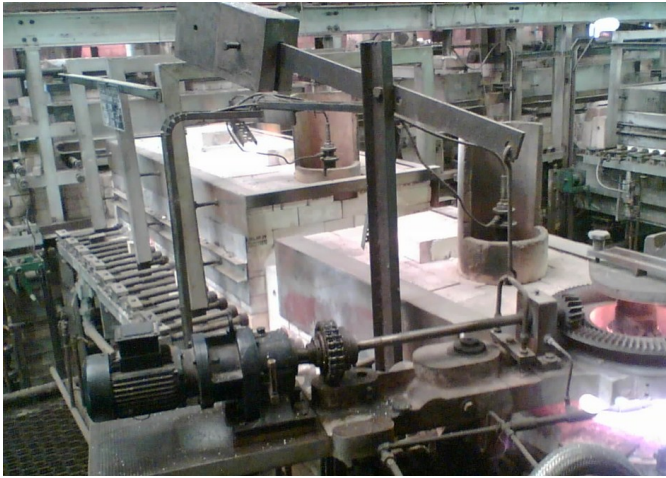
	CUMIZITE ZM	CUMIZITE ZM2 HF SPL
Product Definition		Typical Value
Max. Hot Face Temperature (°C)	1750	1750
Bulk Density (gm/cc)	3.20	3
Apparent Porosity (%)	17	17
Cold Crushing Strength (Kg/cm ²)	800	950
Reheat Change %		
After heating at 1450 °C for 6 hrs.	+ 0.20	+ 0.05
Thermal Conductivity (W/m °K)	1.88	1.90
Chemical Analysis (%)		
Al ₂ O ₃	70.30	65.50
ZrO ₂	19.30	19.80
SiO ₂	10.10	12.90
Fe ₂ O ₃	0.09	0.13

APPLICATIONS

PRODUCT

REGENERATOR (Borosilicate furnace)	Checker Bricks
	Port Connection
DISTRIBUTOR & FOREHEARTH	Cover Blocks for Borosilicate
	Burner Blocks for Borosilicate

The physical and chemical properties represent values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice.



FOREHEARTH SUPERSTRUCTURE— COSMETIC GLASS



FOREHEARTH SUPERSTRUCTURE



FOREHEARTH SUPERSTRUCTURE



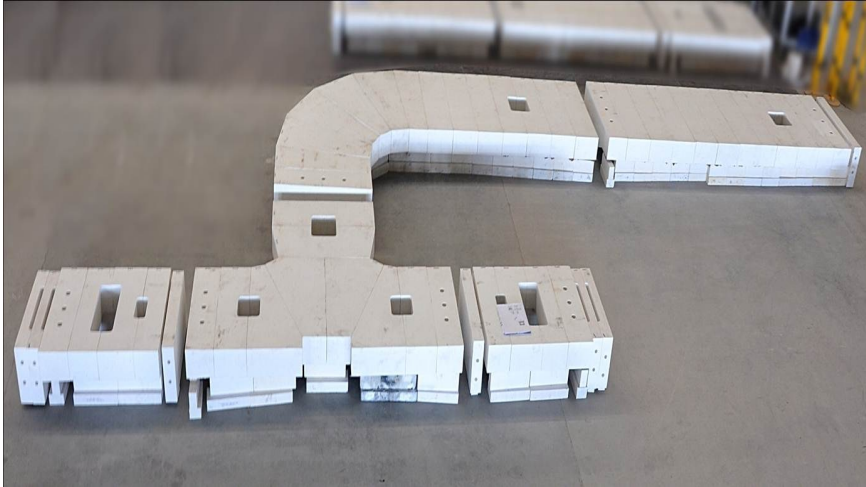
**FOREHEARTH SUPERSTRUCTURE
BOROSILICATE FURNACE**



FOREHEARTH BLOCKS



**DISTRIBUTOR SUPERSTRUCTURE
BOROSILICATE FURNACE**



FOREHEARTH



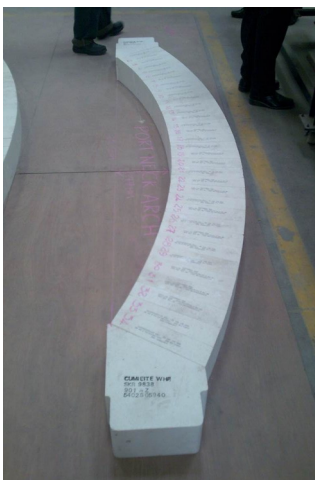
BURNER BLOCKS



RIDER ARCH & RIDER ARCH



151 sqm SUB PAVING ASSEMBLY



**PORT CONNECTION
ARCH—MULLITE**



**FOREHEARTH
SUPERSTRUCTURE**



OPAL FURNACE LINED WITH MULLITE BLOCKS

APPLICATION	PRODUCT	MATERIAL (Recommended)	MATERIAL (Option)
REGENERATOR	Target wall (Top Courses)	CUMILITE 76C	
	Target wall (Middle Courses)	CUMILITE 65A SPL	
	Side wall (Top Courses)	CUMILITE 76C	
	Side wall (Middle Courses)	CUMILITE 65A SPL	
	Partition/Division Wall (Top Courses)	CUMILITE 76C	
	Partition/Division Wall (Middle Courses)	CUMILITE 65A SPL	
	Rider Arches	CUMILITE 60A SPL	CUMILITE 65A
	Spanner Tiles	CUMILITE 60A SPL	CUMILITE 65A
	Crown Arch	CUMILITE WHF	(Insulation CUMILAG25 or 26)
	Checkers	CUMIZITE ZM2 HF SPL	CUMIZITE ZM
	Port Neck	CUMILITE 76C	
MELTER	Superstructure	CUMILITE 76C	
	Sub Paving	CUMIZON (65G)	CUMIZON
	Port Burner blocks	CUMIZITE 30C	CUMILITE 76C
	Dog House Arch	CUMIZITE 30C	
	Crown	CUMILITE WHF	
DISTRIBUTOR & FOREHEARTH	Superstructure	CUMILOX 55C /CUMIZITE 30C	CUMILITE 76C
	Cover blocks	CUMILOX 55C	CUMILITE 76C
	Burner Blocks	CUMILOX 55C	CUMILITE 76C
TIN BATH	Roof	CUMILOX 55C	CUMILITE 76C
	Tiles	CUMILOX 55C	CUMILITE 76C
	Shapes	CUMILOX 55C	CUMILITE 76C
	Lintels	CUMILOX 55C	CUMILITE 76C
	Day Tank	CUMIZITE 30C	
	bottom block	ABB45	
	channels	CUMILOX 55C	CUMILITE 76C
	channels	CUMIZITE 30C	
	Chimney Blocks	CUMILOX101HF	
	Insulation	Various CUMILAG grades	
	Castables	Wide range available	
	Laying Mortars	Various CUMIBOND grades	

CUMI REFERENCE LIST

CUSTOMER	Furnace Capacity	Furnace Designer	Application / Product
Piramal Glass Limited, Kosamba 2006-07	35 TPD Cosmetic	HORN Glass Germany	Rider Arches & Spanner tiles in Regenerator, Forehearth superstructure, Zircon tiles for parting layer
Piramal Glass Limited, Kosamba 2006-07	100 TPD Cosmetic	HORN Glass Germany	Rider Arches & Spanner tiles in Regenerator Distributor & Forehearth Super structure, Zircon tiles for parting layer.
Piramal Glass Limited, Jambusar , 2007-08	105 TPD Cosmetic	HORN Glass Germany	Rider Arches & Spanner tiles in Regenerator , Forehearth Super structure, Zircon tiles for parting layer
Piramal Glass Limited, Kosamba , 2007-08	75 TPD Cosmetic	KTG India	Regenerator : Rider Arches & Spanner tiles , Partition wall / sidewall/ Target wall – Top course, Forehearth Super structure, Zircon tiles for parting layer .
Milly Glass Limited , Kenya , 2007-08	110 TPD Flint	HORN Glass, Germany	Rider Arches & Spanner tiles in Regenerator , Forehearth Super structure, Zircon tiles for parting layer
Gujarat Borosil Ltd , Ankaleshwar. 2008-09	120 TPD Figured Glass / Solar	Techglass, Poland	Regenerator: Crown Arch, Partition wall / sidewall / Target wall. Rider Arches & Spanner tiles, Subpaving : Zircon and Andalusite tiles. Zircon tiles for parting layer

CUMI REFERENCE LIST

CUSTOMER	Furnace Capacity	Furnace Designer	Application / Product
Hindustan National Glass , Rishra 2008-09	250 TPD Amber	SORG Germany	Regenerator : Crown Arch, partition wall / target wall in fused mullite. Andalusite Rider Arches / Spanner tiles.
Philips Electronics India Ltd , Baroda	150 TPD Lamp glass	SORG Germany	Regenerator : Spanner tiles and Rider Arch skew blocks.
AGI Glaspac , Hyderabad March – May 2010	350 TPD flint	SORG Germany	Regenerator : Crown Arch, partition wall / target wall in fused mullite. Distributor / forehearth superstructure in Sillimanite (andalusite)
Piramal Glass Limited 2010-11	45 TPD BRS	SORG Germany	ME Crown : Mullite WE Crown / SS – Mullite Forehearth SS – Mullite
Horn Glass Industries GmbH. (JG Glass containers, Malaysia) 2010-2011	180 TPD	HORN Glass, Germany	Distributor / WE Crown and Super Structure - sillimanite Forehearth Superstructure – mullite Rider arches /Spanner tiles– Sillimanite
Hindustan National Glass & Industries Ltd. – Rishikesh 2010-11	270 TPD	HNG	Regenerator – Sidewall/ partition wall and Crown – Fused mullite. Port Neck Arch – Fused Mullite
Neutral Glass & Allied Industries , Kosamba 2008-09	K Tank 22 TPD , BRS, amber	NGAI	Zirmul - Port Connection Arches /Top course checkers in Regenerator / Feeder Covers / burner blocks / spout cover/ spout burners
Neutral Glass & Allied Industries , Kosamba 2008-09	E Tank - 20 TPD , BRS, amber/flint	NGAI	Zirmul - Port Connection Arches /Top course checkers in Regenerator / Feeder Covers / burner blocks / spout cover/ spout burners

CUSTOMER	Furnace Capacity	Furnace Designer	Application / Product
Neutral Glass & Allied Industries , Kosamba 2009-10	A Tank – 20 TPD, BRS, amber	NGAI	Zirmul - Port Connection Arches /Top course checkers in Regenerator / Feeder Covers / burner blocks / spout cover/ spout burners
Neutral Glass & Allied Industries , Kosamba 2009-10	G Tank- 2 TPD , BRS, amber	NGAI	Zirmul - Port Connection Arches /Top course checkers in Regenerator / Feeder Covers / burner blocks / spout cover/ spout burners
Hindustan National Glass & Industries Ltd. – Bahadurgarh 2010-11	330 TPD Furnace#4	Horn Glass, Germany	70% Sillimanite – Rider arches/ spanner tiles / Burner wall & Port Neck Refractories.
Piramal Glass Limited, Kosamba 2010-11	95 TPD Cosmetic	HORN Germany	ME subpaving/Buffer layer – Zircon Distributor SS - Mullite Forehearth SS – Mullite/ Zirmul
Piramal Glass Limited, Jambusar. 2010-11	230 TPD Amber	HORN Germany	ME subpaving/Buffer layer – Zircon Forehearth SS – Mullite
Piramal Glass Limited, Kosamba 2010-11	55 TPD Cosmetic	HORN Germany	Forehearth SS – Mullite Distributor SS - Mullite
Hindustan National Glass & Industries Ltd. – Rishra 2011-12	250 TPD (Fur#1)	HNGIL	Regenerator Partition wall – Fused Mullite
Hindustan National Glass & Industries Ltd. – Naidupeta 2011 – 12	625 TPD	HORN Germany	Regenerator Rider Arches / Spanner tiles - Sillimanite. Fused Mullite DH Protection Arch. Castables/Mortar
Hindustan National Glass & Industries Ltd. – Nashik 2011 – 12	625 TPD	HORN Germany	Regenerator Rider Arches / Spanner tiles Sillimanite. Fused Mullite DH Protection Arch. Castables/Mortar

CUSTOMER	Furnace Capacity	Furnace Designer	Application / Product
Hindustan National Glass & Industries Ltd. – Rishra 2011 – 12 under execution	625 TPD	HORN Germany	Regenerator Rider Arches / Spanner tiles - Sillimanite. Fused Mullite DH Protection Arch. Castables/Mortar
AGI Glaspac , Hyderabad 2011-12	425 TPD flint	SORG Germany	Regenerator : Crown Arch, partition wall / target wall in fused mullite. Rider Arches/ Spanner tiles - Andalusite Sub Paving – ME / WE - Andalusite Distributor / forehearth superstructure in (andalusite)
Piramal Glass Limited, Jambusar. 2011-12	160 TPD Cosmetic	HORN Germany	ME subpaving/Buffer layer – Zircon Port Connection – fused mullite Distributor / Forehearth SS – Mullite
Nipro Glass Limited , Meerut. 2011 – 12	24 TPD BRS	SORG Germany	ME Crown – Fused mullite ME SS Back up – fused mullite WE / FH SS – Fused mullite Tank Insulating – Zircon mullite /45% Alumina/ Insulation
Mittal Ceramics , Firozabad 2011-12	200 TPD	Glacera Engineers	Regenerator Crown, Sidewalls /Target wall/ Division wall, Port Neck connection , Regenerator checkers – Fused Mullite Regenerator checkers – Sillimanite.
Hindustan National Glass & Industries Ltd. – Rishra 2011-12	250 TPD (Fur#1)	HNGIL	Distributor & Forehearth Cover Blocks – 70% Sillimanite. Furnace Bottom – IFB/ Sillimanite/Mullite/Zirmul/Castables
Cogent Glass Limited , Hyderabad . 2011-12	40Sqm , BRS	Glass Services Srl , Italy /Planet Ceramica Pvt Ltd	Distributor and Forehearth SS Flue lining – Alumina/Zircon Laying Mortars etc.

CUMI REFERENCE LIST

CUSTOMER	Furnace Capacity	Furnace Designer	Application / Product
Neutral Glass & Allied Industries , Kosamba 2012-13	E Tank (BRS)	NGAI	Regenerator checker bricks – Mullite , sillimanite, Zircon mullite Port Connection arch – Z/M Feeder cover blocks- Z/M Feeder burner/ Spout burner blocks – Z/M (INR 13 Mn)
Hindustan National Glass & Industries Ltd. Rishikesh 2012-13	270 TPD	HNG	Regenerator Rider Arches/ Spanner tiles – Sillimanite (INR 6 Mn)
Hindustan National Glass & Industries Ltd. Neemrana 2012-13	280 TPD	HNG	Regenerator Walls / Rider Arches / Spanner tiles – Sillimanite . Distributor SS – Sillimanite (INR 7.5Mn)
Piramal Glass Limited, Kosamba. 2012-13	100 TPD	HORN	N5 Forehearth SS / Sub Structure – Fused Mullite / Zircon mullite / zircon (INR 3.5Mn)
Hindustan National Glass & Industries Ltd. Puducherry 2012-13	350 TPD	HNG	Regenerator Walls / Rider Arches / Spanner tiles – Sillimanite. (INR 11 Mn)
Neutral Glass & Allied Industries, Kosamba 2012-13	K Tank (BRS)	SORG	Complete Furnace Refractories – Except Silica. Approx – 900 MT
St Gobain Glass Indian Limited , Bhiwadi 2012-13	920 TPD Float glass	St Gobain Float	45% Al ₂ O ₃ castables for Flue line Arch (from Regenerator to Chimney) – 415 MT
Gold Plus Glass Industry Limited , India 2012-13	470 TPD Float glass	Chinese	Fused Silica bricks – for Crown repair – INR 0.5 Mn
Mohan Breweries & Distilleries Limited Glass Division	260 TPD	SORG Germany	Fused Silica bricks for Crown repair – INR 0.2 Mn
Piramal Glass Limited, Kosamba. 2013-14 under execution	45 TPD BRS	SORG Germany	Rebuild of Forehearth Super structure Refractories Mullite/Insulation bricks/ Ceramic Fiber – INR 1.5 Mn

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