GOUDA *refractories*

Total solutions and tailored work

For more than 120 years - since 1901 - Gouda Refractories proves that the company adds extra value when designing and producing refractory linings. Its state of the art production facilities do not just deliver refractory bricks, monolithics and precast shapes, but offer worldwide customer- specific total solutions for every imaginable industry: non-ferrous metals, petrochemical, steel & iron, environment & energy and cement.

Because of their experience and expertise, the Product Management, Engineering, Research & Development and Production departments guarantee an efficient problem analysis and solution. When a change in processes demands modification of its products, Gouda Refractories responds promptly always taking into account important requirements, such as a competitive price, superior quality and total costs of ownership.

Industries

Every industry has its own specific challenges and demands. Whether it's a greenfield project or maintenance: Gouda Refractories seamlessly matches the design and the choice of materials to the specific needs of the industry and process. Lifespan, application techniques and reliability are the top priorities. Dialogue and cooperation with the customer mean that products for any specific application can be developed.

Aluminium Industry

The supply program consists of refractory materials for high temperature applications used in the process of producing aluminium as well as in the secondary process of making specific aluminium alloys and the re-melting of aluminium (recycling included), such as:

- Anode baking furnaces
- Transfer ladles
- Potlines
- Casthouse; (re-)melting & holding furnaces

In the field of anode baking furnaces, Gouda Refractories is the worldwide reference and has been approved by leading technology providers such as Riedhammer and RTA Aluminium Pechiney.

The strength can be found in the dimensional stability of the bricks, the process rela-ted defense mechanisms and the stability of the walls. Gouda Refractories has once again set the standards with the new quality: LP 50 S. The LP 50 S has a longer lifes-pan, guarantees a better quality of anodes and offers up to 15%

lower energy consumption when compared with regular bricks for anode baking furnaces.

These claims have been confirmed by Emirates Global Aluminium's smelter in Dubai.

The expertise in the aluminium industry is also applied in similar processes, such as zinc galvanizing in the steel industry.

Petrochemicals
Oil refineries and the (petro)chemical industry demand high perfor-mance refractory products. Gouda Refractories is acquainted with the processes and has the products to match the strict specifications.

From the very beginning of a project, the company thinks along with oil companies, refineries, chemical plants, licensors and exter-nal advisors and engineering companies. Gouda Refractories also participates actively in the American Petroleum Institute's meetings on refractories.

By continuously improving and developing innovative refractory materials, refractory linings for critical equipment used at petro(chemical) plants are successfully designed, manufactured and supplied to, a.o.:

- Sulphur Recovery units
- Incinerators for waste chemicals
- Gasification reactors
- Cracking furnaces
- FCC units
- Reformers

Being market leader in high grade refractory linings for sulphur recovery units and the growing scale of such units with the technical constraints of such bigger units has resulted in the development of the LP 90 L quality: a dense, high aluminium oxide brick with improved thermal conductivity behavior which results in an optimum lining design.

For incinerators and gasification reactors Gouda Refractories has developed a range of Ultra Low Porosity bricks that combine high strengths and excellent thermal properties with very low porosities, therefore being able to withstand extremely aggressive environments.

Environment & Energy
The waste-processing market is drastically developing because of the increasing energy shortages and the demand for eco-friendly energy. Gouda Refractories' environment and energy specialists are constantly searching for the 'optimal solution' for the total waste processing industry, the energy-generating industry and the industry for incinerating chemical waste. For them the dynamic process of thermal, mechanical and chemical loads is a constant challenge when designing, installing and maintaining waste incineration furnaces. Based on solid data and experience they try to find the right compromise between the choice of materials and the lining thickness.

The recent and successful development of the low porosity, aluminium oxide – chromium – zirconium range – the LP 85-5 CZ, LP 85-10 CZ and LP 80-15 CZ – is just an example of the ingenuity that specialists employ when solving customer's problems.

Raw Material Processing
Gouda Refractories' know-how and products are successfully used in a number of raw material processing industries for certain specific, critical parts of the production process such as the preheating zone, the firing zone and the cooling zone. The knowledge concerning heating processes and the efficiency involved results in tailored solutions for a.o.:

- Coke calciners
- Cement calciners
- Lime kilns
- Bauxite calciners
- Petroleum industry
- Cement industry
- Paper / pulp industry
- Aluminium industry

Steel & Iron
The steel industry also has specific requirements for refractory materials. The requirements for the production of steel made from iron ore are different than those of steel made from scrap metal. This is logical because the process is completely different. This means also that different types of refractory material are required. With its unique product line, Gouda Refractories has solutions for process specific problems such as alkali growth, high wear, thermal shock and mechanical stresses. Gouda Refractories can deliver high quality, tailored products for various critical stages of the steel production process.

Summary of product range

Gouda Refractories offers the right and firm solution for every process condition. Below is a selection of highlighted products and their typical properties. The full range of products or comprehensive datasheets can be made available upon request. Most castables are also available in gunning and hand-packing grades.

SHAPED PRODUCTS

Medium Duty - High Duty - Super Duty

General Firebricks with good physical properties such as thermal shock resistance, spalling, low shrinkage for applications up to 1.400 °C.

Quality	Maximum Service Temperature	Chemical Composition		Cold Crushing Strength
		Al_2O_3	Fe_2O_3	
BRO	1.300 °C	25 - 30%	2%	25 MPa
AR 26 AP	1.100 °C	18 - 35%	< 3%	≥ 20 MPa
AR 26 DT	1.100 °C	20 - 30%	< 3%	≥ 40 MPa
B1 Sp	1.350 °C	39%	< 2%	60 MPa
A	1.400 °C	40%	< 2%	35 MPa

High Alumina Fire Clay Bricks

High alumina fire clay bricks made from selected raw materials calcined at high temperatures. The high density and very low amount of bonding clay give the bricks a low porosity, high mechanical strength and excellent physical properties for applications up to 1.550 °C.

Quality	Maximum Service Temperature	Chemical Composition		Cold Crushing Strength
		Al_2O_3	Fe_2O_3	
AK 42	1.450 °C	42%	< 1,5%	50 MPa
AK 45	1.500 °C	45%	< 1%	55 MPa
AK 46 S	1.550 °C	49%	< 1%	50 MPa
AK 59	1.550 °C	59%	< 1,2%	70 MPa

Sillimanite Bricks

Silimanite bricks, on account of their characteristics, have an own place in the range of refractories. High refractoriness, very good resistance to spalling and to alkaline slags make these materials very suitable for application under severe conditions.
For applications up to 1.700 °C.

Quality	Maximum Service Temperature	Percentage Chemical Composition		Cold Crushing Strength
		Al_2O_3	Fe_2O_3	
AK 60 A	1.680 °C	60%	< 1%	90 MPa
AK 65 A	1.700 °C	65%	< 1%	60 MPa

The technical data represent average values, obtained from standard bricks.
Values are typical but not guaranteed, unless agreed otherwise.
Datasheets are available upon request.

Bauxite Bricks

Bauxite bricks are made from typical selected bauxite raw materials. The quality is generally very abrasive resistant and applicable for the cement industry for applications to 1.500°C. Special qualities are applicable as non-wetting bricks in the non-ferro industry applications up to 1.300 °C.

Quality	Maximum Service Temperature	Chemical Composition		Cold Crushing Strength
		Al_2O_3	Fe_2O_3	
AK 82 A	1.550 °C	82%	< 1,5%	70 MPa
AK 85 P1	1.300 °C	81%	1,4%	100 MPa
AK 85 MP	1.500 °C	83%	< 1%	130 MPa

Corundum Bricks

Corundum bricks are extremely high classified quality bricks. These qualities combine very low creep, very good thermal resistance and excellent hot properties. The quality is used in high fired and heavy loaded equipment. For application up to 1.800 °C.

Quality	Maximum Service Temperature	Chemical Composition		Cold Crushing Strength
		Al_2O_3	Fe_2O_3	
AK 85 K	1.750 °C	85%	< 0,2%	90 MPa
LP 90 L	1.760 °C	89%	< 0,2%	100 MPa
AK 94 Mx	1.760 °C	90%	< 0,1%	140 MPa
AK 94 M	1.760 °C	94%	< 0,2%	100 MPa
AK 99	1.800 °C	> 99%	< 0,1%	95 MPa

LP and ULP Bricks

LP and ULP bricks are super dense refractory bricks with an extremely low porosity. LP and ULP bricks provide thermal shock resistance and very good resistance to various aggressive slags. For applications up to 1.800 °C.

Quality	Maximum Service Temperature	Chemical Composition		Cold Crushing Strength	Porosity
		Al_2O_3	Fe_2O_3		
LP 50 S	1.575 °C	50%	< 1,0%	70 MPa	≤ 11%
LP 60 MP	1.600 °C	60%	1,1%	120 MPa	≤ 12%
LP 60 AAP	1.650 °C	60%	0,9%	110 MPa	≤ 9%
ULP 60	1.680 °C	62%	< 1%	100 MPa	≤ 7%
LP 70	1.700 °C	72%	< 0,5%	75 MPa	≤ 12%
ULP 90	1.760 °C	91%	< 0,1%	100 MPa	≤ 7%

Chromium Bricks

Chromium based bricks are extremely high classified quality bricks. These qualities combine excellent hot properties with slag resistance. The quality is used in chemical waste incinerators. For application up to 1.800 °C.

Quality	Maximum Service Temperature	Chemical Composition		Cold Crushing Strength	Porosity
		Al_2O_3	Cr_2O_3 / ZrO_2		
ACZ 85-5 D	1.800 °C	86%	5% / 3%	120 MPa	13%
AC 85-10 D	1.800 °C	87%	10% / 0%	120 MPa	14%
LP 85-5 CZ	1.760 °C	88%	5% / 1%	110 MPa	11%
LP 85-10 CZ	1.760 °C	85%	9% / 1%	110 MPa	12%

The technical data represent average values, obtained from standard bricks.
Values are typical but not guaranteed, unless agreed otherwise.
Datasheets are available upon request.

Special Shapes

Special shapes are refractory products which are unable to press as result of the shape, dimension and / or quantities of these products. The products are made of special raw materials and fired at temperature above 1.600 °C.

Quality	Maximum Service Temperature	Chemical Composition		Cold Crushing Strength
		Al_2O_3	Fe_2O_3	
V 163 A	1.600 °C	62%	< 1%	80 MPa
V 168	1.600 °C	63%	< 1%	100 MPa
V 168 H	1.600 °C	64%	< 1,5%	100 MPa
V 178 M	1.730 °C	78%	< 0,5%	80 MPa
V 188 H	1.760 °C	94%	< 0,2%	100 MPa
V 188	1.800 °C	> 99%	< 0,1%	100 MPa

Insulation Bricks

ASTM qualities insulating bricks Grade 23, 26 and 28 can be supplied by Gouda refractories. The extremely high ASTM-Graded 30, 32 and 34 are produced by Gouda Refractories in a dedicated production run, ensuring highest quality standards.

Insulation bricks of the FI range is a non-ASTM class insulating brick characterized by a good strength, low thermal conductivity and stable refractoriness. Applicable as hotface and back-up lining constructions.

Quality	Maximum Service Temperature	Chemical Composition		λ 800 °C	Cold Crushing Strength
		Al_2O_3	Fe_2O_3		
GI 30 (ASTM grade 30)	1.650 °C	71%	0,5%	0,43 W/mK	2,2 MPa
GI 32 (ASTM grade 32)	1.760 °C	77%	0,5%	0,55 W/mK	3,1 MPa
GI 34 (ASTM grade 34)	1.800 °C	96%	0,1%	1,40 W/mK	8 MPa
FI 45-08	1.450 °C	57%	< 2%	0,37 W/mK	5 MPa
FI 45-12	1.450 °C	52%	< 1,5%	0,47 W/mK	10 MPa
FI 45-20	1.450 °C	48%	< 1,5%	1,14 W/mK	15 MPa
FI 55-11	1.550 °C	51%	2,5%	0,52 W/mK	10 MPa
FI 65-12	1.650 °C	73%	< 1%	0,59 W/mK	10 MPa
FI 80-13	1.800 °C	99%	< 0,2%	1,27 W/mK	6 MPa

DENSE MONOLITHICS

Regular Dense Castable

General dense fire clay castables with good physical properties for all kinds of applications up to 1.400 °C.

Quality	Maximum Service Temperature	Chemical Composition		Cold Crushing Strength at 815 °C
		Al_2O_3	Fe_2O_3	
Curon 120 HS	1.200 °C	36%		25 MPa
Curon 130	1.300 °C	35%		25 MPa
Curon 140	1.400 °C	47%	< 2%	30 MPa

The technical data represent average values, based on the applicable test standards.
Values are typical but not guaranteed, unless agreed otherwise.
Datasheets are available upon request.

Regular High Alumina Chamotte Dense Castable

General dense high alumina castables made from selected raw materials calcined at high temperatures. For applications up to 1.650 °C.

Quality	Maximum Service Temperature	Chemical Composition		Cold Crushing Strength at 815 °C
		Al_2O_3	Fe_2O_3	
Curon 150 H	1.500 °C	48%	< 2%	30 MPa
Curon 160 H	1.600 °C	64%	< 1,5%	50 MPa
Curon 165	1.650 °C	62%	1,5%	35 MPa

Regular Sillimanite Dense Castables

Silimanite based dense castables on account of their characteristics, have an own place in the range of refractories. High refractoriness, very good resistance to spalling and to alkaline slags make these materials suitable for application under severe conditions. For application up to 1.600 °C.

Quality	Maximum Service Temperature	Chemical Composition		Cold Crushing Strength at 815 °C
		Al_2O_3	Fe_2O_3	
Curon 160	1.600 °C	63%	1%	25 MPa

Regular Bauxite Dense Castable

General dense bauxite castables are made from typical selected bauxite raw materials. The quality is generally very high abrasive resistant. For applications up to 1.700 °C.

Quality	Maximum Service Temperature	Chemical Composition		Cold Crushing Strength at 815 °C
		Al_2O_3	Fe_2O_3	
Curon 150	1.600 °C	80%		45 MPa
Curon 170 B	1.700 °C	78%	< 1,5%	25 MPa

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Datasheets are available upon request.

Regular Corundum Dense Castable

Dense corundum based castables are extremely high classified castable. These qualities combine very low creep, very good thermal resistance and excellent hot properties. The quality is used in high fired and heavy loaded equipment. For applications up to 1.870 °C.

Quality	Maximum Service Temperature	Chemical Composition		Cold Crushing Strength at 815 °C
		Al_2O_3	Fe_2O_3	
Curon 180	1.800 °C	95%	0,05%	50 MPa
Curon 180 T Sp	1.870 °C	94%	0,05%	50 MPa
Curon 185 T	1.870 °C	97%	0,05%	17 MPa

(Ultra) Low Cement Dense Castables Vibron

These low cement castables are characterized by an extremely low water content to be added resulting in a much more dense and stronger castable with high cold crushing strength.

Quality	Maximum Service Temperature	Chemical Composition		Cold Crushing Strength at 815 °C
		Al_2O_3	Fe_2O_3	
Vibron 140	1.400 °C	50%	< 1,5%	90 MPa
Vibron 150	1.500 °C	82%	1,5%	80 MPa
Vibron 50 R	1.600 °C	50%	< 1%	75 Mpa
Vibron 160	1.600 °C	60%	< 1%	80 MPa
Vibron 160 H	1.600 °C	63%	1,5%	80 MPa
Vibron 170 M	1.700 °C	73%	0,2%	80 MPa
Vibron 175 B	1.750 °C	85%	< 1%	80 MPa
Vibron 180	1.870 °C	98%	0,05%	75 MPa

Low Cement Self-Flowing Dense Castables Flucon

These castables are characterized by an extremely low water content smoothly self-flowing without any vibration resulting in high cold chrushing strength.

Quality	Maximum Service Temperature	Chemical Composition		Cold Crushing Strength at 815 °C
		Al_2O_3	Fe_2O_3	
Flucon 150 S	1.500 °C	79%	1,3%	120 MPa
Flucon 50 R	1.600 °C	55%	1%	100 MPa
Flucon 160 H	1.600 °C	65%	1%	70 MPa
Flucon 180	1.800 °C	97%	0,05%	100 MPa

The technical data represent average values, based on the applicable test standards. Values are typical but not guaranteed, unless agreed otherwise. Datasheets are available upon request.

Curas Mouldables General ramming mouldable for hot face and special shaped constructions.				
Quality	**Maximum Service Temperature**	**Chemical Composition**		**Bonding system**
		Al_2O_3	**Fe_2O_3**	
Curas 60 SD	1.600 °C	59%	1,5%	Ceramic bond
Curas 85 PD	1.650 °C	85%	< 1,5%	Phosphate bond
Curas 90 PD	1.700 °C	90%	< 1%	Phosphate bond
Curas 90 D	1.760 °C	90%	1%	Ceramic bond
Curas PBK D	1.750 °C	96%	< 0,5%	Phosphate bond

INSULATING MONOLITHICS

Golite Insulating Castables In accordance with ASTM specification general castables for hot face and back-up for casting and gunning application in heaters and ducting. Wide range of Golite insulating castables for general applications. Applicable for hot face and back-up lining constructions.						
Quality	**Maximum Service Temperature**	**Chemical Composition**		**λ at 815 °C**	**Density at 815 °C**	**Cold Crushing Strength at 815 °C**
		Al_2O_3	**Fe_2O_3**			
Golite 1.0.6. Mix C&G	1.000 °C	29%		0,23 W/mK	500 kg/m³	0,8 MPa
Golite 1.2.4. Mix C&G	1.100 °C	25%		0,30 W/mK	1.000 kg/m³	2 MPa
Golite MW	1.100 °C	22%		0,42 W/mK	1.210 kg/m³	5 MPa
Golite 90 L	870 °C	9%		0,15 W/mK	400 kg/m³	0,4 MPa
Golite 120	1.200 °C	28%		0,29 W/mK	1.050 kg/m³	2,5 MPa
Golite 130	1.300 °C	37%		0,45 W/mK	1.490 kg/m³	11 MPa
Golite 140	1.400 °C	41%	3%	0,47 W/mK	1.430 kg/m³	10 MPa
Golite 155 C&G	1.550 °C	51%	< 2%	0,49 W/mK	1.380 kg/m³	10 MPa
Golite 160	1.650 °C	59%	< 1,5%	0,50 W/mK	1.400 kg/m³	10 MPa
Golite 180	1.800 °C	94%	0,05%	1,08 W/mK	1.420 kg/m³	20 MPa

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Datasheets are available upon request.

Golite Extra Light Weight Castables Golite XLW and L castable are charactarized by a high insulating value at high temperatures. Specially developed for applications where high insulation values are required. Applicable for hotface and back-up lining constructions.						
Quality	**Maximum Service Temperature**	**Chemical Composition**		**λ at 815 °C**	**Density at 815 °C**	**Cold Crushing Strength at 815 °C**
		Al_2O_3	**Fe_2O_3**			
Golite XLW 110 C&G	1.100 °C	30%		0,18 W/mK	600 kg/m³	1,5 MPa
Golite 110 L	1.100 °C	25%		0,26 W/mK	1.000 kg/m³	2 MPa
Golite XLW 125 C&G	1.250 °C	38%	1,2%	0,16 W/mK	525 kg/m³	1,5 MPa
Golite 135 L	1.350 °C	42%	< 5%	0,27 W/mK	1.050 kg/m³	4 MPa
Golite XLW 140 C&G	1.400 °C	59%	< 1%	0,20 W/mK	650 kg/m³	2 MPa
Golite 140 L	1.400 °C	70%	< 1%	0,28 W/mK	900 kg/m³	1,5 MPa
Golite 155 L	1.550 °C	80%	< 0,5%	0,38 W/mK	900 kg/m³	2,8 MPa

Golite Low Iron Insulating Castables Range of low iron Golite insulating castables for general applications. Specially developed for CO resistancy.						
Quality	**Maximum Service Temperature**	**Chemical Composition**		**λ at 815 °C**	**Density at 815 °C**	**Cold Crushing Strength at 815 °C**
		Al_2O_3	**Fe_2O_3**			
Golite 1.0.6 Mix R	1.200 °C	38%	< 1,5%	0,23 W/mK	500 kg/m³	0,8 MPa
Golite 125 R	1.250 °C	35%	1%	0,28 W/mK	800 kg/m³	1,5 MPa
Golite 130 R	1.350 °C	45%	3%	0,41 W/mK	1.350 kg/m³	9 MPa
Golite 135 R B	1.350 °C	54%	< 1,5%	0,39 W/mK	1.350 kg/m³	6 MPa
Golite 135 R	1.350 °C	70%	< 0,5%	0,28 W/mK	800 kg/m³	1,5 MPa

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Values are typical but not guaranteed, unless agreed otherwise.
Datasheets are available upon request.

SPECIAL PURPOSE MONOLITHICS

Castables for Aluminium Melting & Holding Furnaces

Special high alumina dense castables made from selected raw materials applicable in the aluminium industry. This castable is resistant against liquid aluminium.

Quality	Maximum Service Temperature	Chemical Composition		Cold Crushing Strength at 815 °C
		Al_2O_3	Fe_2O_3	
Alu-cast 35	1.300 °C	35%	2%	25 MPa
Alu-cast 60	1.300 °C	58%	1,5%	90 MPa
Alu-cast 75 G	1.300 °C	78%	1%	90 MPa
Alu-cast 80 HS	1.300 °C	84%	0,7%	120 MPa

Castables for Fluidized Catalytic Crackers (FCC)

Full range of castable products that can be used in all parts of the FCC Units: Regenerator / Reactor cyclones, head, risers, chamber, etc.

Quality	Maximum Service Temperature	Chemical Composition		Cold Crushing Strength at 815 °C	Density at 815 °C	Abrasion Loss
		Al_2O_3	Fe_2O_3			
Golite 125 S	1.250 °C	47%	1,5%	7 MPa	975 kg/m³	
Golite 135 HS	1.350 °C	48%	2%	12 MPa	1.250 kg/m³	
Curon 140 L HS	1.400 °C	51%		40 MPa	1.720 kg/m³	< 14 cm³
Curon 140 HS	1.400 °C	54%		60 MPa	2.150 kg/m³	< 10 cm³
Flucon 140 L HS	1.400 °C	55%		60 MPa	1.800 kg/m³	< 14 cm³
Flucon 140 HS	1.400 °C	52%		75 MPa	2.150 kg/m³	< 10 cm³
Curas 90 SPF	1.600 °C	82%		140 MPa	2.750 kg/m³	< 3 cm³ (2,6 typical)
Curas 90 PF	1.850 °C	90%	0,15%	110 MPa	2.850 kg/m³	2 - 4 cm³

Castables for Waste Incineration

Special Silicon Carbide containing castables are used in waste incinerators and for application where a high heat flux is needed. This material is also high erosion resistant and applicable at liquid metals applications. Available in vibration and self-flowing qualities.

Quality	Maximum Service Temperature	Chemical Composition		Cold Crushing Strength at 815 °C
		Al_2O_3	SiC	
Vibron 160 K60	1.600 °C	30%	60%	80 MPa
Vibron 160 K75	1.600 °C	12%	75%	70 MPa
Flucon 160 H K15	1.650 °C	60%	15%	50 MPa
Flucon 160 K85	1.600 °C		85%	60 MPa

The technical data represent average values, based on the applicable test standards.
Values are typical but not guaranteed, unless agreed otherwise.
Datasheets are available upon request.

Mouldable refractory materials Special ramming mouldables for various applications where extreme high wear resistance and/or high heat conductivity is required.				
Quality	**Maximum Service Temperature**	**Chemical Composition**		**Typical property**
		Al_2O_3	**Fe_2O_3 / Other**	
Curasbond 60	1.600 °C	60%	< 1,5%	Repair mass phosphate bond
Curasbond 85	1.650 °C	85%	0,7%	Repair mass phosphate bond
Curas K70 D	1.500 °C	18%	70% SiC	SiC mass phosphate bond
Curas K90 D	1.500 °C	3%	87% SiC	SiC mass phosphate bond
Curas 85 P Sp	1.650 °C	83%	1%	Erosion Loss 2 - 4 cm³

Quick Repair Special range of Velox-castables for repair and maintenance purpose. Velox castables don't require a dry-out curve and therefore excellent for rapid heating in case standard dry-out cannot be performed within a standard heating time frame.				
Quality	**Maximum Service Temperature**	**Chemical Composition**		**Cold Crushing Strength at 815 °C**
		Al_2O_3	**Fe_2O_3 / Other**	
Velox 150	1.600 °C	84%	1,7%	50 MPa
Velox 160 H	1.600 °C	63%	1,5%	40 MPa
Velox 160 K60	1.600 °C	30%	60% SiC	40 MPa
Velox MD 145	1.450 °C	53%		8 MPa
Velox MD 180	1.800 °C	> 95%		25 MPa

The technical data represent average values, based on the applicable test standards.
Values are typical but not guaranteed, unless agreed otherwise.
Datasheets are available upon request.

MORTARS AND COATINGS

Mortars & Coatings				
Quality	**Maximum Service Temperature**	**Chemical Composition**		**Typical property**
		Primary Component	**Secondary Component**	
Adhesiet A - 180 P	1.450 °C - 1.800 °C	38% - 90% Al_2O_3	53% - 2% SiO_2	Air Setting Mortar
Heat Setting (HS) A - 180	1.450 °C - 1.800 °C	40% - 94% Al_2O_3	53% - 5% SiO_2	Heat Setting Mortar
SuperSet XT	1.650 °C	42% Al_2O_3	53% SiO_2	General mortar for all refractory purpose up to 1.650 °C
Alu-Coat Z	1.100 °C	> 55% ZrO_2	30% SiO_2	SiC mass phosphate bond
Actres 34	1.800 °C	58% ZrO_2	38% SiO_2	General protective refractory coating
Cohesiet HF	1.800 °C	80% Al_2O_3	16% P_2O_5	Protective coating against Fluoric acid (HF)
Cohesiet ZV Sp	800 °C	70% Al_2O_3	24% SiO_2	Acid resistant steel case coating for protection / dewpoint corrosion
Cohesiet	1.600 °C	8% Al_2O_3	35% P_2O_5	Refractory coating to increase the resistence against liquid slag, alkali and metal

Special Coatings AN-Seal				
Quality	**Maximum Service Temperature**	**Typical Layer Thickness**	**Consumption per layer**	**Description**
AN-Seal 50 NW	1.100 °C	1 mm - min. 1 layer	1 kg/m²	Non-Wetting coating adding resistance to liquid aluminium
AN-Seal 58 HR	1.800 °C	1 mm - min. 2 layers	1 kg/m²	Zirconium based heat reflective coating reducing energy consumption
AN-Seal 70 AR	800 °C	1 mm - min. 2 layers	1 kg/m²	Anti-acid coating applied on the shell to protect against (sulphuric) acids
AN-Seal 80 FA	1.800 °C	1 mm - min. 2 layers	1,5 kg/m²	Special high aluminium oxide based coating applied on the shell against corrosion by fluoric acids
AN-Seal 85 CR	1.800 °C	1 mm - min. 1 layer	1,5 kg/m²	Chromium based mortar that creates additional chemical resistance, fills small voids and reduces slag viscosity

The technical data represent average values, based on the applicable test standards.
Values are typical but not guaranteed, unless agreed otherwise.
Datasheets are available upon request.

Production

Gouda Refractories is a true Dutch company and produces dense refractory bricks and refractory castables by certified and automated processes. The modern production facility can press up to 1600 tons and is equipped with robots for handling pressed bricks. In 2013, Gouda Refractories expanded its production capacity by 60% by taking the third tunnel kiln in operation. In 2018 a new separate high grade mixing line has been commissioned.

The specialized precast department is the extension of the brick factory and the castable plant. Special developed No Cement Castables are used for the production of special shaped products that can't be pressed. It is of course essential that the quality of the precast elements is of the same quality as that of the rest of the refractory construction. This demands an innovative mould technique and strictly controlled castable processing, modern processing equipment, quality maintenance and control. Gouda Refractories can't only dry but also fire up to 1700 °C in its tunnel kilns and periodic furnaces. The result is a cast product with the same physical properties as a pressed brick. High quality and competitive prices are achieved by the continuous investments in production facilities and in long-term relationships with both customers and suppliers of raw materials.

Engineering

The engineering department is the beating heart of the technological know-how of Gouda Refractories. Product managers, engineers and R&D combine their strengths to develop the best solution for each application, every time.

By using modern tools for mechanical strength calculations, heat transfer calculations, 3D modelling and CAD drawings, Gouda Refractories' engineering department is able to transform a customer's requirement into a fully functional refractory lining design - fit-for-purpose.

Research & Development

Refractories must not only withstand high temperatures but also oppose thermo-mechanical degradation (e.g. thermal shock, abrasion and mechanical impact) and corrosion processes (e.g. slag attack, interaction with kiln atmosphere or liquid metal and phase transformations). Every application has its own specific process conditions and installation limitations for which an optimum set of refractory properties has to be determined. The R&D department has an advanced, independent ISO-certified laboratory for developing and testing new products to make sure that the properties of the material match the demands of the customers. Apart from that, the R&D department performs so-called post mortem investigations in order to determine the root cause in case of a problem and to gather information regarding the required direction for new product development.

Exchanging knowledge and joint research with international research institutes such as TNO, DIFK and Lucideon Ltd increase the quality and application range of all refractory products. R&D is also important for propagating specialized refractory knowledge. The well-attended annual International Refractory Course contributes substantially to this process.

Inspection, Supervision & Installation

Having its roots in a joint construction and manufacturing company and in synergy with its sister companies, Gouda Refractories employs a number of refractory experts that have their basics in refractory installation and at least 20 years hands-on field experience prior to be dispatched as inspector or supervisor.

These experts are deployed to project sites across the globe to advise customers on the installation work performed by others, to verify if installation and storage procedures are followed, to inspect customer equipment if and when needed or to train customers' operators and maintenance staff.

Gouda Refractories' inspectors and supervisors use modern communication tools and are supported by Product Management and the engineering department. Therefore, they are able to share their findings with the home office and can get support in the field.

In some cases, customers require an all-inclusive, turnkey package. With a network of experienced, well-known and trusted installation partners around the world, Gouda Refractories is able to provide a turnkey solution: from initial design up to dry-out!

Synergy

The organizational and physical proximity of other operating companies in the Gouda Refractories Group enables Gouda Refractories to generate a synergy advantage by collaborating with subsidiaries Gouda Vuurvast Services, Gouda Vuurvast Belgium, Gouda Feurerfest Services and Gouda Refractories Nordic.

Logistics

Gouda Refractories is strategically located in the vicinity of major international transport hubs (Port of Rotterdam, Port of Antwerp, Amsterdam Schiphol Airport) and is connected to major high ways, rivers and railways that run into the European hinterland.

This means that Gouda Refractories can transport its products to its customers at a competitive price level.

GOUDA *refractories*

SHINAGAWA REFRA GROUP

HEAD OFFICE AND PRODUCTION LOCATION

Gouda, The Netherlands
Goudkade 21, 2802 AA Gouda
P.O. Box 56, 2800 AB Gouda
T +31 (0)182 59 14 00
info@goudarefractories.com
www.goudarefractories.com

PRODUCTION LOCATION

Geldermalsen, The Netherlands
De Rondoven 2, 4191 GX Geldermalsen

SALES OFFICE

Bochum, Germany
Vienhovenweg 2c, D-44867 Bochum
T +49 (0)2327 - 97 90 674

Part of a Group

GOUDA Refractories is an independent operating company of Shinagawa Refra Group. Shinagawa Refra Group is listed on the Tokyo Stock Exchange and is a leading manufacturer of refractory and insulation materials for industrial applications in the steel, cement, and glass industries, among others.

The Group provides a complete solution to customers, from documentation and engineering to installation or supervision and maintenance services.

LRQA CERTIFIED ISO 9001

Group companies:

GOUDA *refractories*
GOUDA *vuurvast belgium*
GOUDA *vuurvast services*
GOUDA *feuerfest services*
GOUDA *refractories nordic*

ITR

GOUDA *refractories group*