

INTRODUCTION

QUALI'METAL is founded in 1994 in Cairo, Egypt in the field of fabrication, trading, designing and installing of aluminum glazing windows, doors, curtain walls, partitions and skylights to serve the construction companies in the Egyptian market.

Quali'Metal launch an experts technical engineering and architects office to serve the Architectural consultant and designers to support them in this field, with a very experts in working drawing, details and technical calculation also choosing the ideal profiles and solution depending on the latest data sheet for aluminum alloys and specification of all kinds of glass and coating aluminum.

Quali'metal have chosen the best supplier in the Egyptian market to fulfill the Architectures need and studied all the updating in this field all around the world and always searching for the best suppliers and designers for aluminum, glazing and coating with direct contact.

As the policy of **QUALI'METAL** to work as a specialist within this field and to have good share with the market;

Quali'Metal is a joint venture with;

MACHINES & ALUMINUM CENTER as the largest Architecture Aluminum Company since 1974, with a big succession during years for many construction projects.

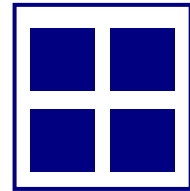
EL DAWLIA one of the largest company for coating Aluminum with the latest technical specification and high technology manufacturing in this field.

DR. GREICHE one of the biggest companies for manufacturing glass with all the Architectural needs.

Also, with some other international company for accessories in Europe

QUALI'METAL systems

For manufacturing, trading and contacting
Aluminum



QUALI'METAL has chosen one of the biggest International machinery suppliers **FOMINDUSTRIE** a leading company in our field to develop our Factory with the latest machinery and software Beginning with 2003

QUALI'METAL has launched a new joint venture with one of the biggest leading company for this field **REYNARES** aluminum international company

Which having a big team in technical supporting and designing to bringing Aluminum to live, having many solution to give the Architectural design all facilities and durability and time guarantee

THE COMPANY

QUALI'METAL system co. Ltd.

Commercial register no.; 13340

CAIRO INVESTMENT COMMERCIAL REGISTRY

Law 8 for year 97 and its regulation for investment

Head office : 71 Sakr korech Bld., Sheraton , Heliopolis

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E-mail: Info@quali-metal.com

Web site : www.quali-metal.com

Factory : 3,172 St., West Extension , industrial zone 1

Tel.: + (202) 46651308 - + (201) 22330871

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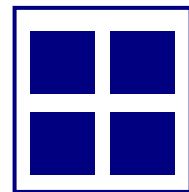
Store house : 23 Ben Hanbal St., Gisir el Suez

Tel.: + (202) 26998424

Total productivity of 60,000 m² / year

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THE FACTORY

QUALI'METAL is based on a very good foundation for fabrication in OBOUR Industrial Zone under the license of the CAIRO INVESTMENT COMMERCIAL REGISTRY Currently employs staff qualified people with an administrative office All the production and the assembly in equipped with PNEUMATIC It consist of two separate production lines for windows, doors and curtain walls systems with different fabrication facilities

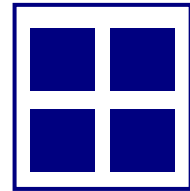
- *Standard Windows and doors
- *Non-standard Window and doors
- *Curtain wall and structural glazing
 - *Skylights
 - *Cladding
- *Auxiliary products
- *Hardware Assembly

The following production tools are available:

- | | |
|--|---|
| 1- Double Miter Saw with automatic software
(Have the ability of sending orders from office) | 1 |
| 2- Copy router 3 axis with automatic software NC
(Have the ability of sending orders from office) | 1 |
| 1 3- Lengths and Miter Cutting Saw | |
| 1 4- Cutting Saw | |
| 1 5- Table Saw | |
| 1 6- Trim Saw | |
| 1 7- Spindle copy router | |
| 5 8- Pneumatic press | |
| 2 9- Milling Machine | |
| 1 10-Corner Crimping Machine | |
| 1 11-Drilling Machine | |
| 3 12-Tables for pneumatic assembly | |
| 13-Test Table for windows | |

Transportation and handling equipments

- | | | | |
|----------------------------|---------|--|---|
| Manual forklift – 1.5 tons | | | 1 |
| 2 - 4 tons | Truck | | |
| 1 - 2 tons | Pick-up | | |
| 1 - 13 seat | Bus | | |



GENERAL SPECIFICATION

All section and profiles are from extruded aluminum alloy 6063 according to American standards (ASTM-H35-0.2 1978) and German standards (Din 1748 part 1) free from defects impairing strength or appearance also to the Egyptian standard (ES 1752 part 1,2,3)
Has ultimate tensile strength of 15.5 kg/mm² & hardness of 60 kg/mm²

Fabrication & Assembly

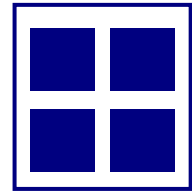
- All corners mechanically joined using heavy aluminum angles
- Stainless steel screws used for hardware fixation
- A drainage system provided for rain and cleaning water
- Hinged doors and windows provided with three gaskets to prevent air & dust infiltration & improve sound insulation
- Central, Lateral, Glass beading gaskets are made of pure EPDM in hardness to suit its application
- Fasteners within accessories are made from stainless steel

Surface finishing

- All exposed surfaces of aluminum profiles is treated either by anodizing treatment (according to DIN 17611) or by electrostatic powder coating

Accessories & Fittings

Heavy duty , high quality European made accessories and fitting are used on all products
Heavy duty polyamide rollers with needle-bearing for sliding



PERFORMANCE REQUIRMENTS:

All aluminum systems performance requirements comply with (BS 6365 part 1) , (Din 18055 , 4108 and 4109), and (Es 1787/89)

1) AIR INFILTRATION:

Cubic m/hr per meter length of visible perimeter of glass at a Pressure difference of 200 pa(N/m²).

2) WATER PENETRATION

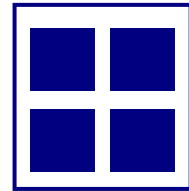
No water leakage at a testing pressure of 550 pa (N/ m²).
Classification: EE(Exceptional)

3) DEFLECTION:

Members retaining an insulating glass unit shall not deflect more than L/175 over length or height of the glass unit when submitted to the design wind pressure and allowable factor of safety.

4) SOUND INSULATION:

Maintain Din 4109 sound proofing requirements.
Special combinations of window, door frames or curtain walls using sound insulating glass can achieve a sound Reduction index Rw of 49 dB.



5) RUBBER GASKETS

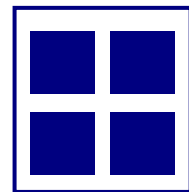
Tightness of all operable sashes (hinged), and of glazing is assured by EPDM gaskets.

EPDM (Ethylene Propylene Diene Monomer) is a rubber mixture extremely resistant to servers weather changes. It is not affected by acids, alkaline, Ozone, salts,heat,cold,nor moisture.

Specifications of rubber gaskets can be as follows:

- * The gaskets` material shall consist of at least 50 % by weight of basic rubber hydrocarbon .
- * The material shall not consist any crude or reclaimed rubber.
- * The material shall be homogeneous and free from defects.
- * Cured EPDM shall meet the following properties when tested in accordance with ASTM test slabs and compression set plugs:

Typical values	Test procedure	property
50	ASTM D-2000	Hardness(± 5)
11.2 \rightarrow 12.4	ASTM D-2000	Tensile strength (N/sq.mm)
400	ASTM D-412	Elongation(%)
Complies	ASTM D-865	Heat Aging



MACHINES & ALUMINUM CENTER

With more than 380 different profile

Systems have certain codes related to profiles used

- SH-80 Indicates lightweight sliding system profile
1.7 mm thickness, 80 mm frame depth
- TG-60 Indicates medium weight sliding system profile
1.8 mm thickness, 60 mm depth
- J-100 Indicates heavy weight sliding system profile
2 mm thickness, 100 mm depth
- SH-45 Indicates heavy weight hinged system profile
1.8 mm thickness, 45-52 mm depth
- SH-40 Indicates lightweight, hinged system profile
1.5 mm thickness, 40-48 mm depth
- CW-52 Indicates heavy weight curtain wall system
2 mm thickness
- CW-62 Indicates Heavy weight structural glazing system
2 mm thickness

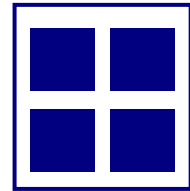
Technical specifications

Materials

- All aluminium profiles are from extruded aluminium alloy American standards (ASTM- H35-0.2 1978) or German standards (Din 1748 part 1).
 - o Alloy components :
 - Silicon: 0.3-0.6%
 - Magnesium 0.4%
 - Manganese: 0.1%
 - Zinc: 0.1%
 - Titanium: 0.05-0.1%
 - Aluminium: All the rest
 - o Alloy Specifications:
 - Tensile Strength : At least 1550 kg /cm²
 - Yield Strength: At least 1100 kg/ cm²
 - Elongation : Up to 8.0%

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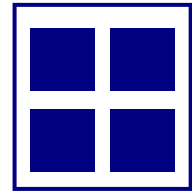
-
- All plastics parts are made from nylon reinforced with fiber glass which has high mechanical properties .
 - All gaskets are made from extruded E.P.D.M – in a hardness to suit its applications.
 - All fasteners within accessories are made from galvanized steel and stainless steel.

Finish

- All exposed surfaces of the aluminium profiles is treated either by anodizing treatment (according to DIN 17611) or by electrostatic powder coating to meet international standards.
- Anodizing treatment according to DIN 17611 with thickness from 16 to 20 micron according to next standards:
 - Abrasion A.S.T.M.D-968-72
 - Acid A.S.T.M.D-3260-73
 - Detergent A.S.T.M.D-2248-73
- Electrostatic powder coating according to RAL Specifications with thickness more than 70 micron.

Technical features for sliding system

- Many varieties are available in frame section and sash sections also
- A full range of accessories is available for the various door and window types.
- Corner Joints are assembled using die cast aluminium corner cleat or locking brackets with dowels, also using different type of angles to keep of right angle.
- Rollers have a high load capacity; that a couple of single rollers can carry a sliding leaf that weigh up to 90 kg, and a



couple of double rollers can carry a leaf that weigh up to 140 kg.

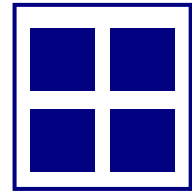
- The profiles provide a large range of infill types and measures, due to the availability of different profile types and a wide range of gaskets measures.
- Additional locking points are available to make more security for the window which make opening or moving leaf is impossible.
- According to moment of inertia value of selected profiles and window type, wind load resistance can be calculated avoiding any deformation grater than 1/200 of window span under load up to 500 pascal.
- Water infiltration is confirms to American standard a.s.t.m.E313, with no penetration up to 10.0 psf and not grater than 1.5 cubic meter per hour per meter length of opening joint at pressure 100 N/m²

Technical Specifications of hinged system

- Different profiles for each type are assembled through corner joints, putting in consideration that connection points should be strong to guarantee strength of the whole construction.
- When designing these profiles, two points we p ut in consideration adequateness of performance and flow of lines as we have various frame shapes and many types of sashes and packets.
- When designing these profiles, chambers were planned to resemble the European chambers to guarantee safe locking. Locking points can reach up to 8 points in addition to the various uses of these systems such as:
 1. Turn system
 2. Tilt system
 3. Swing system
 4. Tilt-turn system
 5. turn-sliding system
 6. folding system

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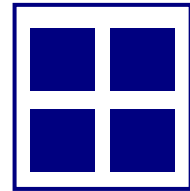
- In addition, it is possible to convert any type to another without reconstruction or deformation of profiles, as all used accessories do not need perforation, instead they are installed in the channels made for them.
- The thickness of outer frame should be at least 45mm and sashes at least 52mm , and for doors thickness should be 45mm, as well as there are various sizes of frames, mullions and transoms to fit all types.
- It was taken in consideration that the sash should be flat to enable easy installation of accessories and specially handles.
- In assembling profiles, high qualified compressors are used to guarantee easy and accurate assembling.
- Profiles were designed to resist loads, such as wind, storms with a study to air resistance up to 50 kg/hour, without any indentation more than 1/200 from the constructional opening and so the moment of inertia was calculated for each profile to know the highest resistance for any constitution.
- The needed accessories for each type are shown as per the technical specifications of each type, and all accessories are installed by means of stainless steel or steels which do not react with oxidized aluminum profiles,
- These Profiles are constructed to bear all kinds of glass with various thicknesses for packets and gasket, thickness of single glass bears 3mm :10mm, whereas thickness for double glass bears 16mm : 22mm surrounded with gasket from inside and outside, for hindering water or air flow, as well as openings were taken in consideration in case of double glass.
- It was observed in profiles to be easily installed side by side with other systems such as sliding systems for partitions.

Technical Specifications of Panorama CW 62 system

- span according to the moment of inertia of selected profiles and wind load design as shown in the technical catalog.

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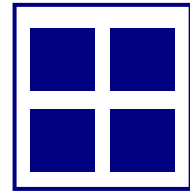
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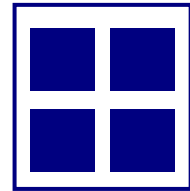
- Panorama 62 system allows a certain extent of water infiltration in the construction (pressure equalized glazing system). The infiltrated water can be drained in a controlled way by the vertical suspension profiles or by the drainage holes applied in the horizontal profiles.
- Panorama 62 system is designed for continued facade means of expansion joints which specially designed to avoid the thermal loads (resulting from temperature fluctuations) and also to absorb the vibrations without any leakage or air infiltration (expansion gap 1.4 mm. per each meter length with max 30 mm.)
- The curtain wall element is fixed on the supporting structure by means of anchoring (Fixing Joints). The quantity, position and anchoring method must be applied according to the curtain wall elements (wind load, self weight, sun protection, Etc..).
- Fixing joints are designed for allowing movements between the structural work and the curtain wall elements without cause any disturbing noise.
- Panorama 62 system allows opening fully concealed windows that are integrated with fixed panels, so the opened window has the same appearance of the fixed panel either from inside or outside the building.
- A wide range of accessories is available for the various designs and types (Corner Joints, aluminium T cleat, locking devices, brackets, friction stays hinges, Etc..).
- The glass panels are screwed down in the channel of the supporting structure by means of special screws in order to obtain a suitably sealed system.

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- Panorama 62 is designed for different types of glazing and provides a large range of intill types and measures, due to the availability of different profile types and a wide mngc of gaskets measures.
- Glass panels may not be in direct contact with the aluminium structure profiles, Panorama 62 system is based on a series of glazing profiles that interlocked to construct frame panels which are screwed in the screw channels of the supporting structure to obtain completely flush Glazing, by press the aluminium glass panel against the EPDM gaskets that fixed on the aluminium structure mesh.
- This aluminium panels can hold the glass panels mechanically in a given U - shape in the aluminium frame that called Semi structural glazing or by glueing the glass to the aluminium frame using structural silicon to construct a fully 4 sided structural glazing system.
- Structural silicon is used as a bonding material between the glass and the aluminium frame.
Panorama 62 is designed to use an anodized bonding profile that enhances the compatibility with the structural silicon glue, this profile should be cleaned by a cleaner which acts as a degreaser and primer.
- Structural silicon should be supplied by an approved supplier (Dow Corning Sika - Tremco), Recommended structural silicon types (DC 993 by Dow Corning or SG500 by Sika or VEC99 Proglaze II by Tremco) or other silicones have been performed tests for the structural glue indicated in EO'A guide.



THE GENERAL SPECIFICATIONS FOR GLASS

Dr.Greiche

Thermal Insulation

The use of glass in buildings offers a wide variety of advantages as follows:

- 1- Decorating & distinguishing the building.
- 2- Providing good comfortable working conditions for the employees.
- 3- Energy reduction.

1-Decorating & distinguishing the building:

Glass for buildings (especially administrative buildings) is considered a vital and very effective factor of aesthetic appeal of the building. (more information is available in the glass [externalfaçades](#) section).

2-Providing good comfortable working conditions for employees:

This is maintained by using glass of different transparency levels to provide color-natural visibility for undistorted, natural views from the interior together with excellent light transmittance that enhances energy reduction during daytime, meanwhile offering quiet and undisturbed working environment by reducing visual & acoustic distractions.

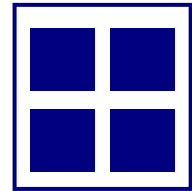
Moreover, It maintains the sensation of thermal comfort since the feeling of excessive heat or cold causes loss of mental concentration span.

3-Energy Reduction:

In view of the fact that maintaining thermal balance of human body needs electrical heating in winter and air conditioning in summer (dominant season in Egypt), glass offers a wide contribution in saving electrical energy used for the above purposes by controlling thermal transmittance levels.

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*The higher light transmittance the less electrical lighting is needed=Energy reduction.

*The more efficient thermal insulation performance is, the less air conditioning is needed=Energy Reduction.

Glass designers can maintain both advantages (thermal insulation + high light transmittance) if needed (mainly in cold sunless countries). If the architect needs to maintain both thermal insulation and low light transmittance of different degrees, it is best to use one or more layers of colored or reflective glass (very suitable to overcome hot weather conditions like in Egypt). This is because of the fact that more light insulating glass is (as in tinted or reflective glass), the more heat absorption and thermal insulation it provides.

Glass and Its Energy Performance

In Brief, the following points are going to be tackled:

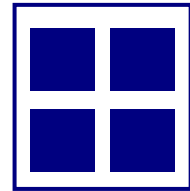
- 1- International thermal standards.
- 2- Light transmittance & thermal controllers.
 - a) thickness.
 - b) color.
 - c) air spacer (insulating glass).
 - d) coating (reflective layers).
- 3-Energy reduction rate of insulating glass.
- 4-Insulating glass as environment friendly.

1-The International Thermal Standards:

Glass characteristics like light transmittance or even its colors can be easily selected by consultants or consumers when objecting glass samples to light. But as for glass thermal control characteristic (heat insulation) it has more than one standard. Or definition that highlights this functional resistance.

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The most of the commonly used standards are as follows:

- 1- Direct solar energy reflectance (D.E.R.)
- 2- Direct solar energy Transmittance (D.E.T.)
- 3- Energy Absorption (E.A.)
- 4- Solar Factor (S.F)=Total Solar Energy Transmittance=g-value

Shading Coefficient (S.C.)=b-Factor

6- K (U)-value.

7- U-Value (U-factor)=ASHRAE U-Value American

8- R-Value

9- Dew Point

10- Solar Heat Gain Coefficient.

11- Relative Heat Gain (R.H.G.)

12- Efficacy factor (Ke)

13- Dr.Greiche unit (*DG*unit)

Note: The numbers shown above are considered merely illustrative figures which vary according to glass type & characteristics.

2-Thermal Controllers:

a)Thickness:

The thicker the glass, the more it absorbs heat and accordingly the less solar heat it gains.

Meaning, glass thickness is:

* inversely proportional to solar heat gain.

* Directly proportional to heat insulation.

b)Color:

Colors come from adding oxides to the glass mixture.

These colors are not considered superficial.

The most common colors of glass are:

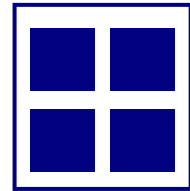
(Bronze - Green - Blue - Grey - Rose - Amber)

For Example:

- Adding iron oxide gives green color
- Adding selenium & nickel oxide gives bronze color
- Adding cobalt oxide gives blue color

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* Basically, coloring glass enhances its ability of heat absorption and accordingly its thermal insulation.

For example:

* Green color enhances thermal control while maintaining natural visibility (without color shifts) and undistorted vision. This is why it is used in auto glass.

* Grey color enhances thermal control and reduces light transmission.

c) Insulating Glass I.G:

Glass is generally considered as a good thermal conductor.

However, in order to enhance its thermal characteristics, two layers of glass with an intermediate air space are enough to fulfill that purpose (since air has a less thermal conducting factor compared to glass).

- If the width of air space is up to 15 mm maximum, the thermal insulation capacity increases.

- However, air spacer of 12 mm ensures maximum thermal insulation and is suitable & practical under most installation conditions.

- Adding a third glass layer and 2 more air spacers further effectively enhances the level of thermal control.

d) Coated Reflective Glass:

* Reflective glass is coloured glass or clear glass coated with a special coat or a number of coats of one or many metals like: (silver Ag - chrome Cr - silicon Si - stainless steel SS (Ni Cr)

* This type is called coated glass or reflective glass as it reflects the light falling on its surface with different levels, and this does not mean that this kind of glass is heatproof.

* Metal coating of glass aims at enhancing the thermal characteristics and in this condition, the glass is called:

- Solar energy reflecting glass.

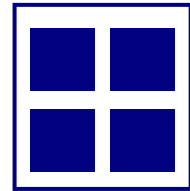
- High performance reflecting glass.

- K-glass or solar control glass.

* Usually for thermal insulation, reflection or absorption, special metals are used like: (Au - Ag - Ti - Tin oxide)

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* Deposition methods of the metal coating vary. The most common methods are:

- 1- CVD Chemical Vapor Deposition
- 2- Sputtering (vacuum coating method)

* Coating of reflective glass is divided into:

- 1- Soft Coating.
- 2- Hard Coating.

Ultra Violet Rays "U.V" Blockage

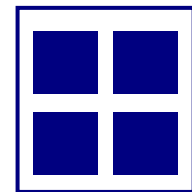
Although the U.V. represents 2% only of the total solar energy which is penetrating the Ozone layer, it is the main reason which cause color fading of furniture, carpets and oil paintings. It also has a harmful negative effect on human's eyes & skin^{*}.

Thus, U.V. proof glass was used giving architects immense freedom of designing buildings and of interior furniture arrangement with total liberty, especially in museums and display showrooms.

- The thicker the glass, the less the U.V. penetration.
- Colored glass minimizes the U.V. penetration according to its color.
- Reflective glass prevents U.V. penetration more than colored glass.
- Clear laminated glass prevents from 99.5% to 100% of U.V. penetration.
- Colored laminated glass prevents from 99.5% to 100% of U.V. penetration.

Sometimes when strong light penetration is needed as in houseplants where plants must be exposed to strong light in order to complete the photosynthesis process vital to their growth, it is highly recommended to use clear laminated glass to guarantee maximum light penetration and total UV blockage rather than total colored or reflective glass.

(*) Excess exposure to U.V. causes skin cancer and retina damage.



Sound Insulation

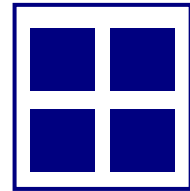
Noise Level (dB)	Source
120 - 130	Airport Noise
100-110	Railways Noise
80-90	Street Noise
70-85	Different Disturbing Noise Sources

Measuring Sound Frequency

Source	Type	Measuring (dB)
Aircraft Engine	<i>High</i> Frequencies	120 -130
Train Arriving	<i>High</i> Frequencies	100 - 110
Car Hooter	<i>Low</i> Frequencies	80 - 90
People Speaking Loudly	<i>Mixed</i> Frequencies	70 - 85
Quiet Apartment		45 - 55
Desert Silence		10 - 0
Absolute Quite		0

Resistance to Thermal Stress (Thermal Breakage)

Glass like most other materials expands with the increase in temperature. When glass is directly exposed to solar radiation, it absorbs heat, rises in temperature and expands. The edges of the glass in the frame, which are shielded from the radiation, remain cooler than the exposed area. The force generated by the expansion of the central portion of glass stretches the cooler edges and causes stress which, should it reach the breaking stress of the glass, will result in **thermal breakage**.



Protection

Glass was known for its weakness and fragility. Even the word "glass" was used to describe anything fragile. This is not true anymore, glass can be toughened and penetration-proof against any attack by sharp instruments or gunshots while preserving its transparency. This was realized by using multiple glass layers which are adhered together by using a strong clear adhesive.

By using multi-layers of different thicknesses, anti-attack and anti-penetration glass of different levels is available. The most important uses are protection for individuals, properties and valuable possessions, or even for hard usage purposes like glass stair cases and paths or water & wind pressure-proof glass.

At breakage or blasting, glass fragments do not scatter or fly apart since it remains as one unit due to the adhesive layer, and remains one piece until its replacement.

In some special cases where glass is frequently exposed to excessive heat or continuous friction, the super collection is highly recommended. This collection is marked by its exterior tempered layers, which enable it to overcome excessive heat and continuous friction, i.e. It is distinguished by its firmness and solidity.

General protection of glass is realized by the following:

1- Tempering:

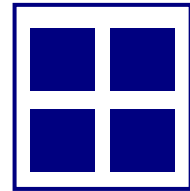
Through tempering, glass is exposed to a sudden cold air stream after being highly heated in order to be tempered or toughened surface compression and become firmer, sometimes more powerful (mechanically) than normal glass, and consequently its heat endurance increases to stand up to 300 degree C.

2- Multiplying layers:

Glass consists of 2 or more layers of glass with inter-layers of P.V.B . It is called "Laminated glass".

This type is marked out by its total resistance to penetration and at breakage it remains in one firm piece.

Further multiplying glass layers will consequently add more capacity for penetration resistance and to ultimately becoming bullet-proof.



LAMINATED GLASS

One of the facilities Dr. Greiche is providing to its clients is the laminated glass line.

GENERAL:

Laminated glass consists of two or more panes of glass with an interlayer of reinforcing material between each two panes. The interlayers are permanently bonded to the glass panes under carefully controlled processing. The interlayers are resistant to penetration and they absorb impact shock, holding the glass in place and preventing extensive spalling of glass fragments. The degree of protection provided by laminated glass depends on the overall thickness and construction.

Laminated glass can usually be cut to size and worked after manufacture, suitable techniques depend on the type and construction of the laminated glass.

CONSTRUCTION:

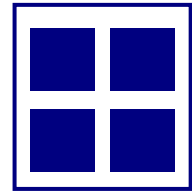
Laminated glass may be used for a wide range of functions; hence it is necessary to

Define the type and thickness of the glass and the requirements for the interlayer. The

Number of layers commonly refers to laminated glasses, i.e. two panes of glass with one interlayer is known as three-ply.

Thicknesses of the interlayer available are 0.8 mm, and 1.2 mm

Tests on laminated glass using UVEKOLs 15 has shown the following results:



Accelerated ageing of UVEKOLs 15-based glass laminates:

Accelerated ageing has been performed on 4/0.8/4 laminates.
The following results were obtained:

Q-panel (UV test)	very slight yellowing after 2400 hours.
" klima "-test:	30 days, no change.
Hot water test:	14 days, no change.

Description of the tests used:

Q-panel (ASTM G 53-7):
12-hour cycle: 8 hours UV – A light (310-390 NM)
Black panel temperature: 60°C

4 hours 100% humidity
Panel temperature: 40°C

" klima " –test (resistance to cycling temperature):

24 hour cycle: 16 hours at + 90 °C
8 hours at -25 °C

Hot water test: immersion in water at 90 °C.

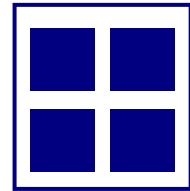
Impact properties of glass laminates using UVEKOLs 15:

A 3/0.8/3 UVEKOL s 15 based laminate satisfies the DIN 52338 requirements for building applications:

1,040g falling ball, 2.5 m height, 1 impact.

QUALI'METAL systems

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Aluminum



TYPES OF LAMINATED GLASS:

Laminated glass is available in a large number of combinations, depending on the thickness and shade of both the glass and interlayers, and on the type of glass (annealed, tempered, figured, rolled, reflective...) Most annealed and toughened glasses can be incorporated in laminates. The combination to be considered depends essentially on the function the glazing must fulfill: simple security against accidental shock, reinforced protection of property against vandalism, bullet resistance, etc...

THICKNESS AND SIZE:

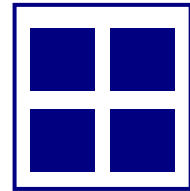
The most common thicknesses are from 6 to 40 mm, but any inquiry may be considered.

The maximum dimensions are those of the glass panes, i.e. 3200 mm X 2250mm

PERFORMANCE:

Solar: In addition to meeting requirements for a safety glazing material, laminated glass possesses other unique properties which make it an excellent product for commercial buildings. Laminated glass provides the greatest reduction of ultraviolet light transmission of any commercial glass product. When combined with two layers of float glass, less than 1% of UV is transmitted.

Sound: Laminated glass reduces noise transmission due to the sound dampening characteristics of the interlayer. While glass is inherently a poor acoustical performer, higher performance levels can be achieved with the use of laminated glass alone or combined with additional glass plies to form a sealed insulating glass unit.



Technical Specifications for Metal Treatment and coating

El Dawlia

Intro

El Dawlia company offers metal surface treatment and painting services especially for metals such as steel and aluminum profiles. We offer an array of colors and paints the client can choose from. Our company specializes in two fields: Selling aluminum profiles painted with any powder coating colors.

Job-coating industry. This includes metal treatment and painting metals like Aluminum, steel and copper.

El Dawlia company specializes in the painting and treatment of metals such as steel, aluminum and its accessories using an array of colors and paints. Both natural and wood effect paints licensed by the Italian Company, (VIV) Decoral which has an expertise in this field since 1988. The first company to make a breakthrough in the painting industry by discovering wooden effect paintings

i.e. Al Dawlia is now ISO 9001 certified

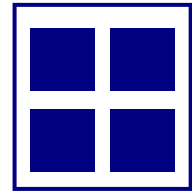
Our Team A d edicated team of 150 talented individuals, behind all the production phase and management. Technicians, managers and engineers responsible for the different production phases, manage the warehouses, purchasing, finance ,marketing and sales departments. El Dawlia company is a (S.A.E) started in 1994 and has an investment of 30 million EGP

Location Located in 6th of October is situated in the Giza governorate. It is located in the Industrial zone #3 in the 6th of October over 3000 Sqm

Metal Treatment The processes necessary to treat the metals needed to be painted in order to assure the efficiency of the paint adhesion on t he metal surface also it's resistance to corrosion and oxidation.

QUALI'METAL systems

For manufacturing, trading and contacting
Aluminum



Raw material: The chemicals are supplied by two HI-Tech german Companies (HENKEL GmbH & CHEMETALL GmbH)

Aluminum treatment: Treating aluminum alloys according to the German standards (DIN) to guarantee the durability.

Steel treatment: Treating steel according to the german standard (DIN) to avoid corrosion and assure quality.

THE TECHNICAL SPECIFICATIONS FOR METAL TREATMENT

- a. Mill finish aluminum in twelve steps.
- b. Anodized Aluminum In sixteen steps
- c. Steel in nine steps (we can provide special treatment for steel for five years guarantee nearby the sea shore.

Raw Materials

Paints:

Colors: (different colors)

The company specializes in the coating of different (RAL) colors.

Wooden Effect:

All wooden colors are available.

New Colors:

Antique and Alwanique colors.

Powder-coating There are four electrostatic powders used for both indoor and outdoor purposes

Indoor Purposes:

Epoxy Powders: The powders used for coating the indoor have no resistance to the sunlight (UV radiations).

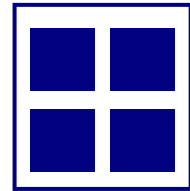
Quality: They have good mechanical properties and excellent chemical resistance

Use: Indoor accessories, cupboards, computer casings, cars fuel tanks, furniture etc...

Epoxy /Polyester powder: These are hybrid powders used for indoor decoration purposes as these powders have limited resistance to the sunlight (UV radiations) as well as good mechanical properties and good chemical resistance.

QUALI'METAL systems

For manufacturing, trading and contacting
Aluminum



Quality: These powders have good mechanical properties and excellent chemical resistance.

Use: These powders are used for painting fans, indoor electric boards and indoor signs etc..

Outdoor Purposes:

Polyester Powders: These are the powders used for out doors purposes as these powders have unlimited resistance for the sunlight (UV radiation).

Quality: These powders have good out doors durability, good mechanical properties also good chemical resistance.

Use: Used for outdoor purposes such as doors/windows.

Decorated polyurethane powders: Are applied on the substrate then submitted to a second stage of heat transfer.

Quality: They have good out doors durability, good mechanical properties and good chemical resistance.

Use: In order to get the wooden like or marble like..., effects.

Production and Quality assurance processes

Al Dawlia treatment & painting metals co ensures that the quality is assessed in the different stages of processing. We use the latest technological systems in the field of metal treatment and painting.

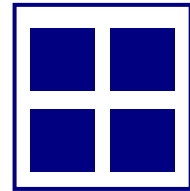
All the treatment tanks are submitted to chemical analysis twice a day performed by qualified chemists according to suppliers DATA SHEETS to assure the treatment tanks strength and guaranty the treatment quality according to the QUALICOAT

Painting process:

- The metal painting processes occur using Electrostatic Powders according the RAL colors @ all powders are supplied from QUALICOAT awarded companies.
- The parts are loaded on a conveyor with variable speed spraying in fully automated spray both supplied by the SWISS company GEMA-VOLSTATIC & containing CYCLON SYSTEM.

QUALI'METAL systems

For manufacturing, trading and contacting
Aluminum



-
- To assure the complete curing of the powder, the heat distribution inside the oven is measured periodically using special equipment to conform the curing with powder DATA SHEETS.
 - The parts are inspected carefully after every step of the treatment & spraying processes by skilled, well trained with good experience technicians.
 - The paint film thickness is measured on the painted parts after coming out from the curing oven to assure that it obtain the needed thickness (60-90) Microns according to the QUALICOAT specifications.
 - Line test is done periodically on the painted parts after the oven to assure the optimum curing and the hardness of the powder inside the oven.
 - All the above mentioned tests beside the VISUAL CHECK for all the painted parts after coming from the oven to guaranty the paint quality and the absence of defects.
 - The defected products are separated in order to be STRIPPED ECOLOGICALLY using the suitable chemicals of each metal then to retreated & repaint it again.
 - After completing the product check, packing of the product check, automatic packing of the product is done using protection film to assure the protection of the product during the transportation process.

Testing paints in laboratories :

The tests are performed in both Al Dawlia Laboratories and in external Laboratories.

Testing is done on the samples that accompanied the products in the pre-treatment & painting processes to assure the perfect quality for the product, these test are shown in the next video.