Nedex Kimya San. Tic. A.S. group of companies

PRODUCT & TECHNICAL DATA SHEET SEPTEMBER 2015

# MELTEX ™

## HIGH PERFORMANCE HOTMELT BUTYL INSULATING GLASS SEALANT

MELTEX™ hot melt butyl insulating glass perimeter sealant is formulated from the highest quality butyl rubber, synthetic polymers and elastomers to deliver outstanding adhesion to glass and aluminium when applied as an edge seal to double and triple glazed window units. This high performance sealant has been specifically and exclusively developed for insulating glass manufacturers. It's fast flowing, low stringing and quick setting properties make it ideal for companies requiring the ability to handle and move sealed units within a short time of production. The product is resistant to degradation from UV light, temperature extremes and exposure to water.

### Features, Properties and Performance Data

- ✓ Fully suited to all known makes of hotmelt sealant application machines
- ✓ Single component thermoplastic properties mean no waste from machine purging after use
- ✓ Compatible with all glass types and coatings: Low-E and other coatings must be edge deleted before manufacture of i.g. units to allow full contact of MELTEX™ to the clean glass surface.
- ✓ Rapid cooling and setting, allowing handling and moving without delays.
- ✓ Fast flowing, smooth, very low slump and stringing makes MELTEX™ the ideal production material.
- ✓ Very low Moisture Vapour Transmission Rate (MVTR)

### Testing and Certification

- ➢ Full certified passes of units to EN 1279 parts 2,3 and 4 by approved and accredited test houses.
- ➢ Certified Thermogravimetric Analysis as required by latest 1279 specifications
- ➢ ISO 9000
- ➢ Full compliance to all requirements of EN 1279 parts 1 and 6

### Characteristics

| | |
|---|---|
| • Packaging: | Blocks of 6.5kg each, or 220kg steel drums |
| • Raw material base: | blend of butyl rubber and synthetic resins |
| • Appearance: | black, glossy and tacky surface |
| • Shelf life: | min. 2 years in unopened original packaging, stored in a cool dry place. |
| • Density/specific gravity: | approx 1.19 kg /litre |

### Typical Technical Performance Properties

| | |
|---|---|
| ○ MVTR Moisture Vapour Transmission Rate | 0.03 g/ $m^2$ /24hrs per 2mm thick @ 25°C/100% RH per ASTM test #E96 & EN 1279-4 |
| ○ Application Temperature | 180 – 200°C |
| ○ Thermal Conductivity | 0.22 W/mK |
| ○ Argon Permeability Rate | 0.069g/$m^2$/24hrs certified to EN 1279-4 |
| ○ RT Overlap Shear Strength | 3 Bar |

## Safety Data

Health and Safety measures must be observed when handling hot materials, including Hotmelt sealants. Please be sure that all operatives have read and understood the Safety Data Sheet for MELTEX™ before starting work. In particular we recommend suitable heat resistant gloves and clothing, and eye protection to minimise risk of burns. Follow the manufacturer's instructions for use of the application machine, and observe the sealant temperature recommendations. Use a digital thermometer to regularly check the temperature of sealant at the point it exits the application nozzle. To avoid flammable vapour do not exceed melt temperatures of 245°C, make sure the workplace is well ventilated, avoid proximity to sources of naked flame.

## Materials Preparation and Compatibility

For best adhesion results it is of paramount importance that all surfaces to be sealed are completely dry and clean and free from contaminants, including mineral deposits from hard water. Where possible use demineralised water for the final rinse of glass after cleaning. If detergents are used in the washing process, be certain that residues are totally rinsed away and that glass is fully dry before applying sealant. Aluminium & other metallic spacers should be grease-free and clean of any oil or dust deposits – easily checked by wiping with a clean white cloth. Remember that contaminants of any kind adversely affect the adhesion of any sealant. Applying MELTEX™ directly to plastic spacers is possible in many cases depending on the type of polymer compound, and assuming the surface is suitably clean. If in doubt, please consult the spacer manufacturer and conduct some simple in-house compatibility tests (see 'Butterfly Test' below).

MELTEX™ is compatible with all known current glass coatings but should not be used in non-edge-deleted situations unless approved by the glass manufacturer (i.e. hard coatings that are fused into the glass). MELTEX™ is not intended for structural glazing applications and, like all thermoplastic materials, should only be used in sloped glazing systems where both glass panes are fully mechanically supported and after review by a design specialist. It should not be used if the I G Unit is unframed or unsupported.

Solvents should not be used for cleaning the units before glazing. Stains and other treatments to timber frames must be fully cured and dried before glazing. If the glazing compound (i.e. putty) is likely to be in contact with the edge of the unit, it is the responsibility of the glazing contractor to ensure compatibility between the compound and MELTEX™ sealant. Avoid the use of edge tapes which might cause rainwater to get trapped between tape and seal.

## DO'S AND DON'TS when applying MELTEX™ in the manufacture of I G Units

1. The workplace should be kept clean to avoid contamination of glass or spacers during assembly, and the ambient temperature of the glass and spacers is best kept above +15°C for optimum results.

2. It is highly important to apply MELTEX™ or any Hotmelt sealant at the manufacturers' recommended temperatures. In this case we recommend maintaining an exit temperature at the gun of 175 – 180°C. This is best checked with a digital thermometer while allowing gunned material to flow back in to the machine hopper, before making units. The test should be carried out regularly during production, to verify the readout (if any) given by the machinery. Applying the sealant at temperatures outside the recommended upper or lower limits will reduce adhesion and flow.

3. When gunning sealant into the unit cavity it is important to make certain there is total contact to both glass surfaces and to the spacer. Any gaps or air-holes left in the sealant can seriously affect unit life by reducing adhesive surface contact and facilitating a path for moisture vapour penetration.

4. Always maintain a good sealant depth. We recommend a minimum of 3mm coverage on the back of the spacer, i.e. at the point where sealant coverage is thinnest, and at least 6mm at the spacer shoulder where it meets the glass surface. Avoid 'hollows' or 'concaving' of the sealant which might reduce that depth (for example due to use of a worn or wrong-size gunning nozzle). Where possible, aim for more than 6mm at the shoulder for a good safety margin and to allow for tolerances during unit manufacture.

5. Be certain that the type of corner keys used are compatible and show good adhesion to the sealant. Care should be taken that the seal is complete around each corner, and that no stop-start gaps or 'cold joins' are

present. We recommend padding the corners, compressing the sealant while still soft, using a suitable non-stick silicone rubber pad.

6. When storing units vertically, ensure that both glass panes are fully supported to avoid shearing. Leaning the unit at the wrong angle could mean it is only supported on one side, leaving the weight of the other side unsupported and vulnerable to shear slip.

7. Due to the high temperatures generated when sealing a unit with Hotmelt sealant, a suitable molecular sieve desiccant with pure 3A properties must be employed to avoid implosion /explosion problems. Desiccants of 4A or more contain nitrogen molecules which are driven out at high temperatures, like those inside a spacer when hot sealant is applied. The resulting over-pressure escapes through the as yet unsealed sides of the unit. When the final side is sealed, and the unit cools down, there is a resultant partial vacuum which distorts the glass inwards and puts undue strain on the edge seal.

8. Be alert for contamination of spacers from residues of other adhesives, if decorative lead or other similar products are incorporated in the sealed unit. Do not use solvents or hydrocarbons for cleaning as these can attack the Hotmelt seal.

## For your peace of mind - a brief overview of the manufacturing process.

**Very extensive tests and production checks are performed on MELTEX™ raw materials, in-process practices and manufacturing methods, and on finished products prior to approval for shipment.**
All incoming raw materials are tested for numerous characteristics and quality indicators before being released to stores and approved for use in production. Resins are tested for consistency in their weight and density. Following a test where a given mass of material is subjected to a specific temperature and duration, the melting characteristics of each component, the hardness, viscosity, colour and the dispersion are all recorded, and the results measured against strict pass/fail criteria.

Specially developed adhesion stress tests are performed on selected components, where single components are melted between two glass sheets and then forced apart in a twisting motion with the associated force being measured.

In-process checks take place throughout the manufacturing process from beginning to end.
A specially designed and constructed mixing plant (double Z blade mixer) is employed to guarantee a perfectly homogenous result once all the components are introduced. The process takes place under a controlled set of parameters which include temperature, pressure and duration. Each batch of finished and mixed MELTEX™ sealant is extruded directly into its final packaging, labelled with its batch number, date and time.

During the mixing stage, material is drawn off from a sampling point and checked for smoothness, homogeneity, and other characteristics. The mixer itself has sensors inside to read the material's temperature, plus there are additional measurements by infrared sensors at different stages during mixing. From the end samples, adhesion tests and other lab tests are completed, and quality certificates issued, before the batch is approved for shipping. **Samples from every batch are retained by NEDEX for 2 years for later checks and tests if required.**

## Pre-Shipment Certification

Each batch sample taken from production undergoes stringent tests in NEDEX's laboratory and the results are recorded and judged against pass and fail criteria:

i. ADHESION TESTS
- Butterfly test of adhesion glass to glass. MELTEX™ is extruded on one edge in a thickness of approx 15 mm between two pieces of 4mm thick float glass 25x100 mm and is allowed to cure for 10 hours. The two glasses are then bent back upon each other like a butterfly opening its wings. The sealant mass must survive intact or break cohesively without losing its bond to either glass.

- H-Test of adhesion glass to glass. MELTEX™ is extruded in a thickness of approx 12 mm between two pieces of 4mm thick float glass in the size of 75 x 12 mm, is allowed to cure for 10 hours. The upper glass is clamped into a special framework, and weights of 7 kg are hung on the lower glass. After a period of 30 minutes, either there should be a cohesive break without losing its bond to either glass or no break.

- Adhesion test of MELTEX™ to spacer: special test equipment is used, which allows the application of force by a suitable set of weights. In case of spacer-spacer samples, two lengths of spacer bar representative of those used in production, are placed parallel back-to-back and 20 mm apart. The gap is filled with MELTEX™ sealant with the aid of a non-adhering plate on the opposite side. After the curing time (at least 24 hours curing at room conditions) the plate is removed, one spacer is clamped and a defined load is applied to the other by hanging weights on it. The determination of the load is based on the width of the chosen spacer bar and the dimension of the test specimen. The tensile force of the test specimen shall be 0.30 MPa. During a loading time of 10 min, no break is allowed.
The corresponding weight to achieve a minimum loading of 0.3 MPa is calculated on the following basis:

| | |
|---|---|
| MPa: N/mm2 where 9.81 N=1Kgf | Specimen area [mm2] (spacer length x width) |
| Applied weight [Kg] x 9,81 : Force, N | Force [N] / Specimen area [mm2] : Load [MPa] |

When we use size 16 (15,5 mm) spacer, a total weight of 9,5 kg is applied.
The pass criteria is cohesive or no break vs. adhesive break.

ii. SHORE-A HARDNESS TEST
MELTEX™ samples are measured for hardness with a Shore-A meter. A value appr. 90 is targeted. Allowed tolerance plus/minus 10 Shore A. Average value over 50 measurement is typically 91 ShoreA.


iii. UV RESISTANCE TEST
Samples are tested in a UV cabinet under lamp spec. (0,89 W/(m2. nm) @340 nm and @60 °C)
The colour, shape and physical properties (adhesion, hardness, density) are observed weekly. After 17 weeks of total test time, there should be no significant change observed.

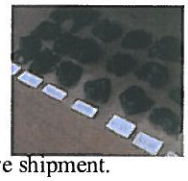
iv. APPLICATION TESTS USING A BASRA TYPE BMT 2000 HOTMELT EXTRUDER
**Hopper temperature 190 C, Pump 190 C, Hose 185 C, Pistol 175 C.**

- FLOW RATE, where the grams per minute are measured as they exit the pistol into a digital scale. An approximate of 1700 gr/min output is sought at the above given extruder temperatures.
- SMOKING – no visible fumes allowed during the extrusion and melting process.

v. MVR (melt volume rate)
Appr. 12 grams of MELTEX™ sample is forced to melt in the laboratory melter at 190°C for 10 min. under 10 kg weight. The results in cm3/10 min. value are recorded and compared to a chart which cross-references recorded flow rates.

vi. SLUMP - visual inspection on a sealed sample unit, no obvious movement between gunning/cooling.

vii. STRINGING - visual check, negligible stringing, if any, on removal of gun nozzle from the sealed unit.



viii. PDI (Pre Delivery Inspection)
All MELTEX™ batches are inspected once more by a defined controller in terms of packaging, palletising, labelling (batch number, weight) and loading quality before shipment.

**Limited Liability and Terms- please read this carefully**
as it constitutes a fixed part of the Terms and Conditions of Sale (T&C) of Nedex (The Company).

It is issued by NEDEX and applies to the use of the product detailed on this data sheet and to all other NEDEX products including those manufactured by subsidiaries and partners (the Products). The limitation of liability should be read carefully and understood before using any Products. Use of this or any Company TDS or Products signifies your acceptance of the limited liability which prevail over any directions or data or contradictory information that may appear in or on packaging or marketing literature.

This clause sets out the total financial liability of the Company to users or re-sellers of the Products including any liability for acts or omissions of its employees, agents or sub-agents. **It does not affect the Company's liability for death or personal injury arising from the Company's negligence concerning Products or other liabilities that cannot be excluded or restricted under the Law.** **The Company's entire liability however arising and including negligence or breach of statutory duty shall be limited** to the price paid for the Product by the User and claims for economic loss, loss of profits or customers or goodwill howsoever caused arising out of use of the Products and in particular claims for consequential loss of any kind are specifically excluded. Additionally the Company will not be liable for any claims relating in any way to losses caused by inappropriate or unapproved use of the Products for any purpose other than those specifically referred to in this TDS.

The information contained in this TDS is correct and up to date to the best of our knowledge at the time of printing. The recommendations are made without guarantee or representation as to results. Users are advised and expected to perform their own additional tests to confirm suitability and compatibility of the Products for their own applications.

**Conditional acceptance**: **Orders accepted from Users by the Company for Products are expressly conditional on the User's /Purchaser's acceptance of the T&C as set out herein.** Any claim brought by a User or Purchaser must be made within 1 year. The laws of Turkey will apply and the place of any hearing if at all will be Istanbul.

NEDEX was founded in 1999. The theme of the company is based around products specifically and solely for insulating glass. The company's goal is reducing energy losses by increasing the glass insulation. About 250.000.000 square meters of glass are produced a year, which contain NEDEX products.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**NEDEX is the only company worldwide producing just for the IG industry...**
molecular sieves, - polysulfide, - aluminium and warm edge spacers - butyl sealants - hotmelt sealants

*Stazione Sperimentale del Vetro S.c.p.A.*

*Venezia - Murano, Via Briati 10*

*Venezia - Marghera, Via delle Industrie 13 - c/o VEGA Edificio Pegaso*

RAPPORTO DI PROVA / TEST REPORT N. 126042 pag. 1 di 1

*Murano* 31/03/2015 Your confirm of October 24th, 2014

*rif.*

*richiedente* proposer: NEDEX KIMYA SAN.VE.TIC.A.S. - CETIN CADDESI KIZ KALESI SOKAK No:1 ELIT PLAZA - 34775 UMRANIYE (ISTANBUL)

*campione* sample: polymeric sealant

*contrassegnato* reference: Hot Melt - sampling performed by the client

*ricevuto il* received: 18/03/2015 by carrier

*prova eseguita dal* / from test date: 27/03/2015

*al* / to: 30/03/2015

## Thermogravimetric Analysis

The test instrument used was a Netzsch simultaneous thermal analyser mod. STA 449C Jupiter.
The sample (58 mg) has been charged in an alumina crucible and heated up to 850°C with a heating rate of 20°C/min, according to prEN 1279-4:2014 (E) with parameters regarding an outer sealant.
The test has been initially carried out in a nitrogen flow from 40 up to 850°C, followed by 10 minutes at the same temperature in a synthetic air flow.

The following thermal effects have been registered:

| | |
|---|---|
| a 1st mass loss between 40 and 540°C, centred at 431°C: | 62,07%; |
| a 2nd mass loss between 540 and 754°C , centred at 706°C: | 12,60%; |
| a 3rd mass loss between754 and 850°C , centred at 789°C: | 3,31%; |
| a 4th mass loss during the isotherm in air at 850°C: | 2.63% |

Data are reported in the enclosed graph with the DTG curve.

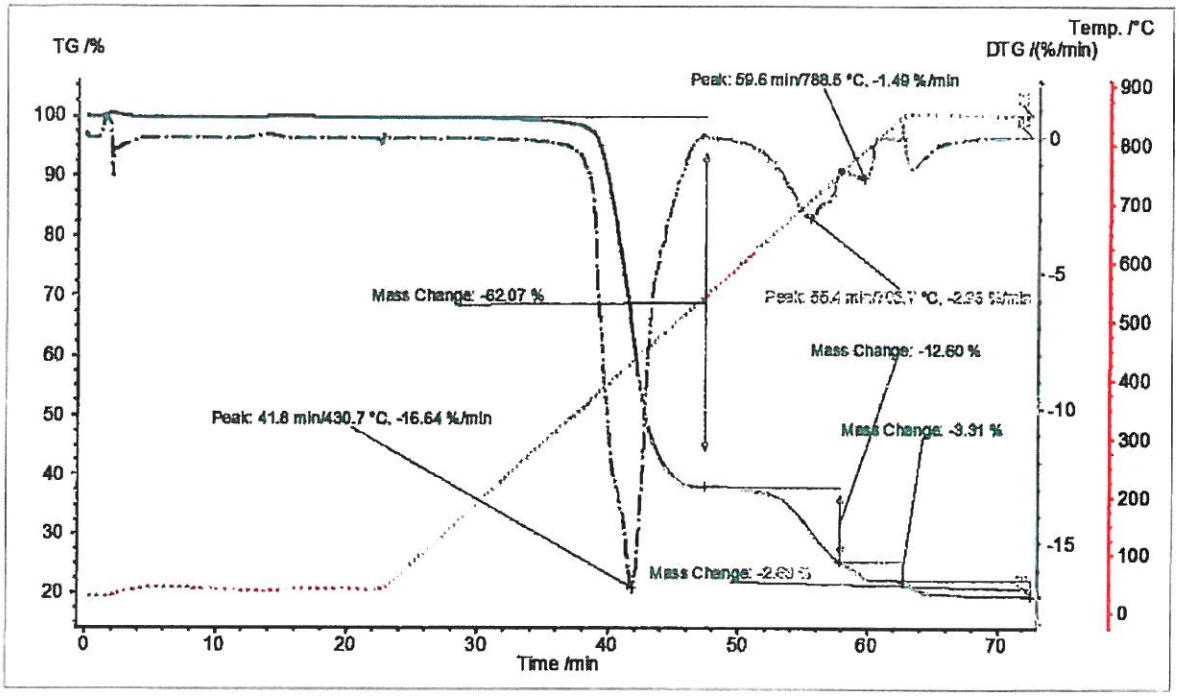
Test carried out at Murano laboratories.

THE ANALYST
Ing. Stefano Maurina
Stefano Maurina

IL DIRETTORE DEI LABORATORI
Dr. Nicola Favaro
Favaro

*Si attesta che il campione oggetto di analisi esibito dalla ditta richiedente presenta le caratteristiche sopra riportate. Il presente attestato si riferisce al campione esaminato e non può essere riprodotto parzialmente. In carta semplice per gli usi consentiti dalla legge.*
We declare that the analysed sample, provided by the customer, presents the above-mentioned characteristics. This Test Report is relevant exclusively for the specimen tested and it cannot be partially reproduced. Issued on unstamped paper for the uses foreseen by the law.

Enclosure to the certificate n. 126042: TG curve with the percentage mass changes and DTG curve with peaks temperatures.



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*Venezia - Marghera, Via delle Industrie 13 - c/o VEGA Edificio Pegaso*

LAB N° 0073

RAPPORTO DI PROVA / TEST REPORT N. 127882 

*Marghera* 3/06/2015 *rif.* Your confirm of October 24th, 2014

*richiedente* proposer: NEDEX KIMYA SAN.VE.TIC.A.S. - CETIN CADDESI KIZ KALESI TATLISU MAHALLESI ARACI SOKAK N.8 - 34774 KAT1-2-3-4 - UMRANIYE (ISTANBU

*campione* sample: IGU

*prova eseguita dal / from* test date *al / to*: 3/02/2015 29/05/2015

*contrassegnato* reference: MELTEX

*ricevuto il* received: 8/01/2015 hand delivered

EN1279p2ing rev 3 26/8/2011

## AGEING TEST ACCORDING TO prEN 1279-2:October 2014
## Glass in building – Insulating glass units - Part 2 –
## Long term test method and requirements for moisture penetration

| | |
|---|---|
| Producer: | Vetro Legno S.n.c |
| Site of production: | Poggibonsi (SI), Italy |
| Sampling: | Carried out by the proposer |
| Test carried out at: | Marghera laboratories |

For any further information concerning product details (such as system description, processing, single components, quantity etc.) please make reference to the manufacturer's technical sheet.

Some constituents declared by proposer are listed below:

| | |
|---|---|
| glass: | float |
| inner sealant: | butyl PIB 996 (Nedex) |
| outer sealant: | hot melt MELTEX (Nedex) |
| spacer: | cut corner aluminium (Profilglass) |
| desiccant: | molecular sieve on two opposed long sides |
| filling: | gas argon (by holes on the spacer) |

The initial dew point was measured on the fifteen samples 4/12/4 of insulating glass units 35,0 cm x 50,0 cm in size according to prEN 1279-6:October 2014 Annex K; all values obtained were below –60°C.

The samples indicated were subject to tests measuring the Ti (initial amount of water absorbed) and the $T_F$ (final amount of water absorbed after ageing in the climatic chamber). Thus, the 'I' penetration index was calculated.

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*Venezia - Marghera, Via delle Industrie 13 - c/o VEGA Edificio Pegaso*

LAB N° 0073

RAPPORTO DI PROVA / TEST REPORT N. 127882 

*Marghera* 3/06/2015 *rif.* Your confirm of October 24th. 2014

*richiedente* proposer: NEDEX KIMYA SAN.VE.TIC.A.S. - CETIN CADDESI KIZ KALESI TATLISU MAHALLESI ARACI SOKAK N.8 - 34774 KAT1-2-3-4 - UMRANIYE (ISTANBU

*campione* sample: IGU

*prova eseguita dal / from* 3/02/2015 *al / to* 29/05/2015 (test date)

*contrassegnato* reference: MELTEX

*ricevuto il* received: 8/01/2015 hand delivered

EN1279pt2log rev 3 26/8/2011

Measurement of Ti, $T_F$ and calculation of I.

| specimen n° | dry desiccant found (g) | Ti (%) | $T_F$ (%) | I (%) | $T_F$ * (%) | I * (%) |
|---|---|---|---|---|---|---|
| 1 | 31 | 1.02 | | | | |
| 2 | 29 | 1.12 | | | | |
| 3 | 30 | 1.07 | | | | |
| 4 | 30 | 1.14 | | | | |
| | **Mean Ti:** | **1.09** | | | | |
| 5 | 29 | | 1.59 | 3.0 | | |
| 6 | 29 | | 2.33 | 7.3 | | |
| 7 | 30 | | 5.30 | 24.9 | | |
| 8 | 31 | | 2.40 | 7.7 | | |
| 9 | 31 | | 1.35 | 1.5 | | |
| | | | **Mean I:** | **8.9** | | |
| 10 | 30 | | | | 1.25 | 0.9 |
| 11 | 30 | | | | 1.31 | 1.3 |

*(*) Aged specimens subjected to a short ageing cycle: 3 weeks at 58,0°C and r.h. > 95% (Annex B4 of prEN 1279-6:October 2014)*

The Tc value (moisture absorption capacity in standard conditions) used for the calculation of I is 18.0%; it has been measured according to prEN 1279-4:October 2014 point E.3 (▲).

**Requirements established in standard.**

1 Average percentage I not higher than 20%;
2 No single percentage value of "I" higher than 25%.

(▲) Test not accredited by Accredia

THE HEAD OF THE LABORATORY
Ennio Mognato

THE LABORATORIES DIRECTOR
Dr. Nicola Favaro

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ACCREDIA
LAB N° 0073

RAPPORTO DI PROVA / TEST REPORT N. 128154 page 1 of 2

| | | | |
|---|---|---|---|
| *Marghera* | 12/06/2015 | *rif.* | Your confirm of October 24th, 2014 |
| *richiedente* proposer | NEDEX KIMYA SAN.VE.TIC.A.S. - CETIN CADDESI KIZ KALESI TATLISU MAHALLESI ARACI SOKAK N.8 - 34774 KAT1-2-3-4 - UMRANIYE (ISTANBU | | |
| *campione* sample | IGU | *prova eseguita dal / from* test date *al / to* | 3/02/2015 12/06/2015 |
| *contrassegnato* reference | MELTEX | | |
| *ricevuto il* received | 8/01/2015 hand delivered | | |

EN1279p3NMirg r4 13/09/2011

**AGEING TEST ACCORDING TO prEN 1279-3:october 2014**

**Glass in building – Insulating glass unit – Part 3: Long term test method and requirements for gas leakage rate and for gas concentration tolerances**

| | |
|---|---|
| Producer: | Vetro Legno S.n.c. |
| Site of production: | Poggibonsi (SI), Italy |
| Sampling: | Carried out by the proposer |
| Test carried out at: | Marghera laboratories |

For any further information concerning product details (such as sistem description, processing, single components, quantity etc.), please make reference to the manufacturer's technical sheet.

Some constituents declared by proposer are listed below:

| | |
|---|---|
| glass: | float |
| inner sealant: | butyl PIB 996 (Nedex) |
| outer sealant: | hot melt MELTEX (Nedex) |
| spacers: | cut corner aluminium (Profilglass) |
| dessiccant: | molecular sieve on two opposed long sides |
| filling: | gas argon (by holes on the spacer) |
| declared concentration ($c_{i,0}$): | 90,0 % |

Declared conditions at the moment of glass sealing — temperature (K): 291
atmospheric pressure (hPa): 120

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*Venezia - Marghera, Via delle Industrie 13 - c/o VEGA Edificio Pegaso*

LAB N° 0073

RAPPORTO DI PROVA / TEST REPORT N. 128154 page 2 of 2

| | | | |
|---|---|---|---|
| *Marghera* | 12/06/2015 | *rif.* | Your confirm of October 24th, 2014 |
| *richiedente* proposer | NEDEX KIMYA SAN.VE.TIC.A.S. - CETIN CADDESI KIZ KALESI TATLISU MAHALLESI ARACI SOKAK N.8 - 34774 KAT1-2-3-4 - UMRANIYE (ISTANBU | | |
| *campione* sample | IGU | *prova eseguita dal / from* test date *al / to* | 3/02/2015 12/06/2015 |
| *contrassegnato* reference | MELTEX | | |
| *ricevuto il* received | 8/01/2015 hand delivered | | EN12579NMag r.4 12/09/2011 |

Tests were performed on 4 IGU randomly selected, size 35,0 cm x 50,0 and 4/12/4 as follows:

- ageing cycle – prEN 1279-3:october 2014 point 6.1.
- determination of gas leakage on two IGU after ageing by gaschromatography according to prEN 1279-3:october 2014 point 6.3.3. and Annex A with "ring container equipment", point A2.2. and calcuilation of percentage of gas leakage rate ($L_i$).

$m_i$ , $c_i$ mesurements and $L_i$ calculation:

| Specimen n° | Internal volume($mm^3$) | Gas | Gas leakage amount $m_i$ (µg/h) | Concentration after ageing $c_i$ (%) | Percentage gas leakage rate $L_i$ (%) $a^{-1}$ |
|---|---|---|---|---|---|
| 1 | 1840552 | argon | 1,20 | 90,4 | 0,37 |
| 2 | 1815559 | argon | 1,13 | 90,0 | 0,36 |

**Requirements of the standards**

1) gas leakage rate $L_i$ <1% $a^{-1}$
2) limit value for gas concentration $c_i = c_{i,0}$ (+ 10%, - 5% absolute).

Pressure and temperature values measured during the production, given by the customer, were used for $L_i$ calculation, percentage of the gas leakage rate.

THE HEAD OF THE LABORATORY
Ennio Mognato

THE LABORATORIES DIRECTOR
Dr. Nicola Favaro

*Stazione Sperimentale del Vetro S.c.p.A.*
***Venezia – Murano**, Via Briati 10*
*Venezia – Marghera, Via delle industrie 13 – c/o VEGA Edificio Pegaso*

ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO
LAB N° 0073

RAPPORTO DI PROVA / TEST REPORT N. 128946 

| | | | |
|---|---|---|---|
| ***Marghera*** | 10/09/2015 | *rif.* | Your confirm of October 24th, 2014 |
| *richiedente* proposer | NEDEX KİMYA SAN. VE TİC. A.Ş. TATLISU MAH. ARACI SOK. No:8 – 34774 KAT:2-3-4 ÜMRANIYE – İSTANBUL | | |
| *campione* sample | glass/sealant/glass | *prova eseguita dal* / from test date *al* / to | 20/07/2015 09/09/2015 |
| *contrassegnato* reference | MELTEX / float | | |
| *ricevuto il* received | 28/05/2015 by carrier | | EN1279p4:2014 |

# UNI EN 1279-4:2014 – Glass in building – Insulating glass units

## part 4 – Methods of test for the physical attributes of edge seal components and inserts

| | |
|---|---|
| Producer: | NEDEX |
| Product type: | IGU sealant: hot melt |
| Glass: | float |
| Sampling | carried out by the proposer |
| Test carried out at: | Marghera laboratories |

The specimens have been measured in our laboratory and their size met the Annex A of the standart UNI EN 1279-4:2014 "Methods of test for the pyhsical attributes of edge seal components" and they have been tested according to point A-1.1.

21 specimens out of 28 were randomly selected and divided into 3 groups each containing 7 specimens and labelled as follows:

1) as received;
2) immersed in water at 23 °C for 7 days;
3) subjected to UV radiation for 21 days and aged at 58 °C for 7 days.

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ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO
LAB N° 0073

RAPPORTO DI PROVA / TEST REPORT N. 128946 

*Marghera* 10/09/2015 *rif.* Your confirm of October 24th, 2014

*richiedente* / proposer: NEDEX KİMYA SAN. VE TİC. A.Ş.
TATLISU MAH. ARACI SOK. No:8 – 34774 KAT:2-3-4 ÜMRANIYE – İSTANBUL

*campione* / sample: glass/sealant/glass

*prova eseguita dal* / from test date: 20/07/2015 *al* / to: 09/09/2015

*contrassegnato* / reference: MELTEX

*ricevuto il* / received: 28/05/2015 by carrier

EN1279p4:2014

After the initial treatments, all the specimens have been subjected to tensile load according to point A.1.3 of UNI EN 1279-4:2014, and the relevant stress/strain curves have been obtained.
The curves exhibiting the lowest and the highest values at the intersection with the line AB have been excluded from the 7 curves obtained for each group.

The mean stress and deformation value at the intersection calculated for the remaining 5 curves is reported below for each of the different conditions.

| | Values at the inersection with line A-B | | Type of failure observed: A = Adhesive C = Cohesive M = Mixed G = Glass | | | | |
|---|---|---|---|---|---|---|---|
| | Average stress $\sigma_{av}$ in N/mm$^2$ | Average deformaiton $\varepsilon_{av}$ in % | | | | | |
| As received | 0.24 | 28.3 | NB | NB | NB | NB | NB |
| After water immersion | 0.25 | 26.6 | NB | NB | NB | NB | NB |
| Afer UV radiation + heating | 0.23 | 27.8 | NB | NB | NB | NB | NB |

NB: "No Breakage"

Attachment: 3 test graphs.

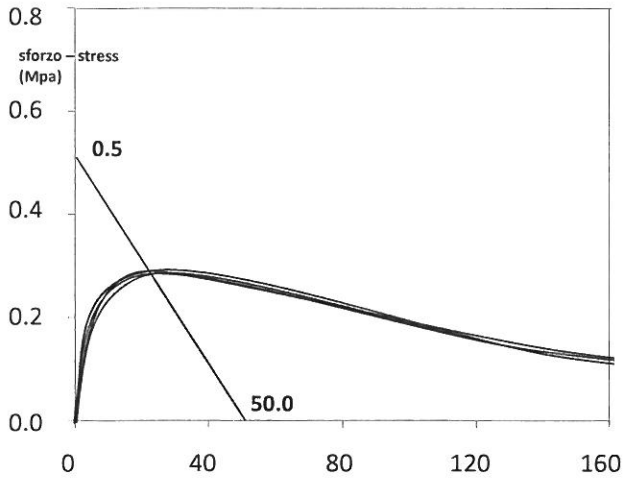
THE HEAD OF THE LABORATORY
Ennio Mognato

THE LABORAORIES DIRECTOR
Dr. Nicola Favaro

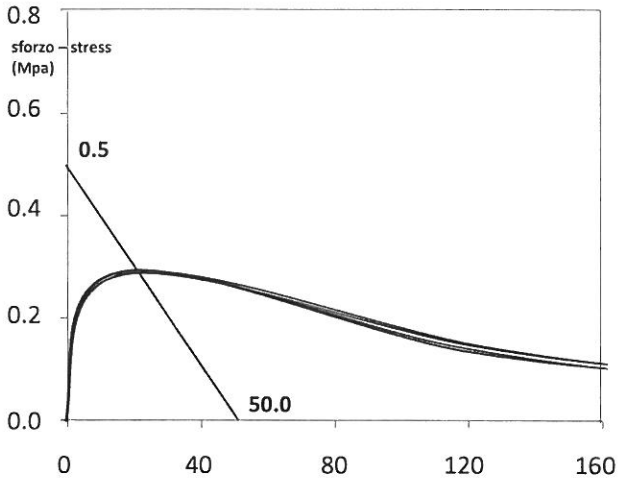
## Stazione Sperimentale del Vetro

allegrato al rapporto di prova n° 128946
attachment to test report n° 128946

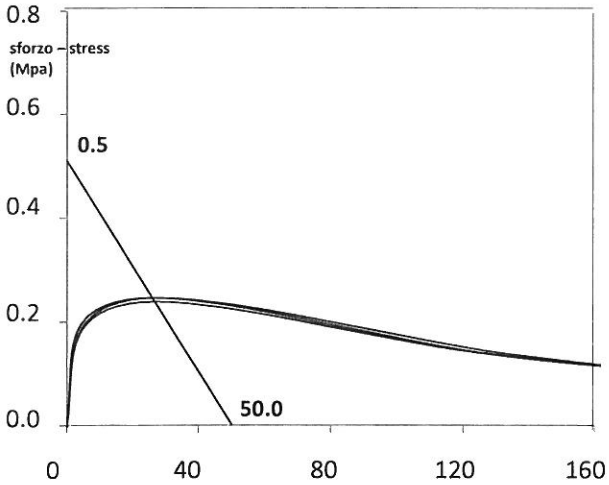
Tipo di vetro – Type of glass: float
Sigillante – Sealant: MELTEX (NEDEX)




invecchiamento – ageing: nessuno – none
valori all'intersezione – values at the intersection point:
sforzo – stress = 0.24 Mpa
Deformazione – extension = 28.3%




invecchiamento – ageing: 7gg in acqua – 7d water immersion
valori all'intersezione – values at the intersection point:
sforzo – stress = 0.25 Mpa
Deformazione – extension = 26.6%




invecchiamento – ageing: 21gg irragg. UV + 7gg at 58 °C – 21d UV radiation + 7d at 58 °C
valori all'intersezione – values at the intersection point:
sforzo – stress = 0.23 Mpa
Deformazione – extension = 27.8%

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ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO
LAB N° 0073

RAPPORTO DI PROVA / TEST REPORT N. 128145 page 1 of 2

*Marghera* 12/06/2015

*rif.* Your confirm of October 24th, 2014

| | |
|---|---|
| *richiedente* proposer | NEDEX KIMYA SAN.VE.TIC.A.S. - CETIN CADDESI KIZ KALESI TATLISU MAHALLESI ARACI SOKAK N.8 - 34774 KAT1-2-3-4 - UMRANIYE (ISTANBU |
| *campione* sample | sealant membranes |
| *prova eseguita dal / from* test date *al / to* | 17/04/2015 11/06/2015 |
| *contrassegnato* reference | MELTEX |
| *ricevuto il* received | 18/03/2015 by carrier |

MVTRing r.3 25/8/2011

## Water vapour transmission rate on a film according to prEN 1279-4:Octber 2014

| | |
|---|---|
| Producer: | Nedex |
| Product type: *(chemical family)* | hot melt |
| Denomination: | MELTEX |
| Sampling: | carried out by the proposer |
| Test carried out at: | Marghera laboratories |

The water vapour permeability of the sealing membranes supplied by you was measured according to prEN 1279-4:October 2014 "Glass in Building – Insulating Glass Units – Part 4: Methods of test for the physical attributes of edge seal components and inserts" Annex D on 3 different specimens labelled by our laboratory as 1, 2, and 3. Each specimen underwent repeated measurements in different days.

The test specimens were prepared as follows: membranes were placed (as hermetic seal) on a glass dish containing about 30 grams of molecular sieves with an initial water content of 1,6%. Under these test conditions the passage of moisture vapour to the outside could occur only through the membrane itself.

The three dishes prepared with each sample membrane were weighed and placed in a climatic chamber with forced ventilation at 23°C and 90% relative humidity. Weighing was repeated at few-days intervals in order to determine the WVTR (Water Vapour Transmission Rate).

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ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO
LAB N° 0073

RAPPORTO DI PROVA / TEST REPORT N. 128145 page 2 of 2

*Marghera* 12/06/2015

*rif.* Your confirm of October 24th, 2014

*richiedente* proposer: NEDEX KIMYA SAN.VE.TIC.A.S. - CETIN CADDESI KIZ KALESI TATLISU MAHALLESI ARACI SOKAK N.8 - 34774 KAT1-2-3-4 - UMRANIYE (ISTANBU

*campione* sample: sealant membranes

*prova eseguita dal / from* test date: 17/04/2015 *al / to*: 11/06/2015

*contrassegnato* reference: MELTEX

*ricevuto il* received: 18/03/2015 by carrier

MVTRing r.3 25/8/2011

The results obtained for three samples are reported in the following table:

| | Weight increase (in grams) | | |
|---|---|---|---|
| time (in days) | sample n° 1 | sample n° 2 | sample n° 3 |
| 13 | - 0.003 | - 0.007 | - 0.005 |
| 21 | 0.009 | 0.004 | 0.006 |
| 28 | 0.007 | 0.005 | 0.007 |
| 39 | 0.012 | 0.009 | 0.006 |
| 48 | 0.010 | 0.008 | 0.003 |
| 55 | 0.016 | 0.011 | 0.006 |
| Membrane thickness(in mm) | 1.7 | 1.9 | 1.9 |
| Dish mouth area (in $m^2$) | 0.00785 | 0.00785 | 0.00785 |
| WVTR | 0.04 | 0.04 | 0.02 |
| WVTR calculated for 2 mm (*) | 0.04 | 0.04 | 0.02 |

**Average WVTR calculated for 2 mm (*): 0.03 ± 0.01** $\frac{\text{grams } H_2O}{m^2 \cdot 24\,h \cdot 2mm}$

*(*) An inverse relationship between thickness and permeability was assumed in the calculation.*

Attachments: n° 3 graphs

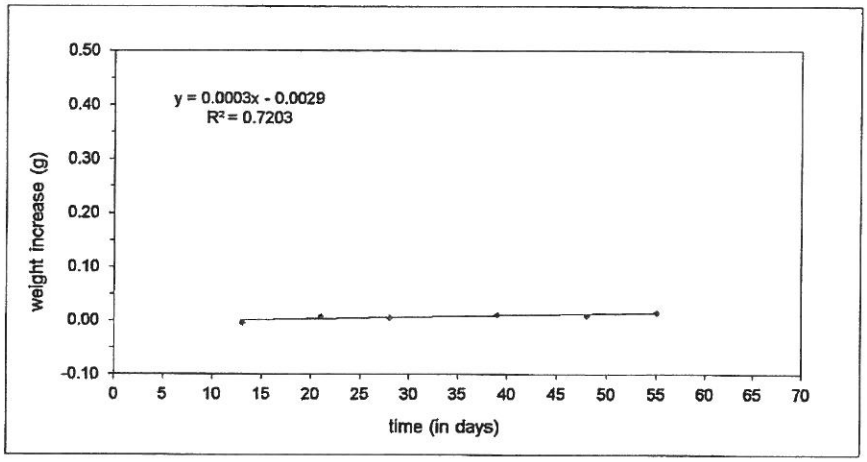
THE HEAD OF THE LABORATORY
Ennio Mognato

THE LABORATORIES DIRECTOR
Dr. Nicola Favaro

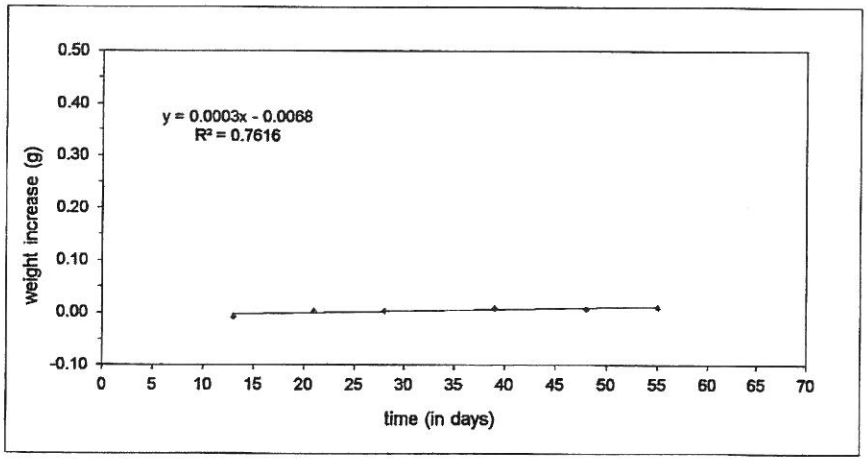
*Le prove riportate in questo rapporto contrassegnate dalla dicitura ** Non Accreditata da ACCREDIA ** non rientrano nell'Accreditamento ACCREDIA di questo Laboratorio. Si attesta che il campione oggetto di analisi esibito dalla ditta richiedente presenta le caratteristiche sopra riportate. Il presente attestato si riferisce al campione esaminato e non può essere riprodotto parzialmente. In carta semplice per gli usi consentiti dalla legge.*
The tests indicated in this report which are cited as ** Non Accreditata da ACCREDIA ** do not fall under ACCREDIA Accreditation. We declare that the analysed sample, provided by the customer, presents the above-mentioned characteristics. This Test Report is relevant exclusively for the specimen tested and it cannot be partially reproduced. Issued on unstamped paper for the uses foreseen by the law.

attachment to test report n° 128145

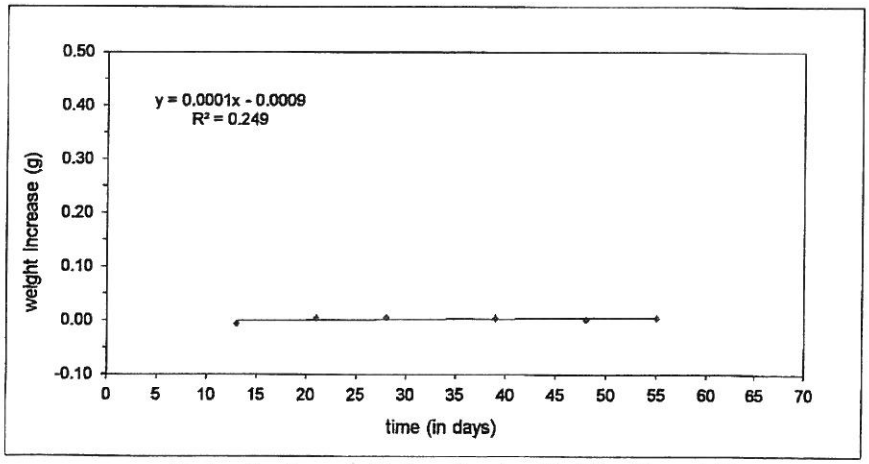
Sample n° 1




Sample n° 2




Sample n° 3



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ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO
LAB N° 0073

RAPPORTO DI PROVA / TEST REPORT N. 128116 page 1 of 1

*Marghera* 11/06/2015 *rif.* Your confirm of October 24th, 2014

*richiedente* proposer: NEDEX KIMYA SAN.VE.TIC.A.S. - CETIN CADDESI KIZ KALESI TATLISU MAHALLESI ARACI SOKAK N.8 - 34774 KAT1-2-3-4 -

*campione* sample: sealant membranes

*prova eseguita dal / from* test date *al / to*: 8/06/2015 11/06/2015

*contrassegnato* reference: MELTEX

*ricevuto il* received: 18/03/2015 by carrier

PermGasI r.2 25/8/2011

## Gas permeation test on film according to EN 1279-4: 2002

| | |
|---|---|
| Producer: | Nedex |
| Product type: *(Chemical family)* | hotmelt |
| Denomination: | MELTEX |
| Sampling: | carried out by the manufacturer |
| Test carried out: | at Marghera laboratories |

The gas permeability of sealing membranes sent to our laboratory has been measured in compliance with EN 1279-4:2002 "Methods of test for the physical attributes of edges seals" point 5.3 on 3 different specimens identified by our laboratory as 1, 2, 3. Each specimen underwent repeated measurements at different days.

As prescribed in EN 1279-4:2002 point 5.3.2, the test was performed adopting apparatus and procedures specified in EN 1279-3:2002 for the measurement of the gas leakage rate for insulating glass units. Apparatus consists of a cell in which a membrane is placed and argon gas flows through. Circular membranes have been used. Helium gas has been used as a carrier gas.

Average values obtained for each sample are reported in the following table with the corresponding standard deviation (1 σ)

| sample | 1 | 2 | 3 |
|---|---|---|---|
| thickness (mm) | 2,1 | 2,1 | 2,1 |
| surface ($m^2$) | 0,01060 | 0,01060 | 0,01060 |
| Average permeability for 3 tests ($g \cdot m^{-2} \cdot h^{-1}$) | $2,69 \times 10^{-3}$ | $2,75 \times 10^{-3}$ | $3,30 \times 10^{-3}$ |
| dev. std (1σ) | $0,64 \times 10^{-3}$ | $0,44 \times 10^{-3}$ | $0,07 \times 10^{-3}$ |

The permeability expressed as mean average, calculated on the thickness of 2 mm (*), is:

$$2,91 \pm 0,38 \times 10^{-3}\ g \cdot m^{-2} \cdot h^{-1}$$

** An inverse relationship between thickness and permeability was assumed in the calculation*

THE HEAD OF THE LABORATORY
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# Material Safety Data Sheet

## MELTEX HOTMELT
### SECONDARY GLASS EDGE SEALANT

According to 91/155 EEC

Printing date 12.01.2012 Reviewed on 12.12.2014

## 1 Identification of substance

| | |
|---|---|
| **Product details** | |
| **Trade name** | **MELTEX HOTMELT** |
| **Application of the substance** | Insulating glass sealant |
| **Manufacturer/Supplier** | **NEDEX KİMYA SANAYİ A.S.**<br>Şerifali Mah. Çetin Cad. Kız Kalesi Sok<br>No:1 Elit Plaza Kat:5 34775 Ümraniye<br>İstanbul - TURKEY<br>Tel. +90 216-488 01 55 |
| **Informing department** | Quality Control |
| **Emergency information** | Tel. +90 216-488 01 55 |

## 2 Composition/Data on components

| | |
|---|---|
| **Chemical characterization** | |
| **Description** | Polyisobutylen based sealant |
| **Dangerous components** | No hazardous materials present as defined By Chemicals Registrations 2002 (Hazard Information and Packaging for Supply) |
| **Additional information** | none |

## 3 Hazards identification

| | |
|---|---|
| **Hazard designation** | Not regarded as a health or environmental hazard |
| **Information pertaining to particular dangers form an and Environment** | The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version. 52/53 Not Harmful to aquatic organisms, doesn't cause long-term adverse effects in the aquatic environment. |
| **Classification system** | The classification is in line with current EC lists. It is expanded, however, by information from technical literature and by information furnished by supplier companies. |

## 4 First aid measures

| | |
|---|---|
| **After inhalation** | Supply fresh air; consult doctor in case of symptoms. |
| **After skin contact** | Wash with water and soap and rinse thoroughly. |
| **After eye contact** | Rinse opened eye for several minutes under running water. If symptoms persist, consult doctor. |
| **After swallowing** | In case of persistent symptoms consult doctor. |

## 5 Fire fighting measures

| | |
|---|---|
| **Suitable extinguishing agents** | Not flammable. CO2, extinguishing powder or water jet for surrounding materials. |
| **Protective equipment** | Wear self-contained breathing apparatus. |
| **Additional information** | Dispose of fire debris and contaminated fire fighting water in accordance with official regulations. |

## 6 Accidental release measures

| | |
|---|---|
| **Person-related safety precautions** | Wear protective clothing. |
| **Measures for environmental protection** | Do not allow product to reach sewage system. Inform respective authorities in case product reaches water or sewage system. Do not allow to enter drainage system, surface or ground water. |
| **Measures for cleaning/ collecting** | Dispose of contaminated material as waste according to item13.<br>Collect mechanically.<br>Send for recovery or disposal in suitable containers. |

## 7 Handling and storage

| | |
|---|---|
| **Handling** | |
| **Information for safe handling** | Keep away from children<br>Avoid release to the environment. |
| **Information about protection against explosions and fires** | No special measures required. |
| **Storage** | |
| **Requirements to be met by storerooms and containers** | Temperatures between -20 and +50, dry, clean |
| **Information about storage in one common storage facility** | Not required. |
| **Further information about storage conditions** | None |

## 8 Exposure controls and personal protection

| | |
|---|---|
| **Additional information about design of technical systems** | Please take care on national and local requirements. |
| **Components with critical values that require monitoring at the workplace** | The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace. |
| **Additional information** | Based on information valid at the time of writing. |
| **Personal protective equipment** | |
| **General protective and hygienic measures** | Do not eat or drink while working.<br>Wash hands during breaks and at the end of the work.<br>Instantly remove any soiled and impregnated garments.<br>Avoid close or long term contact with the skin. |
| **Breathing equipment** | Not required. |
| **Protection of hands** | Protective gloves.<br>The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. |
| **Material of gloves** | The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application. |
| **Penetration time of glove Material** | The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed. |
| **Eye protection** | Protective work glasses. |
| **Body protection** | Protective work clothing. |

## 9 Physical and chemical properties:

| | |
|---|---|
| **General Information** | |
| **Form** | Solid, but pasty at temperaturesa above 110 Celsius. |
| **Colour** | According to product specification black |
| **Smell** | Characteristic |
| **Change in condition** | |
| **Melting point/Melting range** | 110 Celsius |
| **Boiling point/Boiling range** | Not determined |

| | |
|---|---|
| **Flash point** | Not applicable |
| **Self-inflammability** | Product is not selfigniting. |
| **Danger of explosion** | Product is not explosive. |
| **Density** | at 20 ° C appr. 1.19 g/cm3 |
| **Solubility in / Miscibility with** | |
| **Water** | Unsoluble |
| **Solvent content** | |
| **Organic solvents** | 0,0 % |
| **Solids content** | 100,0 % |

## 10 Stability and reactivity

| | |
|---|---|
| **Thermal decomposition / conditions to be avoided** | No decomposition if used according to specifications. |
| **Dangerous reactions** | No dangerous reactions known |
| **Dangerous products of decomposition** | By fire Carbonmonoxide and carbondioxide |

## 11 Toxicological information

| | |
|---|---|
| **Ecotoxicity** | Not dangerous for environment. Contamination of the aquatic environment should be avoided. |
| **Primary irritant effect** | |
| **on the skin** | No irritant effect |
| **on the eye** | No irritant effect |
| **Sensitization** | No sensitizing effect known |

## 12 Ecological information:

| | |
|---|---|
| **Ecotoxical effects:** | |
| **Remark** | Not harmful to fish |
| **General notes** | Not dangerous for environment. Contamination of the aquatic environment should be avoided. |

## 13 Disposal considerations

| | |
|---|---|
| **Product:** | |
| **Recommendation** | Hand over to disposers of hazardous waste. |
| **European waste catalogue** | 08 04 10 waste adhesives and sealants with exception, which fall under 08 04 09. |
| **Uncleaned packagings** | |
| **Recommendation** | Disposal must be made according to official regulations |

## 14 Transport information

| | |
|---|---|
| **Land transport ADR/RID and GGVS/GGVE (cross-border/ domestic) ADR/RID-GGVS /E Class** | Not regulated. |
| **Maritime transport IMDG/ GGVSea IMDG/GGVSea Class** | Not regulated. |
| **Marine pollutant** | No |
| **Air transport ICAO-TI and IATA-DGR: ICAO/IATA Class** | Not regulated. |

## 15 Regulatory information

| | |
|---|---|
| **Designation according to EC guidelines** | The product has been classified and labelled in accordance with EC Directives / Chemicals (Hazard, Informaion and Packaging for Supply) (CHIP) Regulations. |
| **Risk phrases** | 52/53 Not Harmful to aquatic organisms, does not cause long-term adverse effects in the aquatic environment. |
| **Safety phrases** | Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets. |
| **Special designation of certain Preparations** | No chemicals which may produce an allergic reaction. |
| **National regulations** | |
| **Water hazard class** | Not hazardous for water. |

## 16 Other information:

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.
The information provided about the product on this Safety Sheet has been compiled from knowledge of the individual constituent.
The data given here only applies when product used for proper application(s). The product is not sold as suitable for other applications - usage in such may cause risks not mentioned in this sheet. Do not use for other application(s) without seeking advice from manufacturer.

**Full text of risk phrases referred to in section 2.**
51/53 Not toxic to aquatic organisms, doesn't cause long-term adverse effects in the aquatic environment.

| | |
|---|---|
| **Department issuing data specification sheet** | Quality Control |
| **Contact** | info@nedexgroup.com |

CENSOLUTIONS
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# Compliance Management Scheme

**CEN Solutions Ltd** have devised a system of regular auditing to go hand in hand with the periodic testing of units every six months, as required by the standard, thus allowing you to comply with your responsibilities under the self-certification rules of EN 1279. (The on-going requirement of periodic testing can be carried out by organisations other than the notified body test houses.)

This unique "Compliance Management Scheme" contract will ensure that the onerous task of maintaining compliance is virtually guaranteed, enabling you the unit manufacturer to concentrate on what you do best – manufacturing i.g. units. This service has been cost-effectively priced over the initial 24 month period where 2 tests per annum are required. Once 4 consecutive passes have been achieved, the system reverts to auditing and one routine test per year. The routine / periodic testing aspects of the service are mandatory, we do stress however, that the vertical audit described is a **voluntary rather than a mandatory requirement.** However this audit report may be used as an integral part of the technical file which can be used as proof of an independent third party assessment, for use towards acceptance by The NHBC and other specifiers.

The scheme consists of:

1. A six monthly vertical audit to ensure your FPC system is compliant to **EN 1279 Part 6**. (£385.00 + VAT per visit)

2. A periodic unit test **exactly** as detailed in EN 1279 Part 6. During the audit visit we will select 5 units for testing from your **production batch** and then take them to our facilities near Stafford. (£580.00 + VAT) (Note: if the audit visit is not utilised, then the units have to be delivered to the test facility or if collected a £50 collection and delivery fee will be charge)

3. An annual UV fogging test as detailed in EN 1279 Part 6 (£235.00 + VAT)

4. An annual Gas concentration test as detailed in EN 1279 Part 6 (£120.00 +VAT)

5. The calibration of any measuring equipment used in your testing (no charge)

6. Comprehensive audit and periodic test reports, and we will discuss all results including recommendations etc. where necessary.

We will notify you in advance as to when the testing is due. The vertical audit is payable on the day of visit. However, for the periodic unit test, gas concentration and UV fogging tests there is a choice of payment methods, clients may either:

1. Pay for the periodic test at £580.00 + VAT and when required an extra £235.00 + VAT for the UV fogging test. (Gas test - if applicable £120.00 + VAT).

Or

2. Pay a monthly standing order over the 24 months period. The advantage of the standing order is that it spreads the cost out over the year and we guarantee no price increases. Once four consecutive passes have been attained and the 24 month payment period completed, the system reverts to one periodic test and one UV fogging test per year and the monthly standing is renewed at a lower price.

We trust that this service will be of interest to you. Should you require any further information please do not hesitate to contact either myself or your local director/consultant.

Michael Gaillard
Joint Managing Director.
CENSolutions Ltd
Mobile 07985-073707
Email michael.gaillard@censolutions.com

CENSOLUTIONS
Experience Expertise and Added Value

# CENSOLUTIONS CMS QUALITY MARK

The CMS Quality Mark has been devised around an auditing system employed principally to test the suitability of the manufacturers Factory Production Control (FPC). By marking it out of 100 and setting the pass/fail level at a very stringent 90 out of 100, we have made it sufficiently difficult to achieve and subsequently maintain. As product quality forms a major part of the marking system, poor and inconsistent manufacturing techniques would result in a fail at this level. Our CMS Mark has already been assessed and recognised by the National House Building Council (NHBC) and, as such, insulating glass units manufactured by companies operating the CMS Mark are accepted for use in NHBC new-build projects, whereas previously only Kitemark or Q Mark units were acceptable. The CMS Mark is also recognised by the London Housing Consortium (LHC) and Northern Ireland Housing Executive as well as many other local authorities and housing associations.

There are no licence application fees, no annual management fees and the two six monthly audits cost a total of £700 per year. This is significantly cheaper than other third party accredited systems currently available but has been designed to run either as a stand-alone system or in conjunction with third party systems. The reason we are able to do this is due to our experience and expertise in the testing of insulating glass units to EN 1279. We, almost alone in the industry, are prepared to give constructive comments on the performance of test units to EN 1279 Parts 2, 3 and 6, actively working to use this information to improve the quality of product produced.

The end result is that specifiers can be confident that insulating glass units produced under the CMS Mark are of good consistent quality, manufactured to the highest standards available. We at CENSolutions will be striving to ensure that specifiers are aware of this new advancement in the glass and fenestration industry and are subsequently happy to recommend the use of units produced under its banner. It is also our intention to expand the use of this Quality Mark to the toughened glass and window fabrication sectors, making it truly an industry-wide standard of quality and performance.

Michael Gaillard
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