

Bonded windows

perfectly manufactured





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Preface

The development of windows and window systems has by no means come to an end. In recent years it is the heat-insulation capacity of windows that has continued to be improved.

Property owners have always had maintenance-free windows high up on their wish list, or at least ones that require as little maintenance as possible.

With new production processes and product versions the window manufacturers endeavour to reduce the costs of production without allowing quality to suffer.

One way, which in fact enhances the quality of the window and offers entirely new technical possibilities, is the peripheral bond of the glass pane into or onto the frame.

By means of this technique, the so-called "bonded window", pane and frame are bonded together firmly all the way round and form a fixed, structural unit.

Advantages

- greater stability
- better burglary protection
- optimised storm protection
- facilitates narrower frame design
- less additional steel reinforcement
- rationalised, automated production
- new design potential
- better heat- and sound-proof component designs



System requirements

In this context the term “system” means that only tested components, which are made to match, are to be used. In this respect the following points must be taken into account:

- System drawing
- Profiles
- Glazing
- Block-setting
- Seals
- Opening techniques
- Production procedures
- Assembly
- Fittings
- Care and repair procedures

What requirements must a bond or adhesive meet?

- Temperature resistance up to the required minimum / maximum temperature
- Moisture resistance
- UV resistance
- Resistance to cleaning agents
- Adhesive performance on different materials
- Compatibility with surrounding materials (direct or indirect contact)
- Static stability values
- Static rated values
- Elasticity (elastic, rigid)
- Creep behaviour
- Aging reliability

The existing standards and directives, e.g. the new RAL standard 716/1 of December 2008, for bonded glazing systems and test guideline VE-08/1 of ift Rosenheim have been published. Having taken an active part in tests at reputable German and Austrian institutes and a variety of working groups, OTTO is delighted to inform you promptly about their results.

Conclusion: A technology ready to be marketed with many advantages for manufacturers and customers alike

Introducing and applying this bonding technology makes it possible to produce many different joint variations and positionings with new, improved characteristics. Architects and designers can create more elegant designs and structural engineers can develop new constructions. Customers and insurance companies benefit from the greater stability of the new windows. Even though it is necessary for businesses to invest in application and air-conditioning technology in order to be able to guarantee reliable and verifiable ambient conditions, the production of bonded windows offers significant potential for increasing efficiency. And so, bonded window systems open up new market segments through new criteria.

OTTO – always a good connection

We will support you all the way from the planning stage to mounting the windows with our advice and our comprehensive range of products.

If you have any queries, our technicians will gladly be of service to you on 0049-8684-908-460.



Please pay attention to the following for the durability of the bonding:

- Compatibility of the adhesive with all the adjacent materials must be proven.

Definition of “compatibility”:

- DIN 52460 “Joint and glass sealing, terms”: Materials are compatible with one another if no detrimental interaction occurs between them.

What does “compatibility” mean with reference to bonded windows?

- The bond shows no loss of functions
- Sealing materials do not lose their adhesion on neighbouring substrates
- No impairment to the functions of the window
- The insulated glass unit shows no loss of functions

How may incompatibilities occur?

By direct or indirect contact of the adhesive with

- Glazing seals (e.g. EPDM sealing lips)
- Block-settings
- PVB film or casting resin on laminated glass
- Secondary sealing of the insulating glass
- Primary sealing of the insulating glass

What can be the effects of incompatibilities?

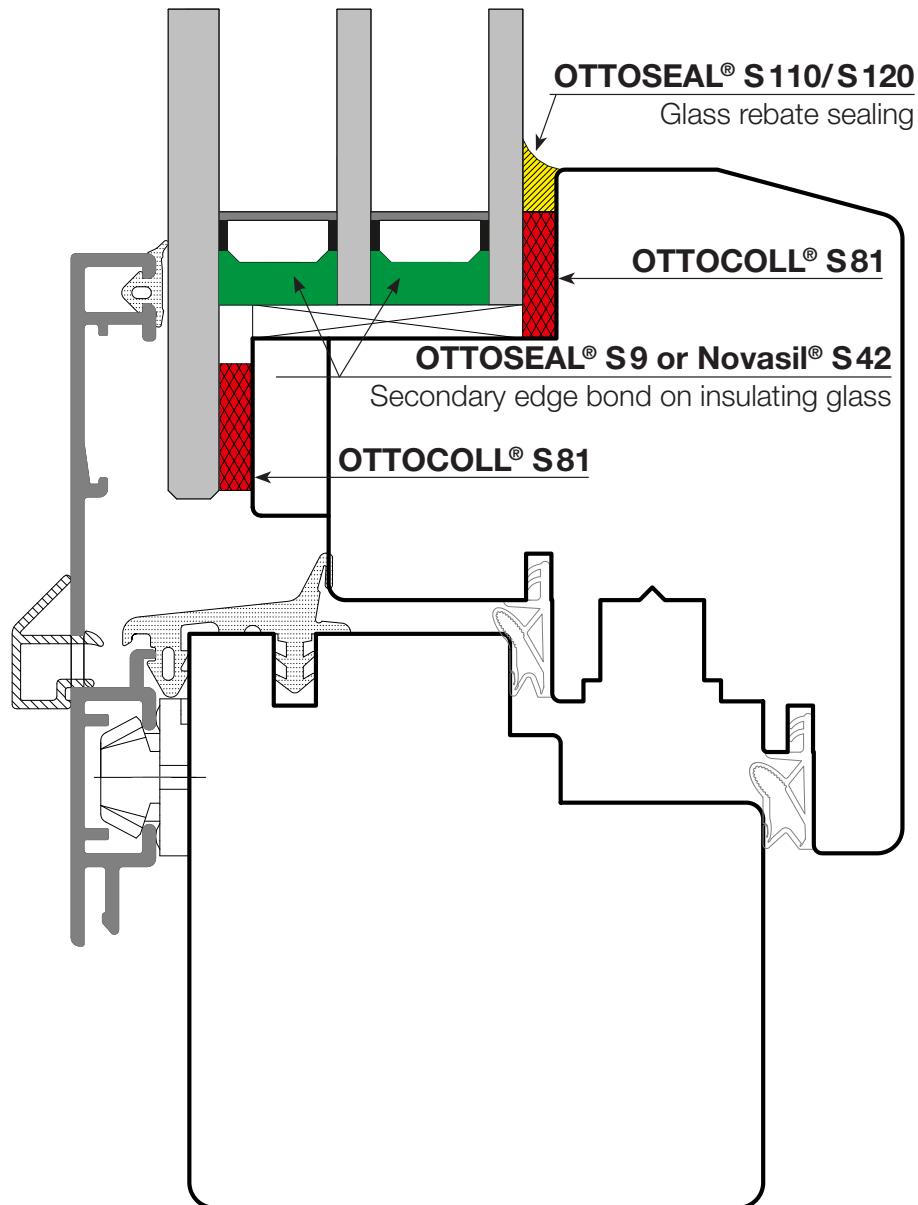
- Damage to the insulated glass unit (e.g. loss of the heat insulation properties due to gas loss)
- Effect on the properties of the adhesive and possible loss of functions
- Delamination of laminated glass

OTTOCOLL® S 81 + OTTOTAPE Duo 20

- **OTTOCOLL® S 81** in combination with the adhesive tape, **OTTOTAPE Duo 20**, makes processing more economical and bonding more reliable. This combination is suitable for all window materials.

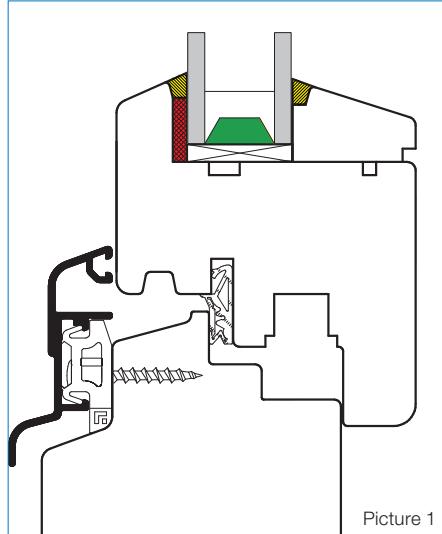


The picture above shows a bonded wooden window with a combination of an overlapping bonded glass surface of the rebate with an aluminium cladding in front of the frame. This almost filigree-looking profile creates a window with a new look. A wide variety of colours provides for a multitude of new design accents. This new design allows for more glass with less frame.

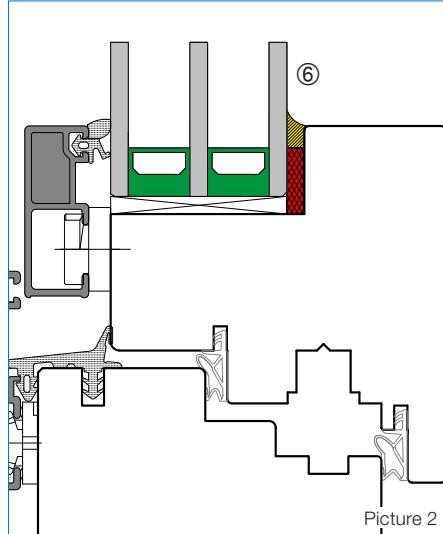


Which bonded window constructions are already being used in practice?

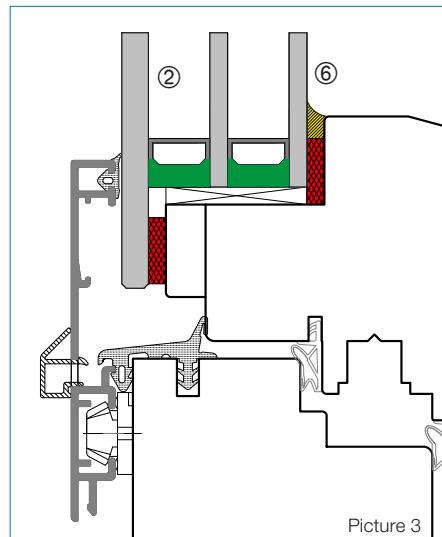
- Rollover bonding at position 1 or 6 (pictures 1 to 2)
- Step-wise glass bonding at position 2 (picture 3)
 - New type of design
 - More glass, less frame
- Rebate platform bond: only combined with silicone edge bond and reliable drainage (picture 4)



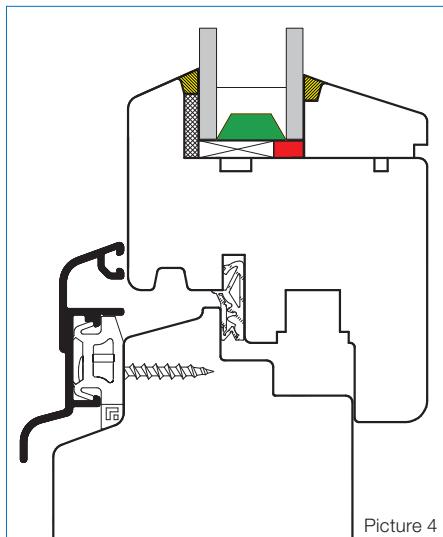
Picture 1



Picture 2



Picture 3



Picture 4

Légende :

Yellow = OTTOSEAL® S 110/S 120

Red = OTTOCOLL® S 81 or OTTOCOLL® S 81 with OTTOTAPE Duo 20 (pictures 1 to 4)

Green = Novasil® S 42/OTTOSEAL® S 9

OTTOCOLL® S81

The 2-component silicone for “bonded windows”



Characteristics:

- Neutral, condensation-curing 2-component silicone adhesive and sealant based on alkoxy
- Excellent weathering, ageing and UV-resistance
- High resistance to notches, tension and tearing
- Excellent adhesion on many substrates, partly in combination with primer
- Non-corrosive
- High expansion-tension value guarantees high stability bonding
- Reduced cycle times - due to the fast curing bonded parts can be further processed extremely soon
- Fast curing even in thick layers
- Low odour

Fields of application:

- Bonding and sealing of windows - direct glazing - bonding of insulated glass units in the window casements (PVC, wood, aluminium) - please note compatibility list
- Bonding and sealing of glass elements (e.g. partitioning walls)
- Suitable for the production of windows reaching standard RC 2 or RC 3 according to DIN V ENV 1627

Standards and tests:

- Tested according to RAL GZ 716/1, paragraph III, part A, 3.5 and ift-guideline VE-08/1, part 1, adhesion behaviour on PVC, overlap adhesion on position 1
- Tested according to RAL GZ 716/1, paragraph III, part A, 3.5.4, floating roller peel test to determine the adhesion strength in rebate bondings
- Tested according to ift-guideline VE-08/1, part 1, adhesion behaviour on wood, overlap adhesion on position 1
- Qualified commentary by the eph Dresden, Germany on the execution of glas-connecting systems in burglary prooved wooden windows of the resistance class RC2, rebate bonding in combination with bonding of the glass stemming profile
- Certified according to GOS

S81/DUO 20

The double-sided adhesion tape



Characteristics:

- Double-sided adhesion tape with closed-cell PE-Copolymer foam
- Good initial adhesion
- No pre-treatment of adherent surfaces necessary
- Pre-fabricated punchings for the application and dosage of liquid adhesive
- No further spacers necessary for the adhesion
- A separate masking to protect the adherent before impregnating and varnishing of wooden windows is not necessary

Fields of application:

- Direct-glazing - Bonding of insulated glass units in the window casements made of PVC, wood and aluminium in combination with OTTOCOLL® S81

OTTO Cleanprimer 1226

The universal cleanprimer



Characteristics:

- Cleans and improves the adhesion on non-absorbant substrates (metals, plastics, glass, etc.)
- Ventilation time not required

Fields of application:

- Improves the adhesion properties of the special silicone OTTOSEAL® S 54 on melted asphalt screed
- Improves the adhesion of OTTOCOLL® S 81 on PVC

Standards and tests:

- Certified according to GOS

MFQX 10-24T static mixer

Static mixing nozzles for side-by-side cartridges



Characteristics:

- Static mixing nozzles for 490 ml side-by-side cartridges

Compressed Air Gun P 490 DP

Compressed Air Guns for 2-component products

Characteristics:

- Compressed air gun for the use of side-by-side cartridges 490 ml



Compressed Air Gun P 495 DP

Compressed Air Guns for 2-component products

Characteristics:

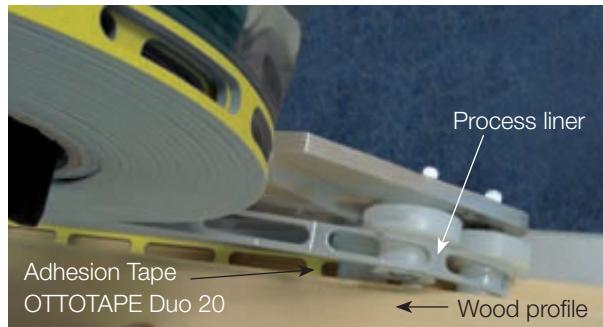
- Compressed air gun for the use of side-by-side cartridges 490 ml. Special pistol for increased product discharge



OTTOTAPE Duo 20 is a double-sided adhesive tape with closed-cell PE-copolymer foam base. The **OTTOCOLL® S 81** adhesive can be applied in the pre-punched cut-outs. The dimensioning of the "bonded joint" is therefore already pre-set on the reel.

The advantages of combining OTTOCOLL® S 81 and OTTOTAPE Duo 20

- Immediate adhesion thanks to **OTTOTAPE Duo 20** combined with the permanent adhesion of the **OTTOCOLL® S 81** 2-component silicone adhesive
- **OTTOTAPE Duo 20** is applied onto untreated wood; no preliminary treatment of the bonding surfaces and no primer required
- Subsequent impregnation and varnishing - a thin film (process liner) on the **OTTOTAPE DUO 20** protects the untreated bonding surface
- Punch-outs in the **OTTOTAPE Duo 20** make it easier to apply and dose the 2-component silicone adhesive **OTTOCOLL® S 81**
- No other spacers required for the bond
- Insures optimised usage of the adhesive

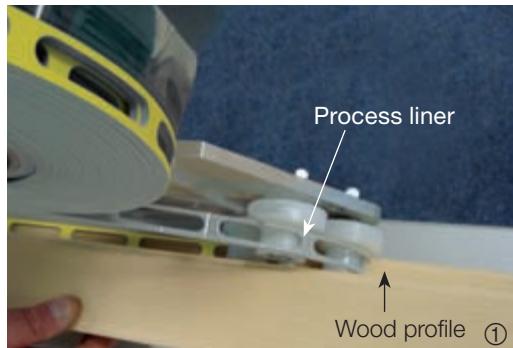
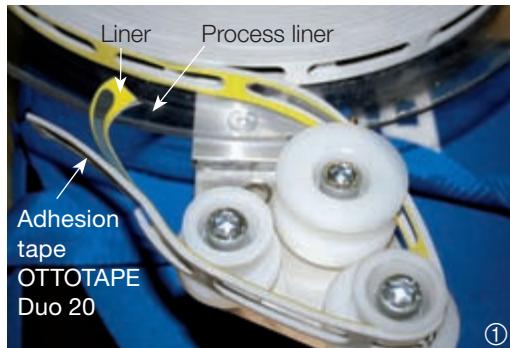


OTTOTAPE Duo 20 is equipped with a process liner of protective foil to conceal the tape optimally on the window element.

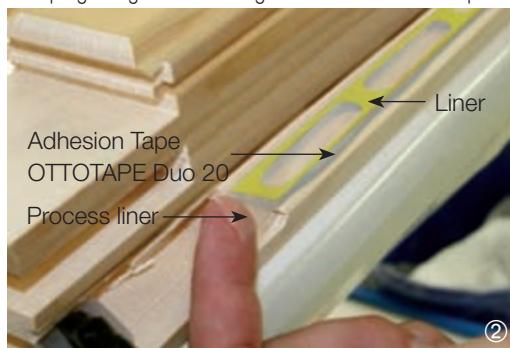


Procedure for a process using **OTTOTAPE Duo 20** and **OTTOCOLL® S 81**
taking a wooden-window profile as an example.

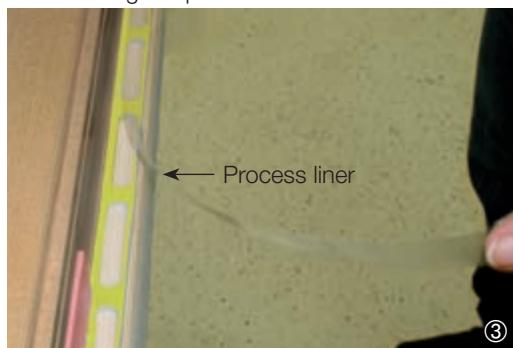
1. Applying the **OTTOTAPE Duo 20** together with the attached process liner from the reel onto the untreated wooden window profile. The full adhesive power of **OTTOTAPE Duo 20** is only reached after at least 24 hours. Our advice is to wait at least that long before you go on impregnating or painting the wooden profile.



2. Impregnating and varnishing of the wooden window profile



3. Removing the process liner



4. Applying the adhesive **OTTOCOLL® S 81**



5. Removing excess adhesive with a spatula. Avoid compression of the tape when removing excess adhesive, so that the necessary adhesive layer in the blankings does not fall below the limit.



6. Removing the liner



(6)

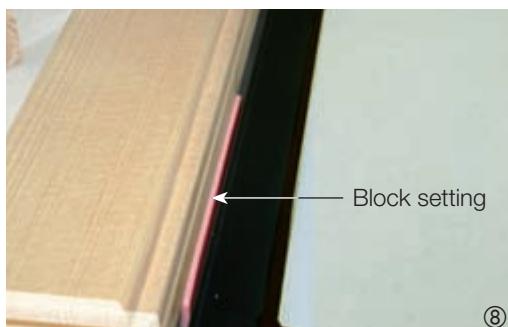
7. Corner connections



(7)

8. Mounting the insulating glass pane.

Apply the insulating glass and fix it with a slight and even pressure on the tape in order to ensure a permanent contact between the glass pane and the adhesion tape respectively the adhesive.



(8)

Checklist of customer wishes

In order to exactly define your wishes for using **OTTOCOLL® S 81** and **OTTOTAPE Duo 20** for a job we have developed a checklist. Your OTTO representative will gladly go through all important points with you. With this list, the OTTO project manager already has all important information at hand when he contacts you regarding the actual processing.

ift-Certificat
**ift-Produktpass
Vorhangfassaden
nach EN 13830 : 2003**

Nr. XXXXX

Gültig bis

Auftraggeber ist
der Systemgeber:
Musterfirma

Musterstraße 00

00000 Musterort

Produktlinie: **Pfosten-Riegel-Fassade Muster**

Muster Variante A

Variante B Muster Variante B

Fassadenmaterial:

Leistungseigenschaften

Eigenschaften

Brand
WiderstandKlima
schutzRaum
dichtigkeitGröße
abmessung

Klass. / Wert

7

100

7

100



BspProduktpass Vorhangfassaden nach EN 13830 (Art-Nr. 00)

Nr. 00000 vom 000

Auftraggeber (Unternehmer
(Konsortium))**1 Klassifizierungsmatrix nach EN 13830**

Diese Matrix ist für die festgelegte Produktfamilie eine Gegenüberstellung der 8. Produktlinie EN 13830, Abschnitt 4 „Anforderungen“ definierten Leistungseigenschaften mit den tatsächlich nachgewiesenen Leistungswertangaben (Spalte 5).

Die Nr. Nummer entspricht der Nummerierung des Abschnitts 4 „Anforderungen“ der Produktlinie.

Für jede definierte Eigenschaft sind die zugrundeliegenden Einzeltechnische und Bewertungen in Punkt 4 des Produktpasses zusammenfassend dokumentiert mit Vierwerts auf die geprüften Produktlinien / Probelörper, die in den Einzelbeschreibungen beschrieben sind.

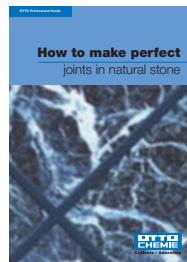
1	2	3	4	5
Art. Nr.	Symbol Widerstand / Wert nach (Dimensions)	Wasser oder Feuerfest?	Klass. abh. Brand	Prüfung Druck > 0,3 MPa Sack > 0,2 m²
00000				



Part n° 9999533



Part n° 9999557



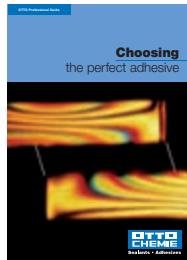
Part n° 9999875



Part n° 9999568



Part n° 9999511



Part n° 9999754



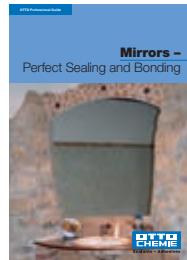
Part n° 9999574



Part n° 9999801



Part n° 9999711



Part n° 9999596

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In order to ensure a quick and correct handling of your orders we would like to ask you to send them by fax or e-mail. Thank you in advance for your cooperation.

Notes:

The information in the present document corresponds to the status quo on going to print, refer to the index. With a new edition this edition becomes invalid. Due to the many possible influences during and after application, the customer always has to carry out trials first. Please observe the respective technical data sheet! This information is available on the Internet at www.otto-chemie.com. Errors and typographical errors are excepted.

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