

TECHNOLOGY

All steamed up

Pressure on the Government to make double-glazing obligatory in new-build has focused attention on the shortcomings of the existing British Standard. Alastair Stewart investigates.

WITH GREEN concerns becoming ever-more potent electoral issues, the Government is under pressure to make double-glazing obligatory in the 1993 revision of the Building Regulations. But widespread problems with double-glazing have brought mounting criticism of the current British Standard.

The first of thousands of double-glazing failures came to light when Margaret Thatcher's neighbours on a Barratt estate in Dulwich, London, started complaining of condensation forming between the panes of their double-glazed sash windows.

The problem has arisen at more than half the estate's 23 detached homes (see 11 October, page 7).

According to one resident, the affected windows turn opaque whenever direct light shines on to them.

"We moved in 1986. The house, which cost around £400 000, was billed as the top of the range and the estate won the

NHBC Best House Award. But within two and half years we noticed the first one fail and it has been downhill ever since."

He and six other residents have issued writs against Barratt, while at least six others are understood to be suffering the same problems. The residents allege the wooden frames and techniques used to glaze them are totally inappropriate for double-glazing (see below and left). Barratt is contesting the claims.

Meanwhile, north of London, County Glazing, a manufacturer of double-glazed units, has suffered similar problems. County and five other manufacturers have confirmed they have received hundreds of complaints (see 18 October, page 7). As at Dulwich Gate, water vapour had got into the space between the panes.

Though the symptoms are similar, County chairman Brian Webb is claiming another cause. The Luton-based firm blames sealant manufacturer Dow Corning Hansil for alleged failure

of a particular brand of compound used for sealing the edges of the units. US-owned DCH denies the sealant, Hansil 172, was the cause of the failures (see right).

The impending legal tussles occur amid mounting concern about the general standards of wooden double-glazing frames in the UK and experts have decried the relevant British Standard as inadequate.

With the prospect of double-glazing being made obligatory under the 1994 Building Regulations, the DOE has commissioned the Building Research Establishment to investigate.

Glazing consultant Norman Plough warned of impending failures and legal battles nearly 10 years ago in a letter to *Building*. Plough called for the scrapping of several sections of the 1982 revision of the British Standard for double-glazing, BS 6262.

Now retired, he believes the large number of failures vindicates his past clashes with the Glass and Glazing Federation, the main trade and standards body for the glazing industry. "I saw the future failures, but the industry had too many vested interests to act."

Plough wants to see the removal from BS 6262 of the fully-bedded method of glazing window units - the technique used at the Barratt estate and in many of the cases concerning County and the other five manufacturers.

In fully-bedded systems the double-glazed unit is held in place

and protected by a continuous ring of glazing compound or sealant (see diagram 1). Plough and a growing number of consultants are pushing for this method to be banned and for drained and ventilated systems to be made obligatory (see diagram 2).

GGF head of standards John Weir admits the federation is becoming more sympathetic to Plough's way of thinking: "You can do a good job with fully-bedded systems, but they are prone to bad workmanship. It is very difficult to glaze them without forming voids in the bedding where water can gather.

"No matter how good the quality of the sealant, it can't survive prolonged contact with water," says Weir.

He says drained and ventilated frames are the preferable method. "Drain holes in the rebate platform allow any moisture that gets past the glazing material to escape. Ventilation holes allow air to dry out any remaining water."

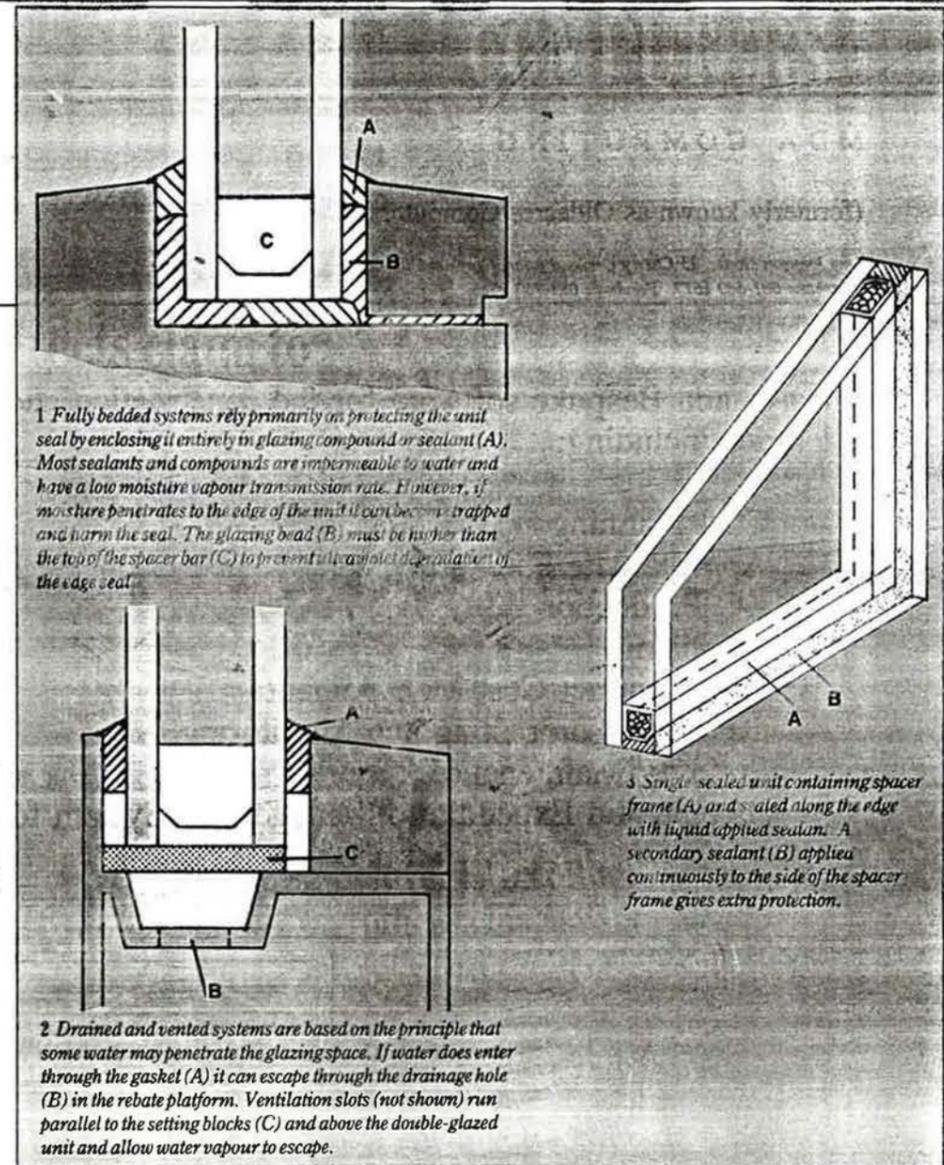
The problem facing the GGF, says Weir, is that the vast majority of standard wooden frames have insufficient rebate depths and widths to accommodate the more complex drained and vented systems and accompanying wooden beads. A minimum 18 mm depth is required for fully-bedded and 22 mm for drained, he insists. But the average is 13 mm.

In drained systems, a minimum width of 38 mm is required. "Some manufacturers think they are doing you a favour if they provide 25 mm," Weir complains.

There is also controversy over whether to use single or a dual sealants. In a single seal system, the edge of the double-glazing unit is lined with silicone or a similar sealant. But Weir believes dual sealants offer a "belt and braces approach".

Weir suggests an inner seal of polyisobutylene, which has extremely high water rejection properties, used alongside silicone or some other sealant with a better adhesion to glass.

Next week: Problems with cavity fill.



Dow Corning denies allegations of sealant failure

DOW CORNING HANSIL has rejected the findings of a report commissioned by the Glass and Glazing Federation in November 1990.

The 17-page document prepared by ex-Pilkington technical sales manager George Linsley details failures on three housing estates built since the mid-1980s. It concludes that Dow's 172 sealant was not suitable to be used as a single sealant.

In a statement to *Building*, Dow said extensive testing has proved that units made employing the single seal silicone "greatly exceed" the requirements of the most stringent parts of BS 5713:1979.

The company rejects the allegations made by County Glazing that the sealant is to blame for the widespread

failures suffered by the north-London based firm.

Dow says the Timber Research and Development Association was "not very complimentary" about the quality of units supplied by County for testing; in high humidity tests the timber frame performed poorly. Then Dow says it put the glass in other frames and tested the units "well beyond" the standard criteria - and they did not fail.

"All this information leads us to the conclusion," says Dow "that the sealant is fit for its intended purpose." The company says it has no plans to change its technical literature.

It says the BS Code of Practice for glazing in buildings produced in 1982 should be followed. Glaziers who use this and the Glass and Glazing Federation's printed

recommendations will be safe.

"Insulating glass unit breakdown can occur due to a variety of reasons - and this is well documented," says Dow. "The major cause of failure is undoubtedly poor glazing and glazing systems; this includes poor quality window frames or incorrect or inadequate glazing compounds."

Other reasons for failure, says Dow, can be the absence of setting blocks and distance pieces, poorly-made lintels and bad maintenance. Dow also cites in its defence a letter published in *Building* on 1 November from Norman Plough that said the main cause of failure in double-glazed units is the water lodgement around the frame. "No edge seal compound can tolerate long-term water contamination," said Plough.

BARRATTGATE

AT Barratt's Dulwich Gate estate, glazing experts that represent the residents claim the double-glazed units are bedded and fronted in a wholly unsuitable material, linseed oil putty. Linseed oil putty was removed from BS 6262 in the 1982 revision because it commonly loses adhesion with the glass, allowing water into the area beneath the glazing unit.

According to the residents, Barratt has offered to strip out the glazed units and fully bed them with metal casement putty. But some of the residents who have issued writs are insisting that all the windows are converted to the drained and ventilated system.

But in order to fit these into the wooden sashes properly, deeper rebates and wider rebate platforms will be required. "Our consultants have told us the rebates are too narrow to even comply with the allegedly poor British Standard," says a resident on the Barratt estate.

Converting to drained and ventilated will require joiners to do considerable reworking of the sashes and frames - an expensive task considering each one of the houses has more than 40 windows.



£400 000 houses have been blighted on Barratt's Dulwich Gate estate. An example (right) of the misted windows.

