NEW STRUCTURAL TIMBER REGULATIONS

Effective from April 1, 1989

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The Irish Standard Recommendation, SR 11: 1988 – 'Structural Timber for Domestic Construction' – was launched in Eolas in 1988 by the Minister for Forestry, Mr. Michael Smith. It was produced after extensive consultations with architects, engineers, distributors and processors. It reflects good trade practice in the use of structural timber in Ireland.

SR 11 has now been incorporated into the Proposed Building Regulations. These are modelled on the regulations currently in force in the U.K. They now form a basis for building control in this country through the specifications of consulting architects and engineers. The requirements of SR 11 formally came into effect from April 1, 1989. Under the new regulations all structural timber should be stress graded and marked to the requirements of SR 11.

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By way of preparation for the introduction of the new regulations a series of workshops and seminars were held in Eolas. These were attended by representatives from the timber industry, State and semi-State bodies, building control authorities, designers and specifiers. Talks were delivered at meetings organised throughout the country by the National House Building Guarantee Scheme of the CIF and at meetings organised jointly by Eolas and timber suppliers. Over 3,000 people have attended these talks to date. A series of on-going visual stress grading courses are being held in Avondale Training Centre to train and certify timber graders to operate under the new regulations. Over 200 people have been trained and certified to date.

Strength Classification System

For ease in design and specification SR 11 introduces a strength classification system for all structural softwood timbers. There are three strength classes specified: SCA, SCB and SCC; the SCA being the lowest strength category and SCC the highest. See Table 1.

Table 1. — Softwood Species/Grades which satisfy the Strength Classes.

SOFTWOOD SPECIES	STRENGTH CLASSES		
	SC A	SC B	SC C
Irish Timber			
Sitka Spruce	GS/MGS	SS/MSS	M75
Norway Spruce	GS/MGS	SS/MSS	M75
Douglas Fir	GS/MGS		SS/MSS
Larch		GS/MGS	SS/MSS
Imported Timber			
Whitewood*1		GS/MGS	SS/MSS
Redwood*1		GS/MGS	SS/MSS
Fir-Larch*2		GS/MGS	SS/MSS
Spruce-Pine-Fir*2		GS/MGS	SS/MSS
Hem-Fir*2		GS/MGS	SS/MSS

*1 — European.
*2 — Canadian.

Ireland is by no means the first country to introduce a grading and strength classification system. Most of the major industrialised countries operate a similar system. In the UK, for example, timber strength classes were introduced in 1984 with the publication of British Standard BS 5268 – 'Structural Use of Timber'. The requirements of this standard have also been incorporated into their building regulations.

In this country Irish timber has approximately a 50% share of the structural timber market. The balance of the demand is filled by timber imports from Scandinavia, Canada and Russia. The strength classification system in SR 11 has made provision for both the Irish and imported timbers. It has removed the barriers of the past to trading for Irish timber and allows Irish grown Sitka or Norway spruce to compete on the same basis as imported timber for its share of our structural timber market. A technical research programme on Irish timber was funded by the Forest Service and used in the preparation of SR 11.

Stress Grading and Marking

The introduction of strength classes does not affect the stress grading of timber. It is a requirement of SR 11 that all structural timbers shall be stress graded and marked accordingly. The timbers are graded to the requirements of British Standard BS 4978 – 'Timber Grades for Structural Use'. Timber can be graded either visually or by machine. There are two visual grades specified – General Structural, (GS), and Special Structural, (SS), with complementary machine grades, MGS and MSS. A further machine grade, M75, is also specified.

Photographed at the launch of SR 11 were, left to right: Pat Colclough, Head Forest Products Department, Eolas; John O'Halloran, Chairman, Irish Timber Council; Christy Conway, Timber Manager, Brooks Thomas Limited; Peter Murphy, Marketing Manager, Woodfab Limited.

Timbers appropriate to a particular strength class are selected on a combination of species and stress grade. The combinations applicable to strength classes SCA, SCB and SCC are outlined in Table 1.

The stress grading and marking of structural timber is subject to the supervisory control of the Timber Grading Bureau of Ireland, (T.G.B.I.). The marking system identifies the stress grade and strength class of the timber member and the registered number of the timber grader and his company. The following is an example of the markings which occur on stress graded timber in accordance with SR 11.

TGBI

Grade	Strength Class
SS	SCC

BS 4978/SR11

Reg. No. 100/738

Table 2 — Permissible Stress and Modulus of Elasticity Values

PROPERTIES	STRENGTH CLASSES		
	SC A	SC B	SC C
STRESS*[1]	MPa	MPa	MPa
Bending	4.1	5.6	6.6
Tension	2.5	3.4	4.0
Shear	0.64	0.64	0.8
Compression:			
Parallel	5.2	6.1	6.4
Perpendic.	1.4	1.6	1.8
MOE			
E mean	7000	8000	9000
E minimum	4500	5000	6000

*[1] — 1 MPa = 1 N/mm²

Design Information and Span Tables

The permissible design stresses and moduli of elasticity values assigned to each of the three strength classes for the dry exposure condition are shown in Table 2. The design values given may be used for all structural applications by the design engineer.

It is a requirement of SR 11 that the moisture content of all structural timber shall not exceed 22 per cent at the time of fixing.

Maximum permissible span tables for specific loading conditions, and based on the strength classification outlined, are provided in SR 11 for floor joists, ceiling joists, rafters and purlins. The timber sizes given in the span tables are the minimum permissible sizes for timber at a moisture content of 22 per cent.