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### Flame spread requirements in the National Building Code of Canada Galbreath, M.

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# NATIONAL RESEARCH COUNCIL OF CANADA

## DIVISION OF BUILDING RESEARCH

No.

317

# TECHNICAL NOTE

NOT FOR PUBLICATION

FOR INTERNAL USE

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DATE

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PREPARED FOR

Information purposes

SUBJECT

FLAME SPREAD REQUIREMENTS IN THE NATIONAL BUILDING  
CODE OF CANADA

Fire hazard classification of interior finish materials has been introduced in the National Building Code (1960) because of the need to place a limit on the use of highly combustible materials in locations where these may contribute to the rapid development of a fire and create a danger to life.

The "tunnel test" designed by Underwriters Laboratories and described in their Bulletin of Research in 1944(1) measures flame spread, fuel contributed and smoke produced of a test sample relative to asbestos cement which has a flame spread index of zero and red oak which is rated 100. This test was adopted as a tentative standard by the American Society for Testing Materials and is described in A.S.T.M. E.84.50T Fire Hazard Classification of Building Materials (2).

At present there are about four laboratories in the United States conducting tunnel tests including Underwriters Laboratories, Chicago, and the South Western Research Laboratories in Texas. In addition to these, Underwriters Laboratories of Canada are operating a tunnel test furnace at their laboratories in Scarborough.

The following is a condensed version of the information on fire hazard classification of some building materials contained in Underwriters Laboratories Bulletin of Research No. 32 (1).

	<u>Flame Spread Index</u>
<u>Asbestos Cement</u>	<u>0</u>
Douglas fir with chemical impregnation	27 - 45.9
Southern yellow pine with chemical impregnation	27 - 78
Fabric treated with borax and boric acid	32
Hair felt $\frac{1}{2}$ " thick treated to reduce com- bustibility	33
Plywood treated to reduce combustibility	37.8
Canvas treated to reduce combustibility	39
Cellulose board $\frac{1}{2}$ " thick treated to reduce combustibility	50
Red oak with two coats fire retardant paint	75 - 83.2
<u>Red Oak Untreated</u>	<u>100</u>
White pine untreated	100 - 131
Douglas fir untreated	100 - 114
White pine with two coats fire retardant paint	100
White pine with two coats whitewash	100 - 104
Plywood untreated	100 - 183
Southern yellow pine untreated	110 - 131
Cellulose board $\frac{1}{4}$ " thick untreated	224
Hair felt $\frac{1}{2}$ " thick untreated	240
Canvas untreated	643
Fabric untreated	1600 - 2500

Underwriters Laboratories are continuing to test materials and the flame spread ratings are published in Underwriters Laboratories Building Materials Lists (3) published in January of each year with bi-monthly supplements.

References

1. Fire Hazard Classification of Building Materials  
Bulletin of Research No. 32  
September 1944  
Underwriters Laboratories Inc. 207 East Ohio  
Street, Chicago, Ill.
2. Fire Hazard Classification of Building Materials  
ASTM Designation E.84.50T  
American Society for Testing Materials  
1916 Race Street, Philadelphia 3, Pa.
3. Building Materials List January 1959  
Underwriters Laboratories Inc.,  
207 East Ohio Street, Chicago, Ill. (also  
obtainable from: Underwriters Laboratories  
of Canada, 7 Crouse Road, Scarborough, Ontario.)