FIRE RETARDANT

and fire resistance coatings

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Wood parts in the event of fire, must comply with **Fire Reaction** and/or **Fire Resistance** norms specified by law.

Fire reaction (DM 06/03/1992 - UNI 9796)

In the event of fire, these coatings must reduce the heat and fire transmission.
A number from 0 to 5, classify the level of coatings (from: 0 = not combustible to 5 = easily combustible)
RENNER fire reaction coatings reach Class 1 when applied on MDF non-fire retardant board (class 4, 830x170x4 mm). The minimum thickness of coating required must be at least 400 g/sqm to reach Class 1.

Fire Resistance (Ministry notice n.91 OF 14/09/1961)

The fire resistance is measured by the time in minutes needed to alter completely the original properties of the wooden load-bearing structures. The fire resistance class are reported in the following way:
R90: means 90 minutes resistance to fire
R120: means 120 minutes resistance to fire
All the test has been performed at "ISTITUTO GIORDANO - Blocco 3 - 47030 Gatteo - ITALY" on solid wood spruce beams (460x30x20 cm for a weight of 26 kg/m) coated with 720 g/sqm of RENNER waterbased 2-pack system RAF - RF90 to reach class R90 and another beam coated with 920 g/sqm of RENNER waterbased 2-pack system RAF - RF120 to reach class R120.

Useful information

According to italian law, the person who applies the products for a fire retardant coating system must fill in a document, CERTIFICATE OF APPLICATION, where the codes of the products used, the kind of fire retardant coating system and the dimension of the surface treated (sqm) shall be declared. Upon receiving this certificate back, Renner will issue a CONFORMITY DECLARATION which shall be given to the final customer. Thid declaration has a 5 years validity.
Both documents, CERTIFICATE OF APPLICATION and CONFORMITY DECLARATION, shall be kept in case of control from local authorities.

Fire retardant products are useful for public office-areas such as AIRPORTS, TRAIN STATION, HOTEL, BANKS, MUSEUM, CINEMAS, THEATHER, SCHOOLS, and all the public buildings.

Application recommendation

1) Order the quantity of product necessary to coat the surface to be treated, considering that 30% will be lost in overspray (times the needed quantity by 1,43).
2) Sand the wood with 150-180 grit sanding paper. In case of renewing of old structures, make sure to remove completely the old film of paint.
3) Stir very well the paint before use.
4) Apply exactly the recommended quantity of product by square meter in order to achieve the same result of the Homologation tests.
5) Perform light basecoat sanding in order not to reduce the thickness of the film, thus ensuring the fire retardant/resistance properties of the system.
6) Room temperature during application and curing must be higher than 8°C for solvent based and 15°C for waterbased fire retardant coatings.

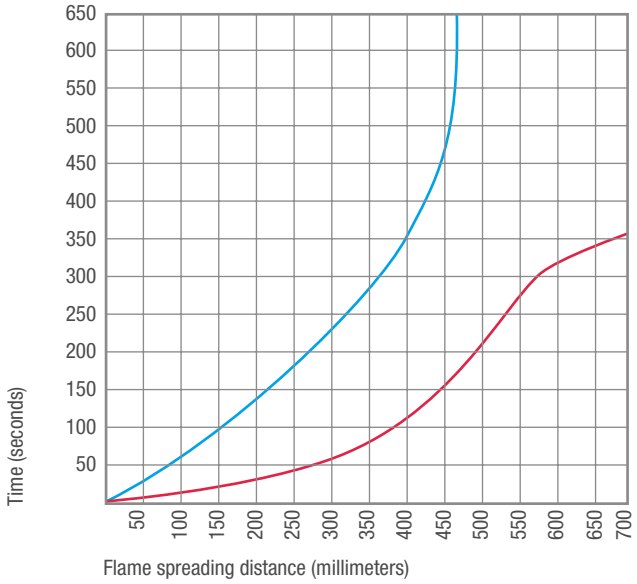
RENNER COATINGS SYSTEMS TO ACHIEVE
N.1 FIRE RETARDANT CLASS

A) WATERBORNE

RAF-AP: 1 pack white self sealer - recommended for exhibition stands
RAF-AT: 1 pack clear basecoat and topcoat system - recommended for skirting, profiles, wall and ceiling paneling
RAF-ATB: 2 pack clear basecoat and topcoat system - recommended for indoor use including furniture

B) SOLVENT BASED PU

RAF-T: 2-pack basecoat and topcoat polyurethane system - recommended for indoor use including furniture
RAF-P 2 pack pigmented basecoat and topcoat system - recommended for indoor use including furniture.
Pigmented topcoat is supplied in 9 different colors, to be used alone or mixed together in order to achieve any type of tone desired. See color chart at the end of this brochure.



Class 1 Fire reaction chart for coating system RAF-ATB
at 520 g/sqm of products.
Homologation number: BO2476PVI100012(D.M. 06/03/92 UNI 9796)

Since the test started it is obvious that the treated panel with RAF-ATB is slowing down the fire advance (see blue line).

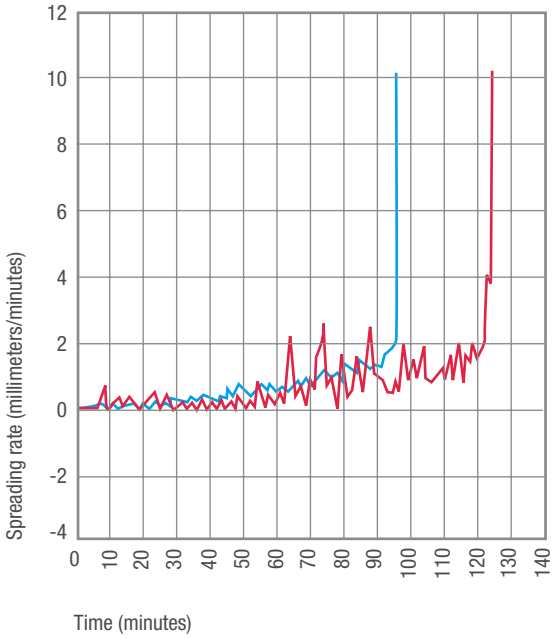
MDF board treated with RAF-ATB
MDF board non-treated with RAF-ATB

RENNER WATERBORNE 2-K COATING SYSTEMS TO ACHIEVE **FIRE RESISTANCE** R90 AND R120

RAF - RF 90
Waterbased basecoat and topcoat to be applied at 720 g/sqm to achieve R90

RAF - RF 120
Waterbased basecoat and topcoat to be applied at 920 g/sqm to achieve R120

RENNER coating system are the state of the art in Fire Resistance as being based on waterbased technology, giving the advantages of an odorless, user's friendly system to be applied also on site.



R90 and R120 Fire resistance chart showing the time resistance to fire for a load-bearing beam.

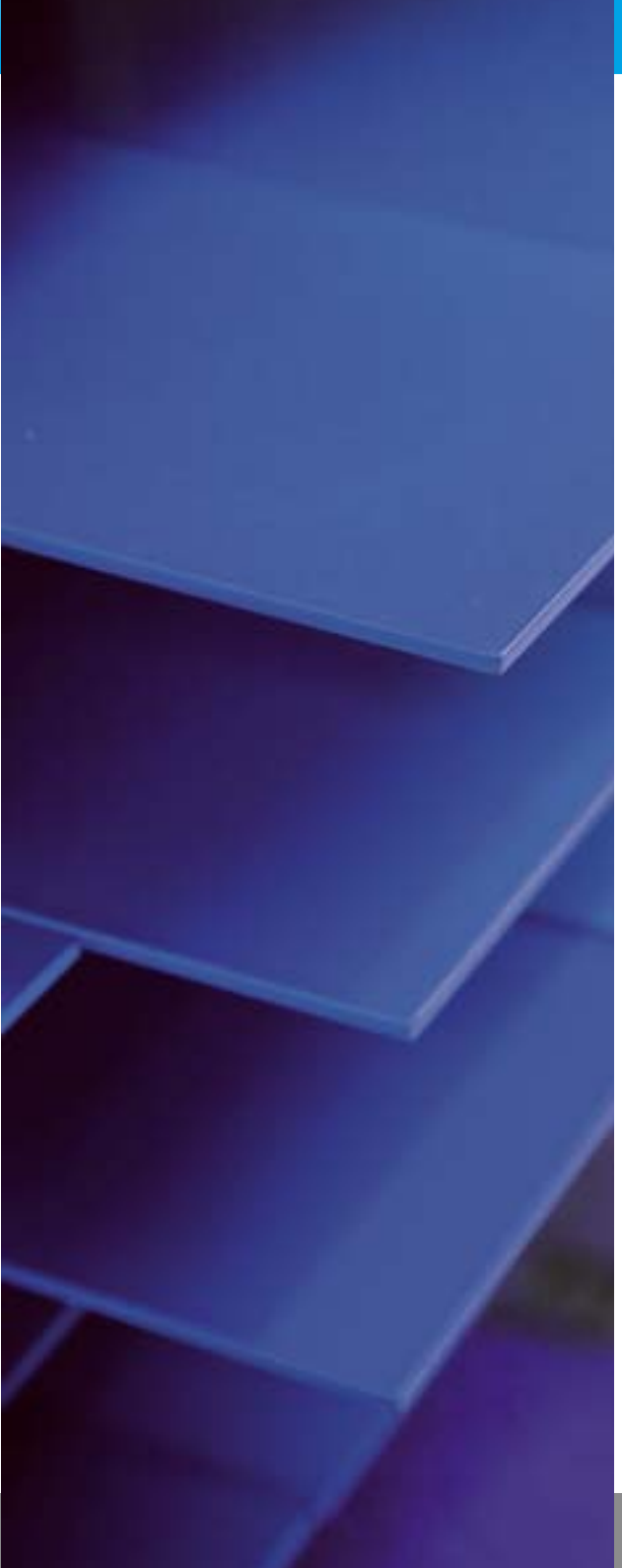
RAF-RF90 resistance time 96'
RAF-RF120 resistance time 124'

VERY IMPORTANT NOTICE
The product used for R90 and R120 are the same, but the difference in resistance is given by the total quantity of topcoat applied.
R90 required 1 coat of basecoat and 3 coats of topcoat for a total of 720 g/sqm
R120 required 1 coat of basecoat and 4 coats of topcoat for a total of 920 g/sqm

WATERBORNE COATING SYSTEMS
IN COMPLIANCE WITH FIRE REACTION CLASS 1

Fire reaction "Class 1" - RAF - ATB. Clear, two pack Waterborne Coating System. Homologation BO 2476 PVI 100012 (D.M. 06/03/92 UNI 9796)	
YL 0512	Waterborne clear basecoat to be catalysed with YC 1112 at 10% - Number of coat: 1 - Quantity for coat: 120 gr/sqm
YO 1012	Waterborne clear topcoat 10 gloss to be catalysed with YC 1112 at 20% - Number of coats: 2 Quantity for each coat: 200 gr/sqm (for a total of 400 gr/sqm) - Interval between coats: 4 hours
YC 1112	Hardener to blend with YL 0512 at 10% ratio and with YO 1012 at 20% ratio
APPLICATION METHOD	By brush or by spray The basecoat should be sanded 6 hours after application with 320 grit paper
GENERAL REMARKS	This coating system is recommended for indoor use (ceiling, roof beams, panelling) including furniture
	Total recommended weight of RAF ATB products: 520 gr/sqm

Fire reaction "Class 1" - RAF - AP. White, one pack Waterborne Coating System. Homologation BO 2476 PVI 100001 (D.M. 06/03/92 UNI 9796)	
YO 0511	Waterborne one pack white self sealer - Number of coats: 2 Quantity for each coat: 200 gr/sqm (for a total of 400 gr/sqm) - Interval between coats: 4 hours
APPLICATION METHOD	By brush or by spray. Product should be thinned with tap water at a ratio of 20% by weight. The first coat should be sanded 4 hours after application with 320 grit paper
GENERAL REMARKS	This coating system is recommended only for exhibition stand/boxes
	Total recommended weight of RAF AP product: 400 gr/sqm



WATERBORNE COATING SYSTEMS
IN COMPLIANCE WITH FIRE RESISTANCE R90 AND R120 CLASS

Fire resistance "R90" - RAF - RF90. Clear, two pack Waterborne Coating System. Giordano Institute (Italy): test report n. 226818/2966 FR issued on 13/06/2007 (Internal Affairs announcement nr. 91 of 14/09/1961 D.M. 30/11/1983)	
YL 0512	Waterborne clear basecoat to be catalysed with YC 1112 at 10% - Number of coats: 1 - Quantity to be applied: 120 gr/sqm
YO 1012	Waterborne clear 10 gloss topcoat to be catalysed with YC 1112 at 20% Number of coats: 3 - Interval between coats: 4 hour
YC 1112	Hardener to blend with YL 0512 at 10% ratio and to blend with YO 1012 at 20% ratio
APPLICATION METHOD	By brush or by spray. Products are ready to use. Basecoat should be sanded 6 hours after application with 240/320 grit paper. The best results can be achieved if the second coat of topcoat is sanded with 320 grit paper 8 hours after its application
GENERAL REMARKS	This coating system is recommended when classification of Fire resistance R90 is required
	Total recommended weight of RAF RF90 products: 720 gr/sqm

Fire resistance "R120" - RAF - RF120. Clear, two pack Waterborne Coating System. Giordano Institute (Italy): test report n. 229549/2997 FR issued on 27/08/2007 (Internal Affairs announcement nr. 91 of 14/09/1961 D.M. 30/11/1983)	
YL 0512	Waterborne clear basecoat to be catalysed with YC 1112 at 10% - Number of coats: 1 - Quantity to be applied: 120 gr/sqm
YO 1012	Waterborne clear 10 gloss topcoat to be catalysed with YC 1112 at 20% Number of coats: 4 - Interval between coats: 4 hours
YC 1112	Hardener to blend with YL 0512 at 10% ratio and to blend with YO 1012 at 20% ratio
APPLICATION METHOD	By brush or by spray. Products are ready to use. Basecoat should be slightly sanded 6 hours after application with 200 grit paper . The best results can be achieved if the third coat of topcoat is sanded with 320 grit paper 8 hours after its application
GENERAL REMARKS	This coating system is recommended when the maximum classification of Fire resistance (R120) is required
	Total recommended weight of RAF RF120 products: 920 gr/sqm

PU COATING SYSTEMS IN COMPLIANCE WITH
FIRE REACTION CLASS 1

	Fire reaction "Class 1" - RAF - P. White, PU Coating System. Homologation BO 2476 PVI 100003 (D.M. 06/03/92 UNI 9796)	
	FL 0511 **FO 2511** **FL 1110**	White basecoat - Number of coats: 2 - Quantity to be applied for each coat: 150 gr/sqm (for a total of 300 gr/sqm) - Interval between coats: 2 hours White 25 gloss topcoat - Number of coats: 1 - Quantity to be applied: 150 gr/sqm - Apply 24 hours after application of basecoat Hardener to blend with Fl 0511 at 50% ratio and to blend with FO 2511 at 50% ratio
	APPLICATION METHOD	By spray. At first, substrate can be slightly sanded with 150 grit paper. Before applying topcoat, the second coat of basecoat should be slightly sanded 24 hours after its application with 320 grit paper. Final drying time: 24 hours
	GENERAL REMARKS	Basecoat FL 0511 is the primer for the 7 PU pigmented coating systems
	Total recommended weight of RAF- P White products: 450 gr/sqm	

	Fire reaction "Class 1" - RAF - P. Red, PU Coating System. Homologation BO 2476 PVI 100005 (D.M. 06/03/92 UNI 9796)	
	FL 0511 **FO 2513** **FL 1110**	White basecoat - Number of coats: 2 - Quantity to be applied for each coat: 150 gr/sqm (for a total of 300 gr/sqm) - Interval between coats: 2 hours Red 25 gloss topcoat - Number of coats: 1 - Quantity to be applied: 150 gr/sqm - Apply 24 hours after application of basecoat Hardener to blend with Fl 0511 at 50% ratio and to blend with FO 2513 at 50% ratio
	APPLICATION METHOD	By spray. At first, substrate can be slightly sanded with 150 grit paper. Before applying topcoat, the second coat of basecoat should be slightly sanded 24 hours after its application with 320 grit paper. Final drying time: 24 hours
	Total recommended weight of RAF- P Red products: 450 gr/sqm	

	Fire reaction "Class 1" - RAF - P. Blue, PU Coating System. Homologation BO 2476 PVI 100006 (D.M. 06/03/92 UNI 9796)	
	FL 0511 **FO 2514** **FL 1110**	White basecoat - Number of coats: 2 - Quantity to be applied for each coat: 150 gr/sqm (for a total of 300 gr/sqm) - Interval between coats: 2 hours Blue 25 gloss topcoat - Number of coats: 1 - Quantity to be applied: 150 gr/sqm - Apply 24 hours after application of basecoat Hardener to blend with Fl 0511 at 50% ratio and to blend with FO 2514 at 50% ratio
	APPLICATION METHOD	By spray. At first, substrate can be slightly sanded with 150 grit paper. Before applying topcoat, the second coat of basecoat should be slightly sanded 24 hours after its application with 320 grit paper. Final drying time: 24 hours
	Total recommended weight of RAF- P Blue products: 450 gr/sqm	

	Fire reaction "Class 1" - RAF - P. Yellow, PU Coating System. Homologation BO 2476 PVI 100007 (D.M. 06/03/92 UNI 9796)	
	FL 0511 **FO 2515** **FL 1110**	White basecoat - Number of coats: 2 - Quantity to be applied for each coat: 150 gr/sqm (for a total of 300 gr/sqm) - Interval between coats: 2 hours Yellow 25 gloss topcoat - Number of coats: 1 - Quantity to be applied: 150 gr/sqm - Apply 24 hours after application of basecoat Hardener to blend with Fl 0511 at 50% ratio and to blend with FO 2515 at 50% ratio
	APPLICATION METHOD	By spray. At first, substrate can be slightly sanded with 150 grit paper. Before applying topcoat, the second coat of basecoat should be slightly sanded 24 hours after its application with 320 grit paper. Final drying time: 24 hours
		Total recommended weight of RAF- P Yellow products: 450 gr/sqm

	Fire reaction "Class 1" - RAF - P. Black, PU Coating System. Homologation BO 2476 PVI 100008 (D.M. 06/03/92 UNI 9796)	
	FL 0511 **FO 2516** **FL 1110**	White basecoat - Number of coats: 2 - Quantity to be applied for each coat: 150 gr/sqm (for a total of 300 gr/sqm) - Interval between coats: 2 hours Black 25 gloss topcoat - Number of coats: 1 - Quantity to be applied: 150 gr/sqm - Apply 24 hours after application of basecoat Hardener to blend with Fl 0511 at 50% ratio and to blend with FO 2516 at 50% ratio
	APPLICATION METHOD	By spray. At first, substrate can be slightly sanded with 150 grit paper. Before applying topcoat, the second coat of basecoat should be slightly sanded 24 hours after its application with 320 grit paper. Final drying time: 24 hours
		Total recommended weight of RAF- P Black products: 450 gr/sqm

	Fire reaction "Class 1" - RAF - P. Oxide Yellow, PU Coating System. Homologation BO 2476 PVI 100009 (D.M. 06/03/92 UNI 9796)	
	FL 0511 **FO 2517** **FL 1110**	White basecoat - Number of coats: 2 - Quantity to be applied for each coat: 150 gr/sqm (for a total of 300 gr/sqm) - Interval between coats: 2 hours Oxide Yellow 25 gloss topcoat - Number of coats: 1 - Quantity to be applied: 150 gr/sqm - Apply 24 hours after application of basecoat Hardener to blend with Fl 0511 at 50% ratio and to blend with FO 2517 at 50% ratio
	APPLICATION METHOD	By spray. At first, substrate can be slightly sanded with 150 grit paper. Before applying topcoat, the second coat of basecoat should be slightly sanded 24 hours after its application with 320 grit paper. Final drying time: 24 hours
		Total recommended weight of RAF- P Oxide Yellow products: 450 gr/sqm

PU COATING SYSTEMS IN COMPLIANCE WITH
FIRE REACTION CLASS 1

	Fire reaction "Class 1" - RAF - P. Oxide Red, PU Coating System. Homologation BO 2476 PVI 100010 (D.M. 06/03/92 UNI 9796)	
	FL 0511 **FO 2518** **FL 1110**	White basecoat - Number of coats: 2 - Quantity to be applied for each coat: 150 gr/sqm (for a total of 300 gr/sqm) - Interval between coats: 2 hours Oxide Red 25 gloss topcoat - Number of coats: 1 - Quantity to be applied: 150 gr/sqm - Apply 24 hours after application of basecoat Hardener to blend with Fl 0511 at 50% ratio and to blend with FO 2518 at 50% ratio
	APPLICATION METHOD	By spray. At first, substrate can be slightly sanded with 150 grit paper. Before applying topcoat, the second coat of basecoat should be slightly sanded 24 hours after its application with 320 grit paper. Final drying time: 24 hours
		Total recommended weight of RAF- P Oxide Red products: 450 gr/sqm

	Fire reaction "Class 1" - RAF - P. Green, PU Coating System. Homologation BO 2476 PVI 100011 (D.M. 06/03/92 UNI 9796)	
	FL 0511 **FO 2519** **FL 1110**	White basecoat - Number of coats: 2 - Quantity to be applied for each coat: 150 gr/sqm (for a total of 300 gr/sqm) - Interval between coats: 2 hours Green 25 gloss topcoat - Number of coats: 1 - Quantity to be applied: 150 gr/sqm - Apply 24 hours after application of basecoat Hardener to blend with Fl 0511 at 50% ratio and to blend with FO 2519 at 50% ratio
	APPLICATION METHOD	By spray. At first, substrate can be slightly sanded with 150 grit paper. Before applying topcoat, the second coat of basecoat should be slightly sanded 24 hours after its application with 320 grit paper. Final drying time: 24 hours
		Total recommended weight of RAF- P Green products: 450 gr/sqm

Fire reaction "Class 1" - RAF - T. Clear, PU Coating System. Homologation BO 2476 PVI 100002 (D.M. 06/03/92 UNI 9796)	
FL 0510 **FO **10** **FC 1110**	Clear basecoat - Number of coats: 2 - Quantity to be applied for each coat: 150 gr/sqm (for a total of 300 gr/sqm) - Interval between coats: 2 hours Clear topcoat available in 25 (**=25) and 75 (**=75) gloss - Number of coats: 1 - Quantity to be applied: 150 gr/sqm - Apply 24 hours after application of basecoat Hardener to blend with Fl 0510 at 50% ratio and to blend with FO 2510 or FO7510 at 50% ratio
APPLICATION METHOD	By spray. At first, substrate can be slightly sanded with 150 grit paper. Before applying topcoat, the second coat of basecoat should be slightly sanded 24 hours after its application with 320 grit paper. Final drying time: 24 hours - Application method: by spray or curtain coater
	Total recommended weight of RAF- T Clear products: 450 gr/sqm

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Renner Italia S.p.A.
Headquarters: via Ronchi Inferiore, 34 / Plants: via Ronchi Inferiore, 7 and 34 - 40061 Minerbio (Bologna) - Italy
tel +39.051.6618211 - fax +39.051.6606312 - info@renneritalia.com - www.renneritalia.com