FIRE RETARDANT
ARCHITECTURAL WOOD COATING

ASTM E84 CLASS A

FIRE SHIELD

FS020
FIRE-SHIELD SEALER

FS021
FIRE-SHIELD TOP COAT
Available in different gloss

www.duro-lak.com

- **Easy to apply**
- **Water base sealer**
- **Solvent base top coat**
- **Fire retardant system**
- **Fast drying**
- **Excellent mar & scratch resistance**
- **Good chemical resistance**
- **ASTM E84 Class A**

duro-lak inc

3020 Le Corbusier, Laval, Quebec,Canada, H7L-3W2 Phone: (450) 687-4140 Fax: (450) 687-9886
1065 Stacey Court, Mississauga, Ontario, Canada, L4W-2X7 Phone: (905) 625-7785 Fax: (905) 625-7798

duro-lak INC.
TEL.: (450) 687-4140
FAX: (450) 687-9886
3020, BOUL. LE CORBUSIER, PARC INDUSTRIEL, LAVAL, QC H7L 3W2

FIRE-SHIELD SEALER FS 020

FIRE-SHIELD SEALER , FS020, IS A CLASS``A`` INTERIOR , WATER BASE, FIRE RETRADNAT PAINT, MANUFACTURED TO MEET ASTM-E84.OFFICIAL TESTING , DONE AT 250 FT.SQUARES/GALLON TO ACHIEVE A CLASS ``A`` RATING.
THIS PRODUCT CAN BE APPLIED OVER DIFFERENT UNCOATED WOODS WITH EXCELLENT ADHESION AND FLAME PROTECTION AFTER CURING.FOR THIS IT WILL BE NECESSARY TO BLEND 6 PARTS FS020 WITH ONE PART FS020B.
ZERO VOCS—CONTAINS NO PETROLEUM DERIVATES
UPON EXPOSURE TO HEAT AND FLAME, A CHAR FORMS ON THE SURFACE OF THE WOOD WHICH ACTS AS A FIRE, HEAT, AND SMOKE BARRIER.
IT IS DESTINATED TO ALL UNCOATED WOODEN OR WOOD DERIVATIVE SUBSTRATES USED WHERE FIRE RETARDANCY AND FLAME SPREADING ARE AN ISSUE. FS020 IS NOT PERMANENT TO THE WOOD SUBSTRATE SO FOR IMPROVE THE CHEMICAL AND PHYSICAL PROPERTIES IT IS REQUIRED THE TOP COAT FS021-20. THE WHOLE SYSTEM IT`S CLASSIFIED CALSS A , ASTM-84.
THIS PRODUCT IS RECOMMENDED FOR INTERIOR USE ONLY.

Finishing Procedures

1) The uncoated wood having uneven or excess porosity should be sanded with 150-180grit paper.

2) Apply a wet layer of 6-8 mils of the Water base Fire Shield Sealer FS020. Let it dry 24 hours before sanding with a 220grit paper..

3) The substrate should be thoroughly dried before the application of the Fire Shield FS021-20.

4) The wet film thickness required of FS021-20 should be between 4 to 5 mils.

5) Type of cure:
After blending 6parts FS020 with 1 part FS020B , the mix can be stirred or blended for 3-5 minutes at slow speed avoiding air entrapment.

6) Always use fresh material and catalyse using FS020B

8) Apply FS020 on surfaces free of contamination.
Application of FS020 cured can be accomplished with brush, roller or spray.For cleanup use soap and warm water wash.
Once activated the coating has a working time of about 1.5 hours at 75°F

10) Flash off: 30 min. To 1 hr. Under good ventilation

11) Drying: at 70-75°F & 50% relative humidity.
Touch free 2-4 hours.
Handle: 6-8 hours.
Through dry 24 hours

Technical Data: **FIRE-SHIELD SEALER** **FS 020**

Appeareance	Slightly cloudy to milky
Weight per Gallon	12.74 Lbs. per gal Imp. @ 25°C
Gloss/Sheen	N/A
Weight Solids	53 ± 1 %
Shelf-life	12 Months..... Unopened original container
	Keep away from freezing
V.O.C	0 Lbs./Gal. U.S.
pH	2-3
Cold check resistance	20 cycles at 3 mils dry, -20°C + 140°F.
Catalyzation	6:1 with FS020B
Reduction	Not necessary
Working temperature	15-22°C / 65-75°F for 50%.R.H. *Avoid extreme.*
Stackable	24 hr
Maximum film at application	6-8 mils wet
Pot life	Max 2 hr

Method of application

Abnormal temperature and humidity conditions will have a negative impact on the final result. The customer should take the necessary precautions to avoid this.

Conventional spray:

Spray gun HVLP
Fluid tip: Fine finish
Air pressure: 45-50 PSIG
Air Flow: 30-35 SCFM

Air assisted airless

Nozzle size.009 or .013 inches
fluid pressure 30-60 P.S.I.

NOTE: AVOID WATER CONTAMINATION

NOTE: The information, rating & opinion stated above pertain to a material currently offered and represent the result of laboratory evaluation. The customer's application and other requirements are unknown, or are not under our control, the company cannot make any warranties or guarantees as to results.

DISCLAIMER: Neither Duro-Lak Inc. nor its marketing agents shall be responsible for the use of this information, or of any product, method or apparatus mentioned. You must have your own determination of product suitability and thoroughly qualify it for serviceability, for environmental acceptability, and for impact on the health and safety of your employees and purchases of your products. Duro-Lak's only obligation shall be to replace such quantity of the product which is proven to have been defective. No person is authorized to make any statement or recommendation not contained herein, and any such statement or recommendation so made shall not bind Duro-Lak Inc. **Keep in mind that: You're the only person able to determine if the suggested product is suitable for the intended applications .**

duro-lak INC.
TEL.: (450) 687-4140
FAX: (450) 687-9886
3020, BOUL. LE CORBUSIER, PARC INDUSTRIEL, LAVAL, QC H7L 3W2

REV-01

CATALYST FOR FS020 — FS020B

PROPERTIES

DESCRIPTION:	Catalyst for FireShield FS020
MIXING RATIO::	6% by volume
DENSITY:	1.210
FIRE HAZARD:	3
HEALTH HAZARD:	2

Catalyze FS020 with 6% of FS020B

For more information, please contact our Technical Support Department at Duro-Lak inc Phone : (450) 687-4140

duro-lak INC.
TEL.: (450) 687-4140
FAX: (450) 687-9886
3020, BOUL. LE CORBUSIER, PARC INDUSTRIEL, LAVAL, QC H7L 3W2

POST CAT FIRE-SHIELD FS 021 line

FIRE-SHIELD IS A FIRE RETARDANT CONVERSION VARNISH, NON OXIDIZING, NON YELLOWING , AS A RESULT OF A ITS HIGH BUILD UP FIRE-SHIELD GIVES A GOOD DEPTH EFFECT AND WEALTH OF FINISH, IN ADDITION TO AN EXCELLENT COLOUR RETIENTION.
THE OPTIMUM HARDNESS IS ACQUIRED VERY FASTLY IN COMPARISON TO EQUIVALENT PRODUCTS IN THE MARKET. AND IT GIVES AN OUT STANDING CHEMICAL RESISTANCE TO HOUSE HOLDS , THUS IT MEETS ALL THE KCMA STANDARDS REQUIREMENTS.
THIS PRODUCT IS ENVIRONMENTAL COMPLIANT: NO ISOCYANATES, ULTRA LOW FORMALDEHYDE EMISSION.
IT IS DESTINATED TO ALL WOODEN OR WOOD DERIVATIVE SUBSTRATES USED WHERE FIRE RETARDANCY AND FLAME SPREADING ARE AN ISSUE. FS021-20 IS FORMULATED TO MEET THE FIRE RETARDANT COATINGS REQUIREMENTS OF THE AMERICAN SOCIETY FOR THE TESTING AND MATERIALS "ASTM E-84 CLASS A" WHEN APPLIED ON FIRE SHIELD SEALER FS020 ,

THIS PRODUCT IS RECOMMENDED FOR INTERIOR USE ONLY.
MEET ASTM E-84 CLASS A WHEN APPLY ON FS020 FIRE SHIELD SEALER

Finishing Procedures

1) The substrate should be sanded using 150-180 grit paper

2) Apply a wet layer of 6-8 mils of the Water base Fire Shield Sealer FS020. Let it dry 24 hours before applying FS021 line.

3) The substrate should be thoroughly dried before the application of the Fire Shield FS021 line.

4) The wet film thickness required of FS021 line should be between 4 to 5 mils.

5) Catalyze under a good mixing. Let catalyst sweat in for 15 min. before applying.
keep under constant agitation, during the finishing process.

6) Always use fresh material and catalyse using FS021B 10% Vol.

8) Apply FS021 line on surfaces free of contamination.
Apply with :
HVLP
Conventional
Air less
Air assisted
(use fine finish nozzle with good atomization.)

10) Flash off: 30 min. To 1 hr. Under good ventilation

11) Drying: at 70-75°F & 50% relative humidity.
Touch free 15-20 minutes.
Handle: 45-60 minutes.
Through dry 10-12 hours
Oven 120-140° F surface temperature 1Hr.

Technical Data: **POST-CAT FIRE-SHIELD** **FS021 line**

Viscosity as supplied	27-29 Sec..... Ford #4 @25°C
Weight per Gallon	10.07 Lbs. per gal Imp. @ 25°C
Gloss/Sheen	FS021-10 (10°), FS021-20 (20°), FS021-35 (35°), FS021-50 (50°) FS021-90 (H/G)
Weight Solids	53 ± 1 %
Shelf-life	12 Months..... Unopened original container *Keep dry and avoid direct sunlight.*
V.O.C.	4.02 Lbs./Gal. U.S.
Color	Translucent
Cold check resistance	20 cycles at 3 mils dry, -40°F + 140°F.
Catalyzation	10% with FS021B
Reduction	FSR189 10% if necessary
Working temperature	15-22°C / 65-75°F for 50%.R.H. *Avoid extreme.*
Application viscosity	20 ± 2 sec on Ford #4 at 20°C.
Stackable	24 hr
Maximum film at application	6 mils wet
Pot life	8 hr

Method of application

Abnormal temperature and humidity conditions will have a negative impact on the final result. The customer should take the necessary precautions to avoid this.

Conventional spray:

Spray gun HVLP
Fluid tip: Fine finish
Air pressure: 45-50 PSIG
Air Flow: 30-35 SCFM

Air assisted airless

Nozzle size.009 or .013 inches
fluid pressure 30-60 P.S.I.

NOTE: AVOID WATER CONTAMINATION

NOTE: The information, rating & opinion stated above pertain to a material currently offered and represent the result of laboratory evaluation. The customer's application and other requirements are unknown, or are not under our control, the company cannot make any warranties or guarantees as to results.

DISCLAIMER: Neither Duro-Lak Inc. nor its marketing agents shall be responsible for the use of this information, or of any product, method or apparatus mentioned. You must have your own determination of product suitability and thoroughly qualify it for serviceability, for environmental acceptability, and for impact on the health and safety of your employees and purchases of your products. Duro-Lak's only obligation shall be to replace such quantity of the product which is proven to have been defective. No person is authorized to make any statement or recommendation not contained herein, and any such statement or recommendation so made shall not bind Duro-Lak Inc. **Keep in mind that: You're the only person able to determine if the suggested product is suitable for the intended applications .**

duro-lak INC.
TEL.: (450) 687-4140
FAX: (450) 687-9886
3020, BOUL. LE CORBUSIER, PARC INDUSTRIEL, LAVAL, QC H7L 3W2

REV-01

CATALYST FOR FS021 line — FS021B

PROPERTIES

DESCRIPTION:	Catalyst for FireShield FS021 line
MIXING RATIO::	10% by volume
DENSITY:	0.895
FIRE HAZARD:	3
HEALTH HAZARD:	2

Catalyze FS021 line with 10% of FS021B

For more information, please contact our Technical Support Department at Duro-Lak inc Phone : (450) 687-4140

duro-lak INC.
TEL.: (450) 687-4140
FAX: (450) 687-9886
3020, BOUL. LE CORBUSIER, PARC INDUSTRIEL, LAVAL, QC H7L 3W2

REV-01

REDUCER FOR FIRESHELL FSR189

PROPERTIES

DESCRIPTION:	Reducer for FS007 line and FS021 line
FLASH POINT	28°C Close cup
DENSITY:	0.859
FIRE HAZARD:	3
HEALTH HAZARD:	2

VOC:	861 grms / L
UN:	1263
CLASS:	3
Packaging Group:	II

Reducer for FS007 line & FS021 line

Colour: Clear transparent

Reduction: 5-10% if necessary

Use this solvent to clean containers & spray equipment.

Shelf life: 1 year

For more information, please contact our Technical Support Department at Duro-Lak inc Phone : (450) 687-4140

MATERIAL SAFETY DATA SHEET

MANUFACTURER'S NAME;	DURO-LAK INC.
STREET ADDRESS:	3020 LE CORBUSIER
CITY, STATE & ZIP CODE:	LAVAL, QUEBEC H7L 3W2
COUNTRY:	CANADA
TELEPHONE NO.:	(450) 687-4140
EMERGENCY PHONE NO. :	(613) 996-6666

DATE:June 2, 2017

SECTION I - MATERIAL IDENTIFICATION

Product name	FIRE SHIELD SEALER (6:1 FS020B)
Product code	FS020
Sheen	
Material use	Industrial finish
W.H.M.I.S. classification	Class B, Division 2 / Class D, Subdivision A, Division 2

SECTION II - HAZARDOUS INGREDIENTS

HAZARDOUS COMPONENT	# C.A.S.	ACGIH TLV/PPM	CONC. %	LEL	VAPOUR PRESSURE
Isopropyl Alcohol	67-63-0	400	0.1-1	2.3	33

SECTION III - PHYSICAL DATA

Physical state	Gas ( ) Liquid (x) Solid ( )	Odour & appearance	Petroleum odour, Opaque liquid
Vapour density	Heavier than air	Odour threshold	Not available
Evaporation rate	Slower than ether	Specific gravity	1.274
Boiling point (°C)		% volatile (by weight)	47%
Freezing point (°C)	Not available	PH	2-3
Coef Water / oil dist	Not available	Weight per gallon	12.74

SECTION IV - FIRE OR EXPLOSION HAZARD

FS020

Flammability... If yes, under which conditions?	Means of extinction
Yes (x) Can ignite at temperature above the flash point or on hot surfaces above the auto-ignition temperature. No ( )	Water Spray ( ) Carbon Dioxide (x) Dry Chemical (x) Foam (x)

Special Procedures: Explosion hazard. Fight fire from behind an explosion proof barrier. Use self-contained breathing equipment and protective clothing.

Flash Point (*C) and Method	>100°C TCC	Auto Ignition Temperature (*C)	Not Available.
TDG Flammability Classification	Not Available	U.E.L. (% per volume):	Not Available.
Sensitive to Impact	Not Available	L.E.L. (% per volume):	Not Available.

Sensitivity to Static Discharge	
Hazardous Combustion Products	Carbon dioxide, Carbon monoxide, & nitrogenous products.

SECTION V - REACTIVITY DATA

Chemical Stability:	Stable.
Incompatibility with other substances:	Strong Oxidizing Agents.
Conditions of Reactivity:	
Hazardous Decomposition Products (if any):	

SECTION VI - TOXICOLOGICAL PROPERTIES

Route of Entry:	Skin Contact (x) Ingestion (x) Inhalation Acute (x) Skin Absorption (x) Eye Contact (x) Inhalation Chronic (x)
Irritancy:	Is a severe irritant.
Carcinogenicity:	Contains a suspect carcinogen.
Mutangenicity:	May cause heritable genetic damage.
Teratogenicity:	May cause birth defects.
Reproductive Toxicity:	May be toxic to foetus (animal studies).
Sensitization to Product:	May cause allergic skin reaction.
Effects of Acute Exposure to Material:	May be harmful if absorbed through skin. Serious eye irritation. May cause dizziness, headache and nausea if inhaled. Working in confined space could lead to unconsciousness. Highly toxic if swallowed.
Effects of Chronic Exposure to Material:	May affect: Skin, Eyes, Blood, Lungs, Stomach, Intestinal tract, Liver, Kidneys, Central nervous system, Heart. May cause: Dermatitis, Skin ulcers, Eye Ulcers.
Exposure Limits:	As exposure limits such as TLV, LD50 and LC50 have not been determined on formulated products, all available information has been listed with the hazardous ingredients in section II.

SECTION VII - PREVENTIVE MEASURES

FS007A

Personal protective equipment	Use silicone free barrier cream, solvent resistance gloves, impermeable footwear, and protective clothing, Wear chemical safety goggles. Use air purifying respirator with dust and vapour removal canisters.
Engineering controls	Use local ventilation with minimum of ten air changes per hour.
Leak and spill procedure	Eliminate immediately all sources of ignition. Evacuate all personnel. Use self contained breathing equipment. Dyke spill. Do not flush into sewers. Ventilate. Absorb with sand. Place in sealable containers. Avoid sparks. May be toxic to aquatic and animal life.
Waste disposal	Use sanitary landfill or incinerator in accordance with local, provincial and federal regulation.
Handling procedures and equipment	Vapours heavier than air causing health, explosion hazards. Do not breath the vapours or spray mist. Avoid formation of electrostatic sparks and discharges. Keep containers tightly closed when not in use. Use in well ventilated areas. Wash before meals, before using toilets and at end of shift. Launder contaminated clothing before re-use.
Storage requirements	Keep away from moisture and rain. Keep in a cool place away from flames, sparks and hot surfaces. Keep away from freezing.
Special shipping information	Keep away from freezing.

SECTION VIII - FIRST AID MEASURES

Skin	Wash affected areas with soap and water. Remove contaminated clothing, If irritation persists, see doctor
Eyes	Flush immediately with water for 15 minutes, see doctor
Inhalation	Remove to fresh air. Aid breathing, see doctor at once
Ingestion	Do not induce vomiting, see doctor at once.

MATERIAL SAFETY DATA SHEET

MANUFACTURER'S NAME: DURO-LAK INC.
STREET ADDRESS: 3020 LE CORBUSIER
CITY, STATE & ZIP CODE: LAVAL, QUEBEC H7L 3W2
COUNTRY: CANADA
TELEPHONE NO.: (450) 687-4140
EMERGENCY PHONE NO. : (613) 996-6666

DATE:June 2, 2017

SECTION I - MATERIAL IDENTIFICATION

Product name	CATALYST FOR FIRE SHIELD SEALER
Product code	FS020B
Sheen	
Material use	Industrial finish
W.H.M.I.S. classification	Class B, Division 2 / Class D, Subdivision A, Division 2

SECTION II - HAZARDOUS INGREDIENTS

HAZARDOUS COMPONENT	# C.A.S.	ACGIH TLV/PPM	CONC. %	LEL	VAPOUR PRESSURE
Isopropyl Alcohol	67-63-0	400	1.0-5.0	2.3	33
Formaldehyde	50-00-0	1	0.1-1.0	7.0	

SECTION III - PHYSICAL DATA

Physical state	Gas ( ) Liquid (x) Solid ( )	Odour & appearance	Petroleum odour, Opaque liquid
Vapour density	Heavier than air	Odour threshold	Not available
Evaporation rate	Slower than ether	Specific gravity	1.210
Boiling point (°C)		% volatile (by weight)	27%
Freezing point (°C)	Not available	PH	8-9
Coef Water / oil dist	Not available	Weight per gallon	12.10 lbs/gal

SECTION IV - FIRE OR EXPLOSION HAZARD

FS020B

Flammability... If yes, under which conditions?	Means of extinction
Yes (x) Can ignite at temperature above the flash point or on hot surfaces above the auto-ignition temperature. No ( )	Water Spray ( ) Carbon Dioxide (x) Dry Chemical (x) Foam (x)

Special Procedures: Explosion hazard. Fight fire from behind an explosion proof barrier. Use self-contained breathing equipment and protective clothing.

Flash Point (*C) and Method	>65.6°C TCC	Auto Ignition Temperature (*C)	Not Available.
TDG Flammability Classification	Not Available	U.E.L. (% per volume):	Not Available.
Sensitive to Impact	Not Available	L.E.L. (% per volume):	Not Available.

Sensitivity to Static Discharge	
Hazardous Combustion Products	Carbon dioxide, Carbon monoxide, & nitrogenous products.

SECTION V - REACTIVITY DATA

Chemical Stability:	Stable.
Incompatibility with other substances:	Strong Oxidizing Agents.
Conditions of Reactivity:	
Hazardous Decomposition Products (if any):	

SECTION VI - TOXICOLOGICAL PROPERTIES

Route of Entry:	Skin Contact (x) Ingestion (x) Inhalation Acute (x) Skin Absorption (x) Eye Contact (x) Inhalation Chronic (x)
Irritancy:	Is a severe irritant.
Carcinogenicity:	Contains a suspect carcinogen.
Mutangenicity:	May cause heritable genetic damage.
Teratogenicity:	May cause birth defects.
Reproductive Toxicity:	May be toxic to foetus (animal studies).
Sensitization to Product:	May cause allergic skin reaction.
Effects of Acute Exposure to Material:	May be harmful if absorbed through skin. Serious eye irritation. May cause dizziness, headache and nausea if inhaled. Working in confined space could lead to unconsciousness. Highly toxic if swallowed.
Effects of Chronic Exposure to Material:	May affect: Skin, Eyes, Blood, Lungs, Stomach, Intestinal tract, Liver, Kidneys, Central nervous system, Heart. May cause: Dermatitis, Skin ulcers, Eye Ulcers.
Exposure Limits:	As exposure limits such as TLV, LD50 and LC50 have not been determined on formulated products, all available information has been listed with the hazardous ingredients in section II.

SECTION VII - PREVENTIVE MEASURES

FS007A

Personal protective equipment	Use silicone free barrier cream, solvent resistance gloves, impermeable footwear, and protective clothing, Wear chemical safety goggles. Use air purifying respirator with dust and vapour removal canisters.
Engineering controls	Use local ventilation with minimum of ten air changes per hour.
Leak and spill procedure	Eliminate immediately all sources of ignition. Evacuate all personnel. Use self contained breathing equipment. Dyke spill. Do not flush into sewers. Ventilate. Absorb with sand. Place in sealable containers. Avoid sparks. May be toxic to aquatic and animal life.
Waste disposal	Use sanitary landfill or incinerator in accordance with local, provincial and federal regulation.
Handling procedures and equipment	Vapours heavier than air causing health, explosion hazards. Do not breath the vapours or spray mist. Avoid formation of electrostatic sparks and discharges. Keep containers tightly closed when not in use. Use in well ventilated areas. Wash before meals, before using toilets and at end of shift. Launder contaminated clothing before re-use.
Storage requirements	Keep away from moisture and rain. Keep in a cool place away from flames, sparks and hot surfaces. Keep away from freezing.
Special shipping information	Keep away from freezing.

SECTION VIII - FIRST AID MEASURES

Skin	Wash affected areas with soap and water. Remove contaminated clothing, If irritation persists, see doctor
Eyes	Flush immediately with water for 15 minutes, see doctor
Inhalation	Remove to fresh air. Aid breathing, see doctor at once
Ingestion	Do not induce vomiting, see doctor at once.

FICHE SIGNALITIQUE

NOM DU MANUFACTURIER:	DURO-LAK INC.
ADRESSE, RUE:	3020 LE CORBUSIER
VILLE, PROVINCE, CODE POSTAL:	LAVAL, QUÉBEC, H7L 3W2
PAYS:	CANADA
TÉLÉPHONE :	(450) 687-4140
TÉLÉPHONE EN CAS D'URGENCE:	(613) 996-6666

DATE: 2 juin, 2017

SECTION I - IDENTIFICATION DU PRODUIT

Nom du produit	REVÊTEMENT FIRE SHIELD À CATALYSÉ
Code du produit	FS021-10, FS021-20, FS021-35, FS021-50, FS021-90
Lustre	
Utilisation	Revêtement industriel
Classe W.H.M.I.S.	Classe B, Division 2 / Classe D, Subdivision A, Division 2

SECTION II - MATIÈRES DANGEREUSES

COMPOSANTES DANGEREUSES	# C.A.S.	ACGIH TLV/PPM	CONC. %	LEL	PRESSION DE VAPEUR
Xylene	1330-20-7	100	15-40	1.0	9.5
N-Buthanol	71-36-3	50	7-13	1.4	4.7
Formaldehyde	50-00-00	1	0.1-1.0	7.0	

SECTION III - DONNÉES PHYSIQUES

État Physique	Gaz ( ) Liquide (x) Solide ( )	Odeur et apparence	Liquide opaque. Odeur de pétrole.
Densité de vapeur	Plus lourd que l'air	Tolérance à l'odeur	Non disponible.
Taux d'évaporation	Plus lent que l'éther	Gravité spécifique	1.007
Point d'ébullition	non disponible	% Volatile (par poids)	47%
Point de congélation	Non disponible	VOC	483 grms / lt
Coefficient eau : huile	Non disponible	Poids par gallon	10.07 lbs/gal.

SECTION IV - DANGER AU FEU OU A L'EXPLOSION

FS021 Series

Si inflammable, sous quelles conditions...	Moyens d'extinction
Qui (x) Peut s'enflammer à une température au-dessus du point d'éclair ou sur des surfaces chaudes au-dessus de la température de la combustion spontanée. Non ( )	Extincteur à l'eau ( ) Dioxyde de Carbone (x) Extincteur Chimique (x) Mousse (x)

Précautions spéciales: Danger d'explosion, maîtriser le feu à l'abri d'une barrière anti-explosion. Utiliser masque et vêtements protecteurs.

Point d'éclair (°C) et Méthode	>65.6° C TCC	Combustion spontanée (°C):	Non disponible.
Classe TDG d'inflammable	non disponible	U.E.L. (% par volume):	Non disponible.
Sensitive à l'impact	non disponible	L.E.L. (% par volume):	Non disponible.

Sensitive au courant statique	
Produits de combustion dangereux	Dioxyde de carbone, Monoxyde de carbone, Formaldéhyde, et produits nitrogènes.

SECTION V - DONNÉES RÉACTIONNELLES

Stabilité Chimique:	stable
Incompatibilité avec d'autres substances:	les agents oxydants puissants
Conditions Réactionnelles:	
Décomposition de Matières Dangereuse:	

SECTION VI - PROPRIÉTÉS TOXICOLOGIQUES

Moyen de contamination	Contact Cutané (x) Ingestion (x) Inhalation Aiguë (x) Absorption Cutanée (x) Contact avec les yeux (x) Inhalation Chronique (x)
Irritation	Très sévère.
Carcinogène	On peut présumer des matières d'ordre cancérigènes
Mutagène	Peut causer des dommages génétiques
Tératogène	Peut causer des malformations à la naissance
Reproduction Toxique	Peut être toxique pour le foetus
Sensibilité au produit	Peut causer une réaction allergique cutanée.
Effets d'une exposition aiguë	Peut être dangereux par absorption cutanée. Cause une irration sérieuse des yeux. Peut causer nausée, maux de tête si inhale. Manipulation dans un espace clos pourrait provoquer l'évanouissement. Hautement toxique si avalé.
Effets d'une exposition chronique	Peut affecter: Peau, Yeux, Sang, Poumons, Estomac, Système Digestif, Foie, Reins, Système Nerveux Central, Cœur. Peut causer: Ulcères de la peau et des yeux.
Limites d'exposition	Étant donné que les limites d'exposition tel que TLV, LD50 et LC50 n'ont pas été déterminées dans les formules, toutes les informations sont contenues dans la section II.

SECTION VII - MESURES PRÉVENTIVES

Équipement de Protection Personnel	Utiliser une crème protectrice sans silicone, des gants résistants aux solvants, des souliers imperméables, des vêtements sécuritaires, des lunettes, un respirateur purifiant l'air des vapeurs et poussières.
Contrôles d'ingénierie	Ventiler complètement la pièce 10 fois par heure.
Procédures en cas de déversement	Éliminer immédiatement toutes sources d'étincelles. Évacuer toutes personnes. Utiliser un équipement respiratoire approprié. Ne pas diriger vers les égouts. Ventiler adéquatement. Utiliser un absorbant pour ramasser. Placer dans un contenant scellé. Éviter les étincelles. Peut-être toxique pour les animaux et les poissons.
Disposition des rebuts	Utiliser un site d'enfouissement ou incinérateur conformément aux règlements gouvernementaux.
Procédures de manipulation et équipement.	Les émanations plus lourdes que l'air causent des dangers d'explosion. Ne pas respirer les vapeurs. Éviter la formation d'étincelles. Garder les contenants bien fermés. Utiliser dans des endroits aérés. Vous laver avant les repas, avant d'utiliser les toilettes et après votre quart de travail. Laver les vêtements contaminés.
Exigences d'entreposage	Garder à l'abri de l'humidité et de la pluie. Conserver à l'abri des étincelles, de la chaleur et du gel.
Information d'expédition	Extrême sensibilité au gel.

SECTION VIII - MESURES DE PREMIERS SOINS

Peau	Laver les régions affectées avec de l'eau et du savon. Enlever les vêtements contaminés. Si l'irritation persiste, consulter un médecin.
Yeux	Rincer immédiatement avec de l'eau pendant 15 minutes. Consulter un médecin.
Inhalation	Respirer de l'air frais. Consulter un médecin immédiatement.
Ingestion	Ne pas faire vomir. Consulter un médecin immédiatement.

MATERIAL SAFETY DATA SHEET

MANUFACTURER'S NAME; DURO-LAK INC.
STREET ADDRESS: 3020 LE CORBUSIER
CITY, STATE & ZIP CODE: LAVAL, QUEBEC H7L 3W2
COUNTRY: CANADA
TELEPHONE NO.: (450) 687-4140
EMERGENCY PHONE NO. : (613) 996-6666

DATE: June 2, 2017

SECTION I - MATERIAL IDENTIFICATION

Product name	FIRE-SHIELD CATALYST 10%
Product code	FS021B
Sheen	
Material use	Industrial finish
W.H.M.I.S. classification	Class B, Division 2 / Class D, Subdivision A, Division 2 Class E

SECTION II - HAZARDOUS INGREDIENTS

HAZARDOUS COMPONENT	# C.A.S.	ACGIH TLV/PPM	CONC. %	LEL	VAPOUR PRESSURE
N-Butyl Acetate	123-86-4	150	30-60	1.4	10
Isopropanol	67-63-0	400	15-40	2.3	33
Butanol	71-36-3	50	15-40	1.4	4.7
P-Toluene Sulfonic Acid	104-15-4	N/A	10-30	N/A	N/A

SECTION III - PHYSICAL DATA

Physical state	Gas ( ) Liquid (x) Solid ( )	Odour & appearance	Clear liquid. Petroleum odour.
Vapour density	Heavier than air	Odour threshold	Not available
Evaporation rate	Slower than ether	Specific gravity	0.895
Boiling point (°C)	80°C	% volatile (by weight)	86%
Freezing point (°C)	Not available	VOC	771 grms / lt
Coef Water / oil dist	Not available	Weight per gallon	8.95 lbs/gal.

SECTION IV - FIRE OR EXPLOSION HAZARD
FS021B

Flammability... If yes, under which conditions?	Means of extinction
Yes (x) Can ignite at temperature above the flash point or on hot surfaces above the auto-ignition temperature. No ( )	Water Spray ( ) Carbon Dioxide (x) Dry Chemical (x) Foam (x)

Special Procedures: Explosion hazard. Fight fire from behind an explosion proof barrier. Use self-contained breathing equipment and protective clothing.

Flash Point (*C) and Method	14°C TCC	Auto Ignition Temperature (*C)	Not Available.
TDG Flammability Classification	3 (8)	U.E.L. (% per volume):	Not Available.
PIN UN2924 Flammable liquid corrosive n.o.s		Packing Group	II
Sensitive to Impact	Not Available	L.E.L. (% per volume):	Not Available.

Sensitivity to Static Discharge	
Hazardous Combustion Products	Carbon dioxide, Carbon monoxide.

SECTION V - REACTIVITY DATA

Chemical Stability:	Stable.
Incompatibility with other substances:	Strong Oxidizing Agents.
Conditions of Reactivity:	
Hazardous Decomposition Products (if any):	

SECTION VI - TOXICOLOGICAL PROPERTIES

Route of Entry:	Skin Contact (x) Ingestion (x) Inhalation Acute (x) Skin Absorption (x) Eye Contact (x) Inhalation Chronic (x)
Irritancy:	Is a severe irritant.
Carcinogenicity:	Contains a suspect carcinogen.
Mutangenicity:	May cause heritable genetic damage.
Teratogenicity:	May cause birth defects.
Reproductive Toxicity:	May be toxic to foetus (animal studies).
Sensitization to Product:	May cause allergic skin reaction.
Effects of Acute Exposure to Material:	May be harmful if absorbed through skin. Serious eye irritation. May cause dizziness, headache and nausea if inhaled. Working in confined space could lead to unconsciousness. Highly toxic if swallowed.
Effects of Chronic Exposure to Material:	May affect: Skin, Eyes, Blood, Lungs, Stomach, Intestinal tract, Liver, Kidneys, Central nervous system, Heart. May cause: Dermatitis, Skin ulcers, Eye Ulcers.
Exposure Limits:	As exposure limits such as TLV, LD50 and LC50 have not been determined on formulated products, all available information has been listed with the hazardous ingredients in section II.

SECTION VII - PREVENTIVE MEASURES

Personal protective equipment	Use silicone free barrier cream, solvent resistance gloves, impermeable footwear, and protective clothing, Wear chemical safety goggles. Use air purifying respirator with dust and vapour removal canisters.
Engineering controls	Use local ventilation with minimum of ten air changes per hour.
Leak and spill procedure	Eliminate immediately all sources of ignition. Evacuate all personnel. Use self contained breathing equipment. Dyke spill. Do not flush into sewers. Ventilate. Absorb with sand. Place in sealable containers. Avoid sparks. May be toxic to aquatic and animal life.
Waste disposal	Use sanitary landfill or incinerator in accordance with local, provincial and federal regulation.
Handling procedures and equipment	Vapours heavier than air causing health, explosion hazards. Do not breath the vapours or spray mist. Avoid formation of electrostatic sparks and discharges. Keep containers tightly closed when not in use. Use in well ventilated areas. Wash before meals, before using toilets and at end of shift. Launder contaminated clothing before re-use.
Storage requirements	Keep away from moisture and rain. Keep in a cool place away from flames, sparks and hot surfaces. Keep away from freezing.
Special shipping information	Keep away from freezing.

SECTION VIII - FIRST AID MEASURES

Skin	Wash affected areas with soap and water. Remove contaminated clothing, If irritation persists, see doctor
Eyes	Flush immediately with water for 15 minutes, see doctor
Inhalation	Remove to fresh air. Aid breathing, see doctor at once
Ingestion	Do not induce vomiting, see doctor at once.

MATERIAL SAFETY DATA SHEET

MANUFACTURER'S NAME;	DURO-LAK INC.
STREET ADDRESS:	3020 LE CORBUSIER
CITY, STATE & ZIP CODE:	LAVAL, QUEBEC H7L 3W2
COUNTRY:	CANADA
TELEPHONE NO.:	(450) 687-4140
EMERGENCY PHONE NO. :	(613) 996-6666

DATE:June 2, 2017

SECTION I - MATERIAL IDENTIFICATION

Product name	FIRESHELL & FIRE SHIELD REDUCER
Product code	FSR189
Sheen	
Material use	Industrial finish
W.H.M.I.S. classification	Class B, Division 2 / Class D, Subdivision A, Division 2

SECTION II - HAZARDOUS INGREDIENTS

HAZARDOUS COMPONENT	# C.A.S.	ACGIH TLV/PPM	CONC. %	LEL	VAPOUR PRESSURE
Xylol	1330-20-7	100	60-100	1.0	9.5
Buthanol	71-36-3	50	10-30	1.4	4.7

SECTION III - PHYSICAL DATA

Physical state	Gas ( ) Liquid (x) Solid ( )	Odour & appearance	Petroleum odour clear,
Vapour density	Heavier than air	Odour threshold	Not available
Evaporation rate	Slower than ether	Specific gravity	0.858
Boiling point (°C)		% volatile (by weight)	100%
Freezing point (°C)	Not available	pH	Not available
Coef Water / oil dist	Not available	Weight per gallon	8.58

SECTION IV - FIRE OR EXPLOSION HAZARD
FSR189

Flammability... If yes, under which conditions?	Means of extinction
Yes (x) Can ignite at temperature above the flash point or on hot surfaces above the auto-ignition temperature. No ( )	Water Spray ( ) Carbon Dioxide (x) Dry Chemical (x) Foam (x)

Special Procedures: Explosion hazard. Fight fire from behind an explosion proof barrier. Use self-contained breathing equipment and protective clothing.

Flash Point (*C) and Method	28EC TCC	Auto Ignition Temperature (*C)	Not Available.
TDG Flammability Classification	Not Available	U.E.L. (% per volume):	Not Available.
Sensitive to Impact	Not Available	L.E.L. (% per volume):	Not Available.

Sensitivity to Static Discharge	
Hazardous Combustion Products	Carbon dioxide, Carbon monoxide, & nitrogenous products.

SECTION V - REACTIVITY DATA

Chemical Stability:	Stable.
Incompatibility with other substances:	Strong Oxidizing Agents.
Conditions of Reactivity:	
Hazardous Decomposition Products (if any):	

SECTION VI - TOXICOLOGICAL PROPERTIES

Route of Entry:	Skin Contact (x) Ingestion (x) Inhalation Acute (x) Skin Absorption (x) Eye Contact (x) Inhalation Chronic (x)
Irritancy:	Is a severe irritant.
Carcinogenicity:	Contains a suspect carcinogen.
Mutangenicity:	May cause heritable genetic damage.
Teratogenicity:	May cause birth defects.
Reproductive Toxicity:	May be toxic to foetus (animal studies).
Sensitization to Product:	May cause allergic skin reaction.
Effects of Acute Exposure to Material:	May be harmful if absorbed through skin. Serious eye irritation. May cause dizziness, headache and nausea if inhaled. Working in confined space could lead to unconsciousness. Highly toxic if swallowed.
Effects of Chronic Exposure to Material:	May affect: Skin, Eyes, Blood, Lungs, Stomach, Intestinal tract, Liver, Kidneys, Central nervous system, Heart. May cause: Dermatitis, Skin ulcers, Eye Ulcers.
Exposure Limits:	As exposure limits such as TLV, LD50 and LC50 have not been determined on formulated products, all available information has been listed with the hazardous ingredients in section II.

SECTION VII - PREVENTIVE MEASURES

Personal protective equipment	Use silicone free barrier cream, solvent resistance gloves, impermeable footwear, and protective clothing. Wear chemical safety goggles. Use air purifying respirator with dust and vapour removal canisters.
Engineering controls	Use local ventilation with minimum of ten air changes per hour.
Leak and spill procedure	Eliminate immediately all sources of ignition. Evacuate all personnel. Use self contained breathing equipment. Dyke spill. Do not flush into sewers. Ventilate. Absorb with sand. Place in sealable containers. Avoid sparks. May be toxic to aquatic and animal life.
Waste disposal	Use sanitary landfill or incinerator in accordance with local, provincial and federal regulation.
Handling procedures and equipment	Vapours heavier than air causing health, explosion hazards. Do not breath the vapours or spray mist. Avoid formation of electrostatic sparks and discharges. Keep containers tightly closed when not in use. Use in well ventilated areas. Wash before meals, before using toilets and at end of shift. Launder contaminated clothing before re-use.
Storage requirements	Keep away from moisture and rain. Keep in a cool place away from flames, sparks and hot surfaces. Keep away from freezing.
Special shipping information	Keep away from freezing.

SECTION VIII - FIRST AID MEASURES

Skin	Wash affected areas with soap and water. Remove contaminated clothing. If irritation persists, see doctor
Eyes	Flush immediately with water for 15 minutes, see doctor
Inhalation	Remove to fresh air. Aid breathing, see doctor at once
Ingestion	Do not induce vomiting, see doctor at once.

QAI LABORATORIES
CERTIFICATION TESTING INSPECTION

1325 North 108th East Avenue
Tulsa, OK 74116
918.437.8333 ph. 918.437.8487 fx.

CLIENT: **DURO-LAK INC.**
3020 Le Corbusier
Laval, Quebec, H7L-3W2

Test Report No: TJ4024-3	**Date: August 23, 2016**

SAMPLE ID: The client identified the following test material as **"FS020 + FS021 ON DOUGLA FIR"**

SAMPLING DETAIL: Test samples were submitted to the laboratory directly by the client. No special sampling conditions or sample preparation were observed by QAI.

DATE OF RECEIPT: Samples were received at QAI facilities on July 23, 2016

TESTING PERIOD: August 19, 2016

AUTHORIZATION: Signed work order 16GR07062

TEST REQUESTED: Perform standard flame spread and smoke density developed classification tests on the sample supplied by the Client in accordance with ASTM Designation E84-16, "Standard Method of Test for Surface Burning Characteristics of Building Materials". The foregoing test procedure is comparable to UL 723, ANSI/NFPA No. 255, and UBC No. 8-1.

TEST RESULTS:

Flame Spread	**Smoke Developed**
5	140

CLASSIFICATION: The material resulted in a class "A". Detailed test results are presented in the subsequent pages of this report.

Prepared By

Jeff Foster
Fire Test Technician

Signed for and on behalf of
QAI Laboratories, Inc.

J. Brian McDonald
Operations Manager

PREPARATION AND CONDITIONING: The sample was submitted in three 8 foot long panels measuring 18" inches wide and approximately 1" thick. The sample material was placed into conditioning at 73ºF (±5ºF) and 50% (±5%) relative humidity until day of testing.

E 84 TEST DATA SHEET:

MOUNTING METHOD: The sample was supported during testing by ½" round metal rods placed at 2' intervals across the width of the test chamber, with cement board place between the sample and tunnel lid.

CLIENT: Duro-Lak Inc. **DATE:** August 23, 2016

SAMPLE: FS020 + FS021 on Douglas Fir

IGNITION: 0 minutes, 20 seconds

FLAME FRONT: 2 feet maximum

TIME TO MAXIMUM SPREAD: 10 minutes, 00 seconds

TEST DURATION: 10 minutes, 00 seconds

SUMMARY: FLAME SPREAD: 5 (3.8 unrounded) **SMOKE DEVELOPED:** 140 (139 unrounded)

OBSERVATIONS:

Bubbling was seen at 9 seconds, at 16 seconds charring was seen. Sustained ignition was at 20 seconds and falling could be seen at 1 minute 50 seconds. Flame spread was slow and only reached 2 feet at 10 minutes with very light smoke. At the conclusion of the ten minute test there was no after burn noted.

CALIBRATION DATA:

Time to Ignition of Last Red Oak (sec):	34
Red Oak Smoke Area (%A*Min):	117.2
Total Fuel Burned (ft^3)	55.0

SUMMARY OF ASTM E84 RESULTS:

Because of the possible variations in reproducibility, the results are adjusted to the nearest figure divisible by 5. Smoke Density values over 200 are rounded to the nearest figure divisible by 50.

In order to obtain the Flame Spread Classification, the above results should be compared to the following table:

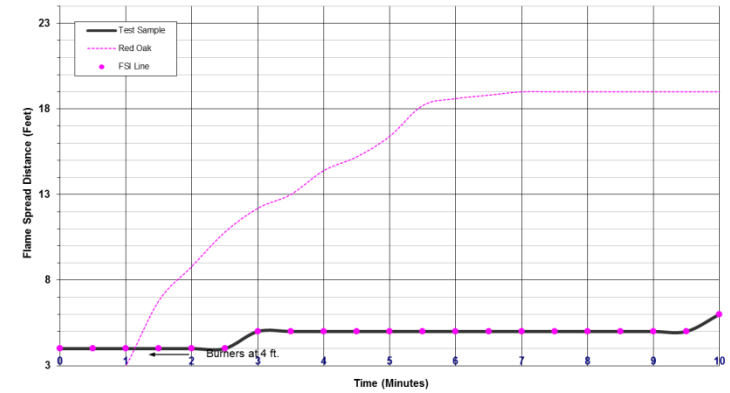
NFPA CLASS	IBC CLASS	FLAME SPREAD	SMOKE DEVELOPED
A	A	0 through 25	Less than or equal to 450
B	B	26 through 75	Less than or equal to 450
C	C	76 through 200	Less than or equal to 450

BUILDING CODES CITED:

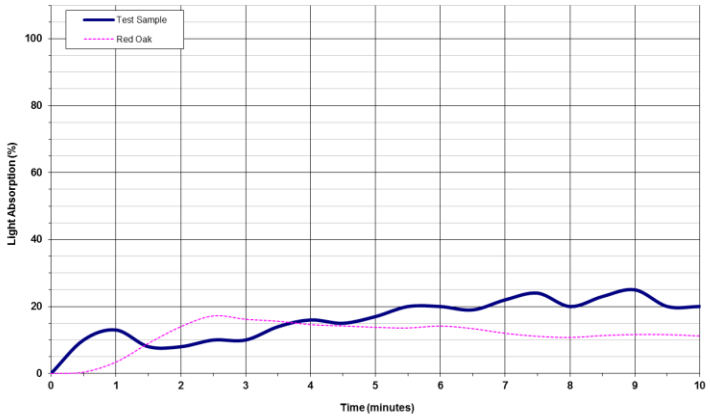
1. National Fire Protection Association, ANSI/NFPA No. 101, "Life Safety Code", 2006 Edition.

2. International Building Code, 2006 Edition, Chapter 8, Interior Finishes, Section 803.

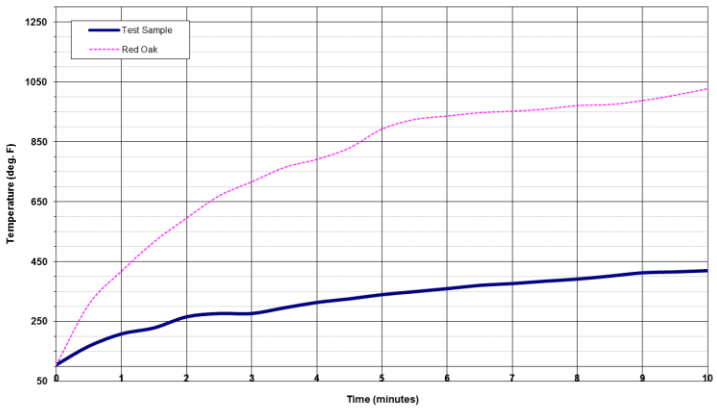
Flame Spread Chart



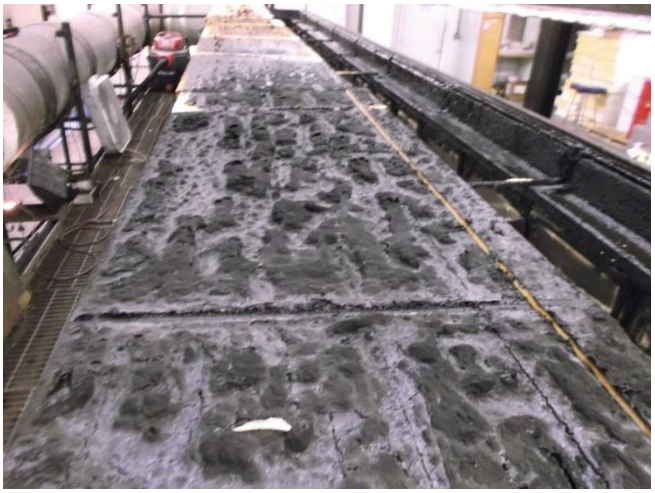
Smoke Developed Chart

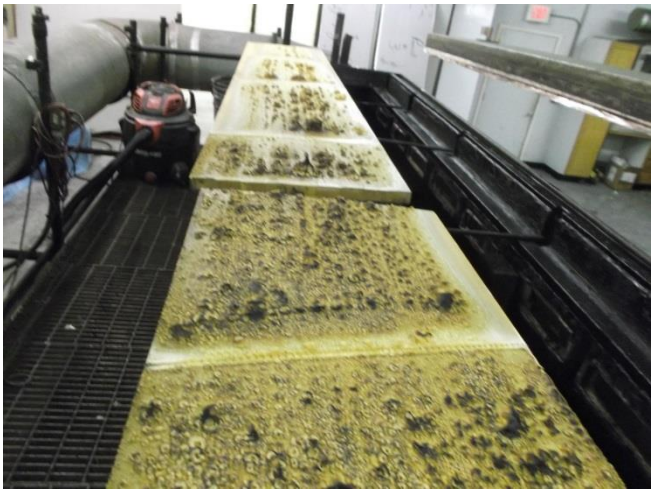
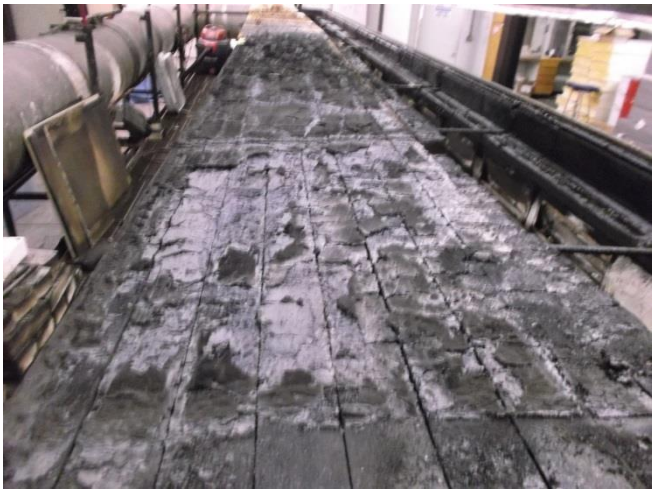


Temperature - Time Curve



PHOTOS: AFTER TEST IMAGES



*****END OF TEST REPORT*****