

Compounds

Operating conditions demand the correct cover compound.

Pure and simple, the primary purpose of conveyor belt “compounds” is to protect the valued carcass. Carcass compounds, skim and cable rubber formulations provide the adhesion and flexibility the belt needs while facing continual dynamic challenges of the conveyor system. Cover compounds must be of sufficient quality and thickness to withstand the varied operational and environmental hazards present.

Compounds, including both the carcass and cover varieties, are essentially elastomeric recipes. Each such recipe typically includes a primary polymer which defines the “grade” or expected function of the compound. Also included are a number of supporting ingredients, such as carbon black, plasticizers, curing agents, and clays/fillers. Today, the number of different compound recipes available from these individual components is staggering. Fenner Dunlop analyzes these seemingly endless options through extensive research and development, rigid quality control testing, and years of application experience. Only from such a thorough study can they be assured of providing the most innovative, and appropriate, compounds to meet today’s increasing material haulage demands.

Bottom line...when both the cover and carcass compounds are functioning together as a team, you have a conveyor belt solution that truly can provide the lowest cost per ton of material conveyed. Fenner Dunlop is committed to working with each and every customer in satisfying that challenge!



Compounds Categories

Fire Retardant Covers

Fire Boss®

- Fire retardant abrasion resistant MSHA compound that meets requirements per MSHA CFR Title 30, Part 14
- Meets ARPM-FR Class 1
- Ideal when an increased fire retardant level is desirable
- For underground coal mining applications

Fire Boss® V

- Fire retardant abrasion resistant MSHA compound that meets requirements per MSHA CFR Title 30, Part 14
- Meets ARPM-FR Class 1
- Ideal when an increased fire retardant level is desirable
- For underground coal mining applications
- UV and ozone protection for above ground applications

Fire Boss® AR

- Fire retardant abrasion resistant MSHA compound that meets U.S. Mine Safety and Health Administration requirements per MSHA title 30, part 14
- Increased resistance to abrasion and cover wear
- Meets ARPM-FR Class 1
- Ideal when an increased fire retardant level is desirable
- For underground coal mining applications
- UV and ozone protection for above ground applications

Mining-FAR

- Fire retardant abrasion resistant compound that meets ARPM-FR Class 2
- Excellent abrasion resistant cover compound for mining applications
- For underground, non-coal mining applications

Mining-FFAR

- Fire retardant abrasion resistant compound that meets ARPM-FR Class 2
- Excellent abrasion resistant cover compound for mining and industrial applications where MSHA specifications are required
- For surface applications

Mining-FFSAR

- Fire retardant abrasion resistant compound that meets ARPM-FR Class 2
- Superior abrasion resistant cover compound for mining applications where MSHA specifications are required
- For surface applications
- Excellent abrasion and cover wear characteristics

CSA-FF

- Fire retardant cover compound with abrasion resistance for mining and industrial applications
- Meets Canadian Standards Association M422 – M87 current specification for Grade C
- For surface applications

CSA-FFAR

- Fire retardant cover compound with greater abrasion resistance for mining and industrial applications
- Meets Canadian Standards Association M422 – M87 current specification for Grade C
- For surface applications

Guardian®

- Specifically designed to counter the negative effects of leaching agents as well as dust suppressants
- Fire retardant abrasion resistant compound that meets ARPM-FR Class 2
- Increased resistance to abrasion and cover wear
- Recommended for Power Generation Facilities and Coal Prep Plants

Guardian® AR (ARPM Grade II)

- High quality grade II fire retardant compound specifically designed to counter the negative effects of leaching agents as well as dust suppressants
- Fire retardant abrasion resistant compound that meets ARPM-FR Class 2
- Excellent abrasion and cover wear characteristics
- Recommended for Power Generation Facilities and Coal Prep plants

Guardian CA (ARPM Grade II)

- High quality grade II fire retardant compound
- Recommended for Power Generation Facilities and Coal Prep plants
- Compounded as Halogen (chlorine) free



Fire Retardant/MSHA Relationships					
FEATURES	Fire Boss	Fire Boss V	Fire Boss AR	Mining FFAR	Mining FFSAR
Premium abrasion resistance, for use in high trip rate and/or abrasive applications.			X		X
Underground Only. Meets MSHA Title 30 Code of Federal Regulations Part 14 Version January 1, 2010.	X				
Underground and Surface. Meets MSHA Title 30 Code of Federal Regulations Part 14 Version January 1, 2010.		X	X		
Surface Only. Meets previous MSHA Title 30 Code 18.65 Version 2007-12-12 standards plus UV and ozone protection.				X	X
Excellent abrasion resistance, suitable for most mining applications.	X	X		X	

NOTE: Customer is responsible for the proper compound selection that meets local, state, and federal MSHA codes relevant to his industry and specific application.

Fire Retardant and Oil Resistant Covers

UGH® (Ultra Grain Handler)

- Provides maximum oil resistance to the destructive effects of grain oils and oil based dust suppressant additives
Temperature range -30° to 200° F (-34°C to 93°C)
- Surpasses U.S. Occupational Safety and Health Administration specifications for static conductivity
- Fire retardant compound that meets ARPM-FR Class 2
- Designed for oil treated grain, crushed soybeans and other materials where mineral, animal, or vegetable fats are a deteriorating factor and where combustion properties are a concern

CGH® (Classic Grain Handler)

- Moderate oil resistant covers for grain handling
- Compounded for colder operating climates
Temperature range -40° to 200° F (-40°C to 93°C)
- Surpasses U.S. Occupational Safety and Health Administration specifications for static conductivity
- Fire retardant compound that meets ARPM-FR Class 2
- Electrical resistance to 300 megohms maximum
- Designed for whole oily grains, including wheat, corn, soybeans, cotton seed, flax seed, and sunflower seed

CSA-FFOR (Fire Freeze & Oil Resistant)

- Fire retardant compound that meets ARPM-FR Class 2
- Fire retardant cover compound that meets Canadian Standards Association M422 – M87 current specification for Grade C
- Moderate oil resistant covers for grain handling
- Compounded for colder operating climates.
Temperature range -40° to 200° F (-40°C to 93°C)

- Surpasses U.S. Occupational Safety and Health Administration specifications for static conductivity.
Electrical resistance to 300 megohms maximum
- Designed for whole oily grains, including wheat, corn, soybeans, cotton seed, flax seed, and sunflower seed

Mining-FFOR

- Fire retardant abrasion resistant compound that meets ARPM-FR Class 2
- Medium Oil Resistant compound for Power Generation and Coal Preparation applications where oil resistance is required
- For above ground applications
- Static conductive

Mining – FFORN

- Freeze resistant and fire retardant non-coal compound with Neoprene that meets ARPM-FR Class 2
- Moderate oil resistant properties

Mining – FFORNS

- Fire retardant compound with Neoprene and SBR rubber that meets ARPM-FR Class 2
- Moderate oil resistant properties
- Static conductive

Guardian OR

- Recommended for Power Generation Facilities and Coal Prep plants requiring moderate oil resistance
- Surpasses U.S. Occupational Safety and Health Administration specifications for static conductivity
- Fire retardant compound that meets ARPM-FR Class 2
- Static conductive

Specialty Cover Compounds

Static Conductive Compounds

Greatly exceed the requirements as set forth by OSHA, tested by ASTM 25 and ISO 284 procedures

OSHA

Surpasses U.S. Occupational Safety and Health Administration specifications for static conductivity

CSA

Meets Canadian Standards Association M422 – M87 current specification for Grade C

Duroslide®

- Low coefficient of friction slider bed compound for the Wood Product Industry
- .30 coefficient of friction
- Non-reverting, non-marking dark brown compound

ClimateGuard

- Excellent resistance to oil and heat up to 250° F (120°C) temperatures for coarse lumps (2 inches +/- 50mm) and 200° F (93° C) for abrasive fines
- Also provides excellent oil resistance down to -50° F (-46° C)
- Provides excellent abrasion resistance at both below zero and elevated temperatures

Natural Tan Gum

- Natural rubber compound for slow down conveyor applications in the Wood Products Industry
- Soft compound with high coefficient of friction
- Non-marking, highly abrasion resistant tan rubber compound

Compound Specifications

Recommended MINIMUM Cover Thickness

Class of Material	Top Cover		Bottom Cover	
	Inches	mm	inches	mm
NON-ABRASIVE MATERIALS - Wood Chips, Pulp, Grain, Loose Cement, Potash Ore or very fine Coal	1/16 to 1/8	1.5 to 3.0	1/16	1.5
MILDLY ABRASIVE MATERIALS - Sharp Sand, Clinker, Earth, Bituminous Coal and Rock under 3" size.	1/8 to 3/16	3.0 to 4.5	1/16	1.5
ABRASIVE MATERIALS - Anthracite Coal, Coke, Sinter, Gravel, or Crushed Stone. Overburden or coal up to 10" size. Iron and Copper ores or Limestone under 6" size	3/16 to 1/4	4.5 to 6.0	3/32	2.0
HEAVY ABRASIVE MATERIALS - Iron, Copper, Rock Ores, Zinc, Lead Ores, or ROM coal, Limestone or Slag under 9" size.	1/4 to 3/8	6.0 to 9.5	1/8	3.0
HEAVY, SHARP ABRASIVE MATERIALS - Trap rock, quartz, Hard Ores, Slag, glass cullet. Any hard heavy sharp ore over 9" size.	3/8 to 3/4	9.5 to 19.0	3/16	4.5

Recommended Service Temperatures

Cover Weight Factors

Type of Compound	HOT – Maximum Load Temperature		COLD – Low Temperature Limit	lbs/in/ft ... per 1/32" thickness	kg/m ² ... per 1 mm thickness
	Fines or mixed	Coarse 2" or More			
CWOR, MATCHLESS, MATCHLESS PLUS, DIN X	180 °F 82 °C	200 °F 93 °C	-50 °F -46 °C	.016	0.936
GRANITE, ZR1, GUARDIAN AR, PLATINUM, PLATINUM PLUS, TITANIUM, DIN Y, ABRADER	180 °F 82 °C	200 °F 93 °C	-40 °F -40 °C	.016	0.936
MOR, MOR (E), ORP, ORWP, UGH	180 °F 82 °C	200 °F 93 °C	-30 °F -34 °C	.016	0.936
MINING FFORN, ORN, MINING FFORNS	205 °F 96 °C	225 °F 110 °C	-15 °F -26 °C	.017	0.994
FIRE BOSS, FIRE BOSS V, FIRE BOSS AR	180 °F 82 °C	200 °F 93 °C	-30 °F -34 °C	.019	1.111
CLIMATEGUARD	200 °F 93 °C	250 °F 120 °C	-50 °F -46 °C	.016	0.936
CGH, CSA-FF, CSA-FFOR, MINING-FAR, MINING-FFAR, MINING-FFSAR, MINING FFOR	180 °F 82 °C	200 °F 93 °C	-40 °F -40 °C	.018	1.053
DELTAHEAT	350 °F 175 °C	400 °F 205 °C	-40 °F -40 °C	.015	0.887
BUTYL, WHITE DELTAHEAT	300 °F 150 °C	350 °F 175 °C	-40 °F -40 °C	.015	0.887
SAHARA, SAHARA SAR	250 °F 120 °C	300 °F 150 °C	-40 °F -40 °C	.015	0.887
OHR	200 °F 93 °C	250 °F 120 °C	-10 °F -23 °C	.015	0.887
SOHR	300 °F 150 °C	350 °F 175 °C	-10 °F -23 °C	.015	0.887
CSA-FFAR, GUARDIAN OR	180 °F 82 °C	200 °F 93 °C	-40 °F -40 °C	.017	0.994
GUARDIAN, GUARDIAN CA	200 °F 93 °C	225 °F 110 °C	-30 °F -34 °C	.017	0.994

Contact Fenner Dunlop for special applications and/or cover compounds.