



Friction Products

MATERIAL SAFETY DATA SHEET

HMIS RATINGS: 1 - 0 - 0 - E

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May be used to comply with OSHA's Hazard Communication Standard 29 CFR 1910, 1200.

Standard must be consulted for specific requirements.

The product identity on this page meets the OSHA definition of an article and is exempt from the Hazard Communication Standard as to all normally careful uses. Some potential may exist for exposure to dust.

The ingredients in these products are resin bonded and hazards normally associated with contact to pure dusts of the listed ingredients should not be significant. Federal Mogul has listed **all of the essential ingredients present in a series of products of this general description. All products identified on this MSDS are asbestos free. The friction materials listed below will not contain all of the ingredients shown below.** The recommended exposure limits are those for the most hazardous substance in a class of substances. Exact formulation is considered proprietary and confidential. Precise product information will not be disclosed, other than to a health professional in accordance with the regulations, without an approved Secrecy Agreement.

The information herein is believed to be accurate, however, Federal Mogul makes no representation or warranty as to its accuracy. This data is furnished gratuitously and independently of any sale of the product, and only for customer investigation and independent verification.

Federal Mogul shall in no event be responsible for any damages of whatever nature directly or indirectly resulting from the publication or use of or reliance upon data contained herein. No express or implied warranty of any kind, including warranties of merchantability or fitness for use, with respect to the product or to the data herein is made hereunder.

IDENTITY (As Used on Label or on Friction Material)**Formulations :**

NA-27 (A, W), 927A, 929A, 931-(66, 83, 92, 162), 987-(6, 6B), 1027-138, 1048-(9, 109, 111), 1083-(7, 49, 63), 1143-(3, 153M, 155, 162M, 301, 320M), 1135-8, 1155-(2, 2H, 61, 155, 169), 1153-5, 1157-14, 1162-15, 1175-8, 1177-9, 1182-95, 1184-41, 1189-10, 1194-3, 1199-17, 1223-44, 1224-(66, 78), 1226-(7, 16, 17), 1272-15, 1273-48, 3006-27, 3027-(73, 85, 91, 91B, 91CP, 108, 127), 3030-(6, 7, 67CP, 114, 153, 158, 160, 197, 212, 227, 258), 3041-29, 3050-(3, 19), 3059-(52, 52A, 91, 100, 100A, 120, 120A, 122A), 3079-(6, 7, 10, 13, 14, 16, 17, 36), 3080-21, 3086-(22A, 40, 65, 65A), 3115-(4, 5, 18, 23, 36, 40, 48, 49, 131), 3153-1, 3156-1, 3158-16, 3152-(21, 22, 26, 27), 3164-(4, 9), 4308-3, 3170-(1, 2, 7, 8, 23, 24, 25)

Edge Codes :

ABEX-(647, 685, 689, 697, 6000, 6008-1, 6008-1S, 6009, 6011, 6020, 6024, 6028, 6029, 6033, 6035, 6036, 6037, 6040, 6042, 6043, 6047, 6048, 6053, 6054, 6055, 6056, 6058, 6060, 6062, 6064, 6068, 6074, 6076, 6078, 6079, 6080, 6082, 6085, 6087, 6088, 6089, 6090, 6092, 6095, 6097, 6098, 6100, 6101, 6103, 6104, 6105, 6109, 6110, 6111, 6173, 6184, 6224, FT, SM, VL20, VL23), ABB-(281, 282, 285, 294, 296, 2003-1, 2005, 2015, 2019, 2022, 2023, 2027, 2029, 2031, 2034, 2036, 2041, 2042, 2047, 2049, 2050, 2052, 2054, 2056, 2063, 2069, 2071, 2073), COM-(371, 372, 377, 383, 385, 392-1, 395, 397, 3005, 3009, 3013, 3014, 3018, 3020, 3034, 3036, 3040, 3042, 3048, 3054, 4000, 4002, 4005, 4007, 4009), ABX-(197, 197S), AE-(1181, 1195, 1210, 1215, 1220, 1225, 1230, 1240, 1250, 1255, 1260, 1270, 1275, 1290, 1320, 1340, 1350, 1360, 1475, 1490), AR-(1, 2), ASAA-2171, BDX-2171, City 20, E1-(30HS, 30GHS, 40HS), E88A, EES-(400, 401, 420, 421, 500, 501, 600, 601, 700, 701, 710, 711, 800, 801, 1101), FA (14, 16, 22, 26, 34, 867, 3000, 3010, 3020, 3030, 4000, 4005, 4006, 4008, 4010, Met, PMT, PM17/20-1, PM23-1), FA OE (456, 718, 867), FC-(20, 23), Ferodo (385, 392-1, 397, 3013, 3022, 3059, 3061, 3062, 3063, 3064, 3153, 3142, 3219, 4006), FM (200, 200-1, 296, 372, 385, 392-1, 2003-1, 2007, 2022, 2031, 2048, 2073, 2074, 2075, 2076, 2077, 2158, 2169, 2237), MA614, METALLIC 23K, MTP (20,30), MPV 2015, NAB (035, 131, 132, 285, 286, 286-1, 456, 456-3, 718-9, 743, 867), NSS-(1200, 1205, 1245, 1250, 1255, 1260, 1265, 1270, 1280, 1285, 1310, 1330, 1350), OFS (18, 20, 23), OTR (I, II, III, IV, V, VI, BRZ, BLK, BLU, GRN, RED, ORG, GLD, SLV), R-(201, 203, 204, 208, 209, 301, 401, 403, 404, 501, 503, 602, 607, 608, 609), RC101, SB (C, A20, A23, P20, P23), and SOR215,

SECTION I

Manufacturer's Name:	Emergency Telephone Number:	(540) 662-3842
Federal Mogul Friction Products	Telephone Number for Information	(540) 662-3871
Address: (Number, Street, City, State, Zip Code)		
2410 Papermill Road, PO Box 3250	Date Prepared:	April 11, 2005
Winchester, VA 22604	Preparer:	J. P. Kwolek / Dick Hummel

SECTION II - Hazardous Ingredients / Identity Information

All Components (Hazardous and non) (Specific Chemical Identity: Common Names)	MINIMUM		MINIMUM	
	OSHA	PEL	ACGIH	TLV
Phenolic, Cashew, Elastomeric, Linseed Compounds, Lime Vitreous and Non Vitreous Fibers: organic and inorganic: (proprietary) Barytes, Calcium Carbonate, Mica, Iron Chromite (trivalent chromium), Amorphous silica, Sodium hexametaphosphate, Ferrophosphorus, Fullers earth, Portland Cement, Slag wool, Vermiculite Metal/Metal Oxides: (Aluminum, Aluminum Oxide, Magnesium Oxide, Iron, Iron oxides, Titanium Dioxide, Steel, Zinc Oxide)	5.0 mg/M ³		5.0 mg/M ³	
Carbon Products: (Carbon, Carbon black, Graphites, Coke, Coal) Talc, Kyanite, Rottenstone, Lime, Mica, Mineral fibers (exempt), Wollastonite, Zeospheres	2.0 mg/M ³		2.0 mg/M ³	
Inorganic (biosoluble) fibers	1 fiber/cm ³		1 fiber /cm ³	
Copper, Zinc, Brass fibers and chips	1.0mg/M ³		1.0 mg/M ³	
Chrome green oxide	0.5 mg/M ³		0.5 mg/M ³	
Ceramic fibers	0.5 fibers/cm ³		0.5 fibers/cm ³	
Quartz, Tripoli	0.3 mg/M ³		0.3 mg/M ³	
Lead (<0.025% in brass chips only, < 0.25% in formula)	0.005 mg/M ³		0.005 mg/M ³	

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SECTION III - Physical/Chemical Characteristics					
Boiling Point	NA	Specific Gravity (H ₂ O = 1)	1.5 - 3.5		
Boiling Point	NA	Melting Point	NA		
Vapor Density (Air = 1)	NA	Evaporation Rate (Butyl Acetate = 1)	0		
Solubility in Water	Insoluble				
Appearance and Odor	Solid, Brownish Grey Color, Friction Material Odor				

SECTION IV - Fire and Explosion Hazard Data					
Flash Point (Method Used)	NA	Flammable Limits	NA	LEL	UEL
Extinguishing Media	Water, (Class A, B, or C)				
Special Fire Fighting Procedures	Positive pressure self-contained breathing apparatus should be used. Personnel not having suitable respiratory protection should leave the area to prevent significant exposure to toxic combustion gases from any source.				
Unusual Fire and Explosion Hazards	Powder will smolder and burn				

SECTION V - Reactivity Data					
Stability	Unstable		Conditions to Avoid	NK	
	Stable	X			
Incompatibility (Materials to Avoid)	NK				
Hazardous Decomposition or Byproducts	Incomplete combustion will create carbon monoxide and dioxide				
Hazardous Polymerization	May Occur		Conditions to Avoid	NK	
	Will Not Occur	X			

SECTION VI - Health Hazard Data			
Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	Yes	Yes	Yes
Health Hazards (Acute and Chronic)			
Some persons may be sensitive to cashew resins and develop dermatitis-type problems. Dust of glass fiber, silica, talc, graphite, carbon black, and coal may produce pneumoconiosis, silicosis, a progressive degenerative scarring of lung tissue and other lung damage. Metal dusts may be irritants to the eyes and upper respiratory system. There is little evidence of chronic industrial poisoning from iron, aluminum, and zinc dusts.			
Carcinogenicity:	NTP?	IARC Monographs?	OSHA
Regulated?	No	Yes*	No
* IARC (volume 42, 1987), has concluded that there is sufficient evidence for the carcinogenicity of crystalline silica to experimental animals and "limited evidence" with respect to humans.			
Signs and Symptoms of Exposure			
Cashew Resins - skin eruptions similar in appearance to poison ivy. Pneumoconiosis and silicosis - coughing, wheezing, shortness of breath, sputum production, impaired pulmonary function. Dusts in eye may cause irritation. Gastrointestinal disturbances possible from ingestion. Glass fiber may create transient mechanical irritation of the skin of some persons.			
Medical Conditions Generally Aggravated by Exposure			
Existing respiratory problems may be aggravated by exposure to any dust.			
Emergency and First Aid Procedures			
Eye Contact:	Flush eyes with large amounts of water for 15 minutes with eye lids open, get medical attention		
Skin Contact:	Wash affected area thoroughly with soap and water, launder contaminated clothing before reuse. If irritation persists, get medical attention.		
Inhalation:	Remove from exposure to fresh air, restore breathing, get medical attention.		
Ingestion:	Give large quantities of water and induce vomiting, get medical attention. Do not make an unconscious person vomit.		

SECTION VII - Precautions for Safe Handling and Use
Steps To Be Taken In Case Material Is Released Or Spilled

Grinding, drilling, milling, etc. can result in the release of airborne dust. Wet sweep or vacuum, avoid generating airborne dust and avoid breathing dust. Measures as outlined in Section VIII should be followed if dust is generated.

Waste Disposal Method

Hazardous Ingredients: 40 CFR, Part 261, 262 and applicable State and Local regulations.

Other Precautions

Pre-employment screening for allergies and histories of skin sensitivities may be beneficial in determining persons sensitive to cashew materials.

SECTION VIII - Control Measures
Respiratory Protection (Specify Type)

NIOSH approved for pneumoconiosis - fibrosis producing dusts and dusts with TLV not less than 0.05 mg/M³

Ventilation
Local Exhaust

For dust exposures exceeding TLV

Mechanical (General)

Not recommended for dust exposures

Special

NK

Other

Barrier creams for persons with skin sensitivity to cashew resins and fiber glass

Protective Gloves

Recommended

Eye Protection

Should not be needed for normal handling of product. Eye protection is good practice where dust is propelled by grinding or drilling activities.

Other Protective Clothing or Equipment

Long sleeved shirts or other protective clothing may be beneficial to prevent skin contact of persons sensitive to cashew resins and fiber glass.

Work / Hygienic Practices

Employees should be properly instructed in the use of control measures as indicated above when there is a need for it. If dust from this product is produced, unnecessary exposures should be avoided by using a vacuum in place of dry brooming. Use wet method of cleaning for other surfaces. Proper and adequate personal hygiene should be practiced by exposed workers.

HMIS RATINGS: Health = 1;

Flammability = 0

Reactivity = 0

Protective Equipment = E (dust masks recommended)

NA - Not Available

NK - Not Known