Material Safety Data Sheet

MSDS/SDS Number: M102,005

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Revision: J

SECTION 1 PRODUCT AND COMPANY INFORMATION

Trade Name: Nitrocellulose Membrane Filters

Catalogue Number(s): MF (AA.., DA.., GS.., HA.., PF.., PH.., RA.., SC.., SM.., SS.., VC.., VM.., & VS..) membranes

EZ-PAK® (EZ.., MS.., MZ..) membranes

HI-FLOW™ (SN0, SP0, SR0, ST0, SX0) un-backed membranes

IMMOBILON™ (NC, NC-PURE) membranes

S-Pak™ (..S1, ..S2, ..S3, S6, ..SP) filters

Selected SA3J and XA3J series specials

Chemical Name: Nitrocellulose/Cellulose Acetate Filtration membranes

Other trade names and synonyms: Mixed Cellulose Ester (MCE) membranes, MF membranes

Manufacturer/Distributor:	Millipore Corporation (Corporate Headquarters)	Millipore S.A.S. (European Headquarters)
Postal Address:	290 Concord Road Billerica MA, USA	Boite Postale 116 67124 Molsheim Cedex, France
Telephone Number:	+1-978-715-1335	+33 (0) 3 90 46 90 00

Email: msds@millipore.com

CHEMTREC Emergency Telephone Number: International +1-703-527-3887 (collect)
North America 1-800-424-9300 (toll free)

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

Component	EINECS or ELINCS No.	CAS No.	Content (weight percent)	Symbol letters*	R Phrases**
Nitrocellulose(Pyroxylin)	Not listed	9004-70-0	80-100 %	F	R11
Cellulose Acetate	Not listed	9004-35-7	0-20 %	None	None

Note: The nitrogen content of the nitrocellulose resin does not exceed 12.6 percent on a dry weight basis.

* Symbol letters and categories of danger: **T+** = Very toxic, **T** = Toxic, **C** = Corrosive, **Xn** = Harmful, **Xi** = Irritant, **E** = Explosive, **F+** = Extremely flammable, **F** = Very flammable, **N** = Dangerous for the environment, **O** = Oxidising.

** The full text of each phrase is listed in Section 16.

SECTION 3 HAZARD IDENTIFICATION / EMERGENCY OVERVIEW

Appearance: White, black or green porous solid disks & sheets.

Classification: This product is classified as dangerous according to European Union Directive 1999/45/EC.

F Highly Flammable

Adverse human health effects

Contact with Eyes: Possible eye irritant; with possibility are burns.

Ingestion: Possible digestive tract irritant, central nervous system depressant and adverse kidney effects.

Inhalation (Short Term): This product is not considered to represent an inhalation hazard.

Inhalation (Long Term): This product is not considered to represent an inhalation hazard.

Skin Contact: Possible skin irritant and/or dry, cracked skin with repeated or prolonged contact.

Target Organs: Kidneys, central nervous system.

Medical conditions aggravated by exposure: None found.

Adverse environmental effects: Because of its very limited solubility in soils and natural waters, this product is not expected to have an adverse effect on their flora and fauna. See section 12.

Adverse physiochemical effects: Flammable solid which will be easily ignited by sources of ignition such as flames or hot surfaces. Once ignited, this product will burn rapidly and intensely.

SECTION 4 FIRST AID MEASURES

Contact with Eyes: Wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids. Get medical attention immediately.

Ingestion: This material is not expected to present an ingestion hazard in the quantities present in a workplace setting. However, if ingestion occurs, do not induce vomiting, have victim rinse mouth, drink 2-4 cups of water and seek medical attention.

Inhalation: This product is not expected to present an inhalation hazard. If inhalation of small particles of membrane does occur, remove victim to free air, and, if breathing is difficult, give oxygen. Immediately seek medical attention.

Skin Contact: Wash exposed skin thoroughly with soap or mild detergent and water. If irritation persists or develops, seek medical attention.

SECTION 5 FIRE FIGHTING MEASURES

Fire & Explosion Hazards: Dry membrane represents a severe fire hazard. Once ignited, theses membranes will burn very rapidly. Water wetted membrane is very resistant to ignition.

Flash Ignition Temperature: Not available.

Autoignition Temperature (ASTM D1929): 130 ºC minimum, determined on aged membrane.

Flammability Limits: Not available.

Suitable extinguishing media: Small fire: Water, regular dry chemical, sand, earth, and regular foam.

Large fire: Large fires can be brought under control with a fine spray or fog pattern to prevent dispersing burning material. Once under control, use a straight stream to penetrate the smoldering mass and expose hot spots.

Unsuitable extinguishing media: Carbon dioxide may prove ineffective for large fires.

Special protective equipment for firefighters: If product is present in large quantities, self-contained breathing apparatus in pressure-demand mode and full protective gear are recommended to protect from products of combustion.

Special exposure hazards: If product is present in large quantities, approach fire from upwind direction. Exposure to products of exposure may cause reduce oxygen levels to dangerous levels.

SECTION 6 ACCIDENTAL RELEASE

Personal precautions: Not available.

Small spills: Eliminate unnecessary traffic in area of the spill. Remove all sources of ignition and oxidizing agents. See section 8 for personal protection equipment.

Large spills: Evacuate area. Limit access to those trained to clean up the spill, and who are properly equipped with protective clothing. Summon fire fighting personnel before commencing clean-up.

Environmental precautions: The water applied to a fire involving this waste may be acidic, depending upon combustion conditions, and quantity of water applied. Prevent run-off from entering natural waters without permission of local environmental authorities. Berm with earth or sand until acidity of water can be determined and a disposal plan established.

Clean up measures: Clean up spills immediately. Wetting sheets and rolls with a fine water spray will reduce the fire hazard significantly. Then proceed with collecting product into metal drums suitable for transport to a disposal facility. Use non-sparking tools. See section 13 for disposal considerations.

SECTION 7 HANDLING AND STORAGE

Handling: Keep away from sources of heat and ignition. Nitrocellulose membrane is a flammable material which can be easily ignited by flame, sparks, heat or friction. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Wash hands before eating and do not eat, drink, or smoke in workplace.

Storage: There is an 18 month expiration date given to all triton-free nitrocellulose membranes. This expiration date must be strictly observed. Storage under improper conditions could lead to the membrane self-decomposing at ambient temperatures with the formation of nitrous vapors or self ignition. Material should be used on FIFO basis and records kept to track expiration dates.

Ideal storage conditions are as follows:

- Store in a cool, dry, ventilated location
- Protect from direct sunlight
- Keep away from sources of ignition and heat
- Recommended storage temperature 15-25 ºC
- Recommended storage humidity 30-70%
- Elevated temperature and humidity as well as significant variations in temperature can accelerate aging and lead to premature deterioration of the membrane in advance of expiration date
- Store in a tightly closed packaging
- Rotate stock and strictly observe expiration dates

If there are indications of membrane roll deterioration, such as described in Section 16, the membrane should be immediately disposed of using guidance from Section 13.

Prior to the expiration date the membrane should be disposed of using guidance from Section 13.

SECTION 8 EXPOSURE CONTROL AND PERSONAL PROTECTION

	Normal Handling Conditions	Emergency Response Conditions
Respiratory protection:	Not required for normal use	If dusting is a problem, use air purifying respirator with dust filters meeting European Standard EN 149 or ANSI Z88.2 requirements
Ventilation:	General room ventilation	Mechanical exhaust ventilation
Eye protection:	Safety glasses with side shields	Safety glasses with side shields
Skin protection:	Nitrile gloves and laboratory coat	Nitrile gloves and laboratory coat

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance: White, black or green porous solid

Odor: Possible slight sharp odor

Odor Threshold: Nitric acid: 0.27 ppm - Acetic acid: 0.03 ppm

pH: Not applicable

Melting Point: Decomposes upon heating

Boiling Point: Not applicable

Flash Ignition Point: Not available

Explosive Properties: Ignition of nitrocellulose membranes in a confined space may lead to an explosive release of energy

Oxidizing Properties: Not an oxidizing hazard

Vapor pressure, 20 ºC: Not known

Solubility in water, 20 ºC: Not soluble in water

Specific Gravity (Water = 1.0): 0.3 - 0.4

Vapor Density, 20 ºC: Not applicable

Viscosity, centipoise: Not applicable

Partition coefficient (n-octanol/water): Not applicable

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability: Stable under normal temperatures and pressures and within recommended shelf life. The presence of acids may initiate an autocatalytic decomposition and self-heating. See Section 16 for information on the signs of deterioration of membrane roll stock.

Incompatible With: Acids.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, oxides of nitrogen.

Conditions to Avoid: Heat, sources of ignition, incompatible materials.

Hazardous Polymerization: Has not been reported.

SECTION 11 TOXICOLOGICAL INFORMATION

Inhalation: This product is not considered to represent an inhalation hazard.

Ingestion: May cause digestive tract irritation, CNS depression and kidney damage.

Skin Contact: Repeated or prolonged contact may cause irritation and/or dry, cracked skin.

Eye Contact: Eye contact may cause irritation and burns.

Carcinogenicity: None of the components of this product are listed as carcinogenic by IARC, NIOSH, NTP, OSHA, or the State of California.

Chronic Toxicity: Chronic inhalation of nitrocellulose containing dust will result in nose, throat and upper respiratory tract irritation.

Toxicology Data: Toxicological information for this product as a whole does not exist, below is data for the individual components.

Nitrocellulose (RTECS # QW0970000)

LC50, oral, mouse	> 5 gm/kg
LD50, oral, rat	> 5 gm/kg

Cellulose Acetate (RTECS # NOT LISTED) – Source: Van Waters & Rogers

LD50, oral, rat	> 3.2 gm/kg

SECTION 12 ECOLOGICAL INFORMATION

Ecotoxicity: These materials are expected to have low toxicity in the environment due to their very limited solubility in water.

Environmental Fate: Scientific literature indicates nitrocellulose and cellulose acetate will slowly biodegrade in contact with soils. Their decomposition in contact with natural waters is expected to be somewhat slower.

SECTION 13 DISPOSAL INFORMATION

General considerations: Degraded or decomposing material should be wetted thoroughly with water (immersed minimum 50% water) and stored in tightly closed UN approved container until final waste disposal in accordance with local and national regulations.

England: Classification according to The Hazardous Waste (England) Regulations 2004, Annex III – H3-A

European Union: When disposal is required, this product should be considered according to the European Waste catalogue (European commission decision of 03/05/01 modifying directives 94/3/CE and 75/442/CE) as part of the following category:

Other than Pharmaceutical MSFU	20 01 39 separately collected fractions, plastics
Pharmaceutical MSFU with residual dangerous substances	07 05 13 solid wastes containing dangerous substances
Pharmaceutical MSFU without residual dangerous substances	07 05 14 solid wastes other than those mentioned in 07 05 13

United States: Although nitrocellulose and nitrocellulose/cellulose acetate membranes are not US Environmental Protection Agency RCRA Hazardous Wastes, they may be regulated in some jurisdictions. Consult local or state authorities as to regulatory status. They are United States Department of Transportation Hazardous Materials. Transport and dispose in accordance with all federal, state and local regulations.

SECTION 14 TRANSPORTATION INFORMATION

Proper Shipping Name: Nitrocellulose membrane filters

UN Number: UN3270

Hazard Class: 4.1

Packing Group: II

Hazard Label: FLAMMABLE SOLID

Note: The following products are not regulated as hazardous materials under 49 CFR 172.102(c)(1) special provision 43 or as dangerous goods by air under IATA Regulations, 4.4 special provision A122: AABG047S, EZAABG474, EZGSWG474, EZHAGG504, EZHABG504, EZHAGG474, EZHAGG504, EZHAWG474, EZHAWG504, EZHCWG474, GSWG047S, HABG047S, HAWG047PP, HAWG047S6, HAWG047S, HAWG047, HAWGSP, HAWG050S1, HAWG050S3, HCWG047, MSP000814, MZAABG101, MZAAWG101, MZAAWG251, MZGSWG101, MZHABG101, MZHABG251, MZHAWG101, MZHAWG251, RAWG047S

SECTION 15 REGULATORY INFORMATION

Australia	Hazchem Code:	2[Y]
	Poisons Schedule Number:	None allocated
California	No Significant Risk Level:	None of the chemicals in this product are known to Millipore Corporation to be listed
Canada	WHMIS:	B4, D2B and F
		CAS Registry Numbers 9004-70-0 and 9004-35-7 are found on the Canadian Dangerous Substance List.
European Union	Symbols:	F
	Category of danger:	Highly Flammable
	Risk phrases:	R11 Highly Flammable
	Safety phrases:	S16 Keep away from sources of ignition. No Smoking.
		S33 Take precautionary measures against static discharge.
	OECD/High Production Volume (HPV) chemicals:	No information found indicates nitrocellulose and cellulose acetate are listed as High Production Volume chemical.
	WEEE:	Not applicable
	RoHS:	Not applicable
Japan	Poisonous and Deleterious Substances Control Law:	None of the components of this product are listed.
United Kingdom	Control of Substances Hazardous to Health Regulations 2002 (COSHH) Rating:	No data available
United States	Toxic Substances Control Act (TSCA):	Nitrocellulose and cellulose acetate are listed on the Toxic Substances Control Act (TSCA). See regulations in 40 CFR 710 for details.

Occupational Exposure Limits

Component	OSHA PEL	NIOSH REL	ACGIH TLV
Nitrocellulose	None found	None found	None found
Cellulose Acetate	None found	None found	None found

SECTION 16 ADDITIONAL INFORMATION

Roll Stock Decomposition Information:

In addition to the inherent hazards associated with the flammability of nitrocellulose membrane, decomposition of roll stock kept beyond its recommended shelf life can present additional safety concerns.

Deterioration of roll stock, as indicated by amber discoloration of the membrane or an acetic acid (vinegar) odor, can generate pressure, heat, and additional acidity thus leading to the possibility of spontaneous combustion. Deterioration of the membrane goes through various stages starting with early onset of discoloration to advanced stages where the membrane forms liquid or jelly like “hot spots” and eventually degrades into a solid brown resin type material. It is not possible to predict when or what rolls will deteriorate and how quickly the membrane will go from one stage to the next, therefore, regular inspection of roll stock material as recommended in Section 7, should be conducted.

Membrane roll stock showing signs of deterioration should be disposed of in accordance with Section 13.

Abbreviations Used

ACGIH	American Conference of Government Industrial Hygienists
ADR	European agreement on the international carriage of dangerous goods on road
CAS	Chemical Abstract Service
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EPA	United States Environmental Protection Agency
IARC	International Agency for Research in Cancer.
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMDG	Regulations regarding the transportation of dangerous goods on ocean-going vessels issued by the International Maritime Organization.
LC_{50}	Lethal Concentration 50% is the concentration of a chemical which kills 50% of a sample population
LD_{50}	Lethal Dose 50% is the dose of a chemical which kills 50% of a sample population.
LDLo	Lowest observed lethal dose
MSFU	Manufacture, Formulation, Supply and Use (Section 13)
NIOSH	National Institute of Occupational Safety and Health (US)
NTP	National Toxicology Program (US)
OSHA	United States Occupational Safety and Health Administration
RID	International regulations concerning the international carriage of dangerous goods by rail.
RTECS	Registry of Toxic Effects of Chemical Substances (US)
WHMIS	Workplace Hazardous Materials Information System (Canada)

This safety data sheet has been prepared to comply with the requirements of European Union Directive 2001/58/EC and ANSI Z400.1-1998.