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MRV-IPA

POLYTETRAFLUOROETHYLENE DISPERSIONS

MRV-IPA IS A DISPERSION OF A WHITE, WAXY POLYMER OF TETRAFLUOROETHYLENE IN ALCOHOL (ISOPROPANOL ALCOHOL). WHEN APPLIED TO A VARIETY OF SURFACES THE PRODUCT EXHIBITS TWO OUTSTANDING CHARACTERISTICS: (1) LOW COEFFICIENT OF FRICTION (HIGH LUBRICITY) AND (2) EXCELLENT RELEASE OR ANTI-STICK PROPERTIES. THREE MRV DISPERSIONS ARE AVAILABLE, DIFFERING ONLY IN ACTIVE INGREDIENT CONTENT. THE MOST COMMONLY USED DISPERSION IS MRV-1000 IPA.

TYPICAL PROPERTIES

APPEARANCE	WHITE TRANSLUCENT FLUID
PARTICLE SIZE(AVERAGE)	5 MICRONS
FLASH POINT	53°F. 12°C.
FLAMMABLE LIMITS	LEL=2% UEL=12.7%

<u>DISPERSION</u>	<u>MRV-1500 IPA</u>	<u>MRV-1000 IPA</u>	<u>MRV-250IPA</u>
SOLIDS, WT.%	15%	10%	2.5%
DENSITY @ 77°F. G/CM ³	0.7992	0.798	0.7896
LBS./GAL.	6.66	6.65	6.58

POLYMER SOLIDS

DENSITY @ 77°F.(25°C.) G/CC	2.16
SOFTENING POINT (ASTM E-28-58T)	510°F.(265°C.)
MELTING POINT(CRYSTALLINE)	572°F.(300°C.)
HARDNESS (ASTM D-1321-57T) (@ 5 SEC, 77°F., 5 SEC 400 GM. WT.)	
PENETROMETER NEEDLE PENETRATION MM	0.5
AVERAGE MOLECULAR WT.	3700

THE ABOVE DATA IS TYPICAL BUT IS NOT TO BE CONSTRUED TO BE SALES SPECIFICATIONS.

PROPERTIES

THE HIGHLY FLUORINATED NATURE OF THE ACTIVE INGREDIENT OF THE MRV DISPERSIONS RESULTS IN A UNIQUE COMBINATION OF PHYSICAL AND CHEMICAL PROPERTIES. THE FLUOROPOLYMER EXHIBITS THESE OUTSTANDING CHARACTERISTICS:

- * LUBRICITY
- * THERMAL STABILITY
- * CHEMICAL STABILITY
- * INSOLUBILITY
- * ANTI-STICK PROPERTIES
- * NONFLAMMABILITY

THE UNIQUE PROPERTIES OF MRV'S -- CLEAN, DRY, NON-OILY, NONSTAINING CHARACTER, INERTNESS, AND ABILITY TO FUNCTION UNDER A WIDE VARIETY OF ENVIRONMENTAL CONDITIONS FROM EXTREMELY COLD TEMPERATURES TO 500°F. (260°C.) OR HIGHER MAKE IT UNUSUALLY ATTRACTIVE AS A DRY LUBRICANT AND RELEASE AGENT.

NOTE: THE FLUOROPOLYMER IS NONFLAMMABLE, HOWEVER, THE IPA DISPERSION IS FLAMMABLE.

LUBRICITY

MRV'S APPLIED TO SURFACES PRODUCE EXTREMELY LOW STATIC COEFFICIENTS OF FRICTION AND THUS PROVIDE EXCELLENT LUBRICATION. ALSO, UNLIKE CONVENTIONAL LUBRICANTS, MRV'S REDUCE "STICK-SLIP" PROBLEMS TO A MINIMUM. AS A LUBRICANT, THE FLUOROPOLYMER IS MOST EFFECTIVE WHERE LOW SPEEDS AND LIGHT LOADS ARE INVOLVED. THE FOLLOWING TABLE ILLUSTRATES FRICTIONAL DATA OBTAINED UNDER LIGHT LOADS ON SURFACES COATED WITH MRV'S.

<u>TEST SURFACES</u>	<u>COEFFICIENT OF FRICTION AT INDICATED LOADS</u>	
	<u>3 PSI</u>	<u>23 PSI</u>
STEEL ON STEEL	0.12	0.11
ALUMINUM ON ALUMINUM	0.16	0.16
HARDWOOD ON HARDWOOD	0.09	0.10

* ALL TESTS WERE RUN ON AN INSTRON TESTER @ 5"/MIN.

UNDER SOME CONDITIONS OF HIGH SPEED AND HIGH LOAD, THE FLUOROPOLYMER MAY BE ABRADED FROM THE SURFACE RAPIDLY AND THUS FREQUENT REAPPLICATION OF THE COATING MAY BE REQUIRED.

THERMAL STABILITY

THE ACTIVE INGREDIENTS OF MRV DISPERSIONS HAVE EXCELLENT HIGH TEMPERATURE PROPERTIES. IT CAN BE HEATED ABOVE ITS MELTING POINT OF 572°F. (300°C.), BEFORE APPRECIABLE DECOMPOSITION BEGINS. MRV CONTAINS A RANGE OF MOLECULAR WEIGHTS. SUBLIMATION OF THE LOWER MOLECULAR WEIGHT FRACTIONS OCCUR WITH ACCOMPANYING WEIGHT LOSS ON PROLONGED HEATING AS SHOWN IN FIGURE 1. THE ACTUAL SUBLIMATION RATE IS DEPENDENT UPON TEMPERATURE, AREA AND AIRFLOW.

CHEMICAL STABILITY

THE FLUOROPOLYMER ACTIVE INGREDIENT OF MRV-IPA DISPERSIONS IS CHEMICALLY STABLE. LABORATORY TESTS INDICATE COMPLETE RESISTANCE TO ATTACK BY NITRIC ACID, CONCENTRATED HYDROCHLORIC ACID, 30% AQUEOUS SODIUMHYDROXIDE AND 30% ALCOHOLIC POTASSIUM HYDROXIDE AT TEMPERATURES OF 212°F. (100°C.) BUT HAS NO OBSERVABLE EFFECT UPON IT AT ROOM TEMPERATURE.

SOLUBILITY

THE FLUOROPOLYMER ACTIVE INGREDIENT IS ESSENTIALLY INSOLUBLE IN ALL SOLVENTS.

ANTI-STICK CHARACTERISTICS

MRV-IPA FLUOROPOLYMER HAS OUTSTANDING ANTI-STICK PROPERTIES WHICH MAKE IT PARTICULARLY ATTRACTIVE AS A RELEASE AGENT. THIS OUTSTANDING PROPERTY PROVIDES THE BASIS FOR A SUBSTANTIAL BUSINESS FOR MRV'S IN APPLICATIONS REQUIRING A RELEASE AGENT OF ANTI-STICK PROPERTIES.

THE FOREGOING COMBINATION OF UNIQUE PROPERTIES SUGGEST A VARIETY OF INDUSTRIAL APPLICATIONS FOR MRV FLUOROPOLYMERS.

MRV AS A DRY LUBRICANT

* LEATHER, PLASTICS AND ELASTOMERS USED IN DRIVE BELTS, GASKETS PACKINGS, GEARS, BEARINGS, SLEEVES AND CHAIN DRIVES.

* CORD, TWINE, ROPE AND CABLE MADE FROM NATURAL OR SYNTHETIC FIBERS, THREAD, FABRICS OR METALS.

* MACHINE PARTS AND FITTINGS INCLUDING NUTS AND BOLTS, LINKAGE AND CONNECTORS, LOCKS, POWER SAW BLADES, TEXTILE MACHINERY, THREADED CONNECTIONS, VENDING MACHINE MECHANISMS, ELECTRICAL EQUIPMENT, INSTRUMENTS, OFFICE MACHINES AND OFFICE FILING CABINET GLIDES.

* METAL EXTRUSION, ROLLING, DRAWING, SIZING AND OTHER METALWORKING OPERATIONS.

* MUSICAL INSTRUMENTS, MAGNETIC RECORDING TAPES, CAMERA SHUTTERS, FILM.

* PAPER AND GLASS MANUFACTURE.

* ELECTRICAL SWITCHES, WINDOW AND MILITARY HARDWARE.

* HOUSEHOLD USED, DOOR HINGES, LOCKS AND CATCHES, WINDOW GUIDES, SLIDE CHANNELS ON STORM SASH AND SCREENS, FURNITURE AND CABINETDRAWERS AND GUIDES, ZIPPERS, SNOW SHOVELS, SNOW BLOWERS, AND MANY OTHER SITES OF FRICTION.

* MILITARY SPECIFICATIONS - PRIOR BULLETINS ON THE MRV'S IN FREON GAVE AN APPROVAL OF THE POLYMER FOR USE IN MIL SPECIFICATION L-60326. AS OF THIS WRITING ONLY THE MRV'S WITH THE FREON TYPE SOLVENTS HAVE BEEN APPROVED EVEN THOUGH THE DEPOSITED POLYMER IS THE SAME. BECAUSE EVENTUAL APPROVAL IS EXPECTED, THESE TYPES ARE INCLUDED BELOW. WHEN APPROVED IT WILL BE NOTED HERE.

<u>TYPE</u>	<u>DISPERSION</u>	<u>% SOLIDS</u>
I	MRV1500IPA	15%
III	MRV250IPA	2.5%

MRV AS A RELEASE AGENT

GENERAL RELEASE

MRV FORMULATIONS ARE USED EXTENSIVELY IN THE RELEASE OF PLASTIC AND ELASTOMER PRODUCTS. THE PERFORMANCE OF MRV AS A RELEASE AGENT IS RELATIVELY INDEPENDENT OF THE MOLD MATERIALS OF CONSTRUCTION AND THE MATERIAL TO BE MOLDED. REFER TO THE APPLICATION METHODS SECTION FOR DETAILS ON HOW TO APPLY THE DILUTED DISPERSIONS.

RELEASE LIFE WITH MRV COATINGS IS GOOD. FOR DIFFICULT TO RELEASE PRODUCTS SUCH AS EPOXY RESINS, AIR-DRIED COATINGS HAVE PROVIDED 8 TO 10 RELEASES BETWEEN APPLICATIONS. WHEN THE MRV IS FUSED ON THE MOLD, 25 OR MORE RELEASES ARE NORMALLY ACHIEVED IN MOST INDUSTRIAL APPLICATIONS. FOR PHENOLIC TYPE RESINS THE RELEASE LIFE OF AIR-DRIED AND FUSED COATINGS IS SUBSTANTIALLY LONGER.

POSSIBLE USES

- * CONVEYOR BELTS, CHUTES AND SLIDES, PAPER, LEATHER, INDUSTRIAL BLENDERS, TANKS, BINS, SPRAY BOOTHS, HOSIERY FORMS, DRY CANS, PRESSURE SENSITIVE LABELS, GASKETS, SEALS.
- * EPOXY RESINS, POLYESTER RESINS, VINYL PLASTISOLS, URETHANES, PHENOLICS, POLYAMIDES, UREA FORMALDEHYDES, AND OTHER MOLDED PLASTICS.
- * MOLDED RUBBER ITEMS.

UNLIKE OILY RELEASE AGENTS, MRV COATINGS USUALLY DO NOT INTERFERE WITH POST FINISHING OPERATIONS.

PLASTIC LAMINATE RELEASE

FUSED COATINGS OF MRV ON PRESS PLATES PROVIDE OUTSTANDING RELEASE LIFE FOR PLASTIC LAMINATES. IN THE CASE OF EPOXY-FIBERGLASS LAMINATES 25 TO 30 RELEASES ARE ACHIEVED IN COMMERCIAL OPERATIONS. THIS COATING LIFE IS IN CONTRAST TO A SINGLE RELEASE FOR PLASTIC FILMS AND FOIL, AND 1 TO 5 RELEASES FOR CONVENTIONAL RELEASE COATINGS. AIR-FRIED COATINGS OF MRV PROVIDE GOOD RELEASE FOR ALL TYPES OF LAMINATES BUT DO NOT HAVE THE DURABILITY OF THE FUSED COATINGS WHERE THE SUBSTRATE WILL ALLOW THE COATING TO BE FUSED. THE ADHESION OF MRV COATINGS IS IMPROVED BY HEATING THE APPLIED MATERIAL AT 570-600°F.(299-316°C.) FOR 5 TO 10 MINUTES. IN HEATING MRV'S, THE PRECAUTIONS OUTLINED IN THE SECTION ON SAFETY AND HANDLING SHOULD BE OBSERVED. ADEQUATE VENTILATION MUST BE PROVIDED.

REMOVAL OF MRV COATINGS

AIR-DRIED MRV COATINGS CAN USUALLY BE LOOSENED WITH TRICHLORO, TRIFLUOROETHANE, III TRICHLOROETHANE, METHYLENE CHLORIDE, OR ACETONE AND THEN REMOVED WITH A CLOTH OR BRUSH. OBSERVE THE NECESSARY SAFETY PRECAUTIONS WHEN USING HIGHLY FLAMMABLE ACETONE. SEE TLV'S UNDER HANDLING PRECAUTIONS.

MRV COATINGS THAT HAVE BEEN FUSED ON A SURFACE OR FORCED INTO THE SURFACE BY OPERATIONS SUCH AS METAL EXTRUSIONS ARE NORMALLY REMOVED BY HEAT TREATMENTS WITH OVENS, SALT BATHS, ETC. IN THE CASE OF SOME METAL APPLICATIONS, PICKLING OR ABRASION TECHNIQUES MAY BE NECESSARY. SOLVENT WASHING DOES LITTLE TO REMOVE MELT-APPLIED COATINGS OF MRV'S.

EXTENDERS FOR MRV'S

THE MRV'S ARE STOCKED IN THE MRV1000IPA AND MRV1500IPA CONCENTRATIONS.

YOU MAY, HOWEVER, WISH TO PREPARE YOUR OWN DILUTIONS.

IN USING MRV'S AS A DRY LUBRICANT OR AS A RELEASE AGENT, IT IS RECOMMENDED THAT IT BE DILUTED TO THE 2-5% CONCENTRATION RANGE. SPECIFIC INSTANCES MAY ARISE WHERE MORE DILUTE OR MORE CONCENTRATED DISPERSIONS WOULD BE DESIRED. FOR BEST RESULTS, THE PRE-MEASURED MRV-IPA DISPERSIONS WOULD BE DESIRED. THEY SHOULD BE ADDED SLOWLY TO THE DESIRED SOLVENT WHILE THOROUGHLY AGITATING. 99% ISOPROPYL ALCOHOL IS THE PREFERRED SOLVENT.

FOR CONVENIENCE IN DILUTING, USE THE FOLLOWING TABLE:

<u>ADD</u> <u>SOLVENT</u>	<u>DESIRED FINAL</u> <u>CONCENTRATE %</u>	<u>FOR EACH 1 PART OF MRV-IPA</u> <u>THE FOLLOWING VOLUME OF</u>
FOR MRV1500IPA	10.0%	1.5
	5.0%	3.0
	2.5%	6.0
	1.0%	14.0
FOR MRV1000IPA	7.5%	0.3
	5.0%	1.0
	2.5%	3.0
	1.0%	9.0

HANDLING PRECAUTIONS

THE PRECAUTIONS TO BE OBSERVED IN HANDLING MRV-IPA FLUOROPOLYMERS ARE ESSENTIALLY THE SAME AS THOSE WHICH SHOULD BE OBSERVED IN HANDLING MANY SOLVENTS AND RESINOUS MATERIALS IN REGULAR COMMERCIAL USE. THE SOLVENT USED IN THESE PRODUCTS WILL DISSOLVE NATURAL OILS, HENCE CONTACT WITH THE SKIN SHOULD BE AVOIDED TO PREVENT DRYING OF THE SKIN. BREATHING OF SOLVENT VAPORS SHOULD BE AVOIDED. FOR COMPARISON, THE 1993-1994 THRESHOLD LIMIT VALUES OF SEVERAL WELL-KNOWN SOLVENTS ARE:

<u>PERFORMANCE</u>		
TRICHLOROTRIFLUOROETHANE	1000 PPM	VERY GOOD
ACETONE	750 PPM	
ISOPROPYL ALCOHOL 99%	400 PPM	BEST
METHYLENE CHLORIDE	50 PPM (A)	
N-HEPTANE	400 PPM	GOOD
TOLUENE	50 PPM (B)	GOOD
MINERAL SPIRITS	300 PPM	GOOD

PERCHLORETHYLENE
TRICHLOROETHYLENE

50 PPM (A)
50 PPM (A)

FOOTNOTE: (A) SUSPECTED CARCINOGEN
(B) BIOLOGICAL EXPOSURE INDEX-I.E. POTENTIAL HEALTH HAZARD
LEVEL

IF MRV DISPERSIONS ARE TO BE APPLIED BY SPRAYING, CARE SHOULD BE TAKEN TO AVOID THE INHALATION OF THE SPRAY MIST, JUST AS THE INHALATION OF SPRAYED SOLVENTS, RESINS, PAINTS, ETC., SHOULD BE AVOIDED.

THE CONTAINERS SHOULD BE CLOSED PROMPTLY AFTER REMOVING PART OF THE CONTENTS TO AVOID EXCESSIVE LOSS OF SOLVENT BY EVAPORATION AND COAGULATION OF THE DISPERSED ACTIVE INGREDIENT. THE PRODUCTS SHOULD BE AGITATED BEFORE BEING REMOVED FROM THEIR CONTAINERS, SINCE THE ACTIVE INGREDIENT IS DISPERSED AND WILL SETTLE UPON STORAGE.

THE DRY TIME FOR MRV-IPA IS APPROXIMATELY 4 MINUTES AT AMBIENT ROOM TEMPERATURE, DEPENDING UPON TEMPERATURE AND VENTILATION. OPEN CONTAINERS OF MRV-IPA WILL ABSORB MOISTURE FROM THE AIR. ALWAYS CLOSE THE CONTAINER TO PREVENT THE ABSORPTION OF MOISTURE.

APPLICATION METHODS

MRV COATINGS SHOULD BE APPLIED TO CLEAN, DRY SURFACES. ONCE APPLIED THE COATINGS WILL NOT BE AFFECTED BY WATER OR OTHER MATERIALS THAT MAY COME IN CONTACT WITH THE TELOMER COATING. ANY OF THE FOLLOWING METHODS MAY BE USED IN APPLYING MRV-IPA DISPERSIONS. STIR THE DISPERSION FREQUENTLY TO KEEP THE POLYMER IN SUSPENSION. PROVIDE ADEQUATE VENTILATION.

1. DIPPING - SMALL PARTS, COILS OF WIRE AND OTHER SHAPES CAN BE COATED BY DIPPING IN DILUTED DISPERSIONS. COATING LEVELS ARE CONTROLLED BY THE SOLIDS CONCENTRATION, RATE OF WITHDRAWAL AND NUMBER OF APPLICATIONS. A SINGLE DIP COATING IS USUALLY ADEQUATE FOR MOST APPLICATIONS USING A 2%-5% SUSPENSION OF THE FLUOROPOLYMER.

WHEN NOT IN USE, THE MRV DISPERSION SHOULD BE STORED IN A CLOSED CONTAINER TO AVOID SOLVENT LOSS. SOLVENT LOSS FROM DIP COATING DEVICES CAN BE MINIMIZED BY PROPER DESIGN OF THE COATER AND BY USE OF COOL COILS.

2. WIPING OR BRUSHING - DILUTED DISPERSIONS MAY BE APPLIED BY WIPING OR BRUSHING. THIS TECHNIQUE IS PARTICULARLY USEFUL ON LONG SURFACES SUCH AS ROD, TUBING AND OTHER SHAPES. IT IS ALSO A GOOD TECHNIQUE FOR COATING SELECTED AREAS ON A PART.

A VARIATION OF THIS TECHNIQUE INVOLVES FLOOD COATING FOLLOWED BY A WIPING DEVICE.

3. AIR SPRAYING - CONVENTIONAL SPRAY EQUIPMENT MAY BE USED WITH DILUTED DISPERSIONS. SPRAY WET COATS AS A DRY SPRAY HAS POOR ADHESION.

ALLOW TO DRY BETWEEN COATS IF A HEAVIER COAT IS NEEDED. SINGLE HEAVY COATS TEND TO "MUD CRACK" AND HAVE POOR ADHESION.

4. AIRLESS SPRAYING - AIRLESS SPRAYING IS PARTICULARLY EFFECTIVE IN DEPOSITION A COATING WITH EXCELLENT ADHESION. THIS SYSTEM CAN BE USED WITH A HAND SPRAY GUN OR WITH AUTOMATIC SPRAY HEADS WHICH CAN BE OPERATED INTERMITTENTLY OR CONTINUOUSLY. INFORMATION IS AVAILABLE ON REQUEST FOR AN AIRLESS SPRAY SYSTEM.

5. AEROSOLS - ARE AVAILABLE. GENERALLY, THEY ARE NOT AN ECONOMICAL METHOD OF APPLICATION BUT DO OFFER CONVENIENCE.

6. REFILLABLE AIR-PRESSURIZED SPRAY APPLICATOR - PROVIDES THE CONVENIENCE OF AN AEROSOL CONTAINER BUT IS REFILLABLE FOR ECONOMY. PRESSURIZE WITH PRODUCTION AIR OR CO² CARTRIDGES. SPRAY NOZZLES ARE INTERCHANGEABLE FOR MAXIMUM VERSATILITY.

ADHESION IS PROMOTED ON SUBSTRATES SUCH AS METALS BY CONTROLLING THE SURFACE ROUGHNESS OF THE SUBSTRATE. THIS IS PARTICULARLY TRUE FOR AIR DRIED COATINGS EXPOSED TO HIGH SHEAR FORCES IN APPLICATIONS SUCH AS METAL EXTRUSIONS.

ANIMAL TESTS SHOW THAT MRV ACTIVE INGREDIENT HAS A LOW ORDER OF ORAL, SKIN AND EYE TOXICITY. IT DID NOT PRODUCE SKIN SENSITIZATION. WHEN INHALED AS AN AEROSOL SPRAY REPEATEDLY OVER A NINE-DAY PERIOD, IT DID NOT PRODUCE DETECTABLE ORGAN CHANGES. THE TOXICITY OF PYROLYSIS PRODUCTS OF THE SOLID POLYMER IS SIMILAR TO THOSE OBTAINED FROM TEFLON® TFE FLUOROCARBON RESIN.

THE FLUOROPOLYMER ACTIVE INGREDIENT OF MRV-IPA DISPERSIONS IS ESSENTIALLY INERT PHYSIOLOGICALLY. THE APPROXIMATE LETHAL ORAL DOSE FOR RATS IS IN EXCESS OF 17,000 MILLIGRAMS PER KILOGRAM OF BODY WEIGHT. WHEN HEATED TO TEMPERATURES OF 570°F.(299°.) SOME SUBLIMATION OF UN-DECOMPOSED TELOMER SOLIDS OCCURS; THUS, VENTILATION SHOULD BE PROVIDED WHENEVER THE FLUOROCARBON IS HEATED AND PERSONNEL SHOULD BE CAUTIONED AGAINST INHALING FUMES. WHILE NO SERIOUS INJURIES HAVE BEEN REPORTED FROM EXPOSURE OF INDIVIDUALS TO THE PYROLYSIS PRODUCTS OF THE POLYMER, THE INHALATION OF FRESHLY GENERATED FUMES FROM THE PYROLYSIS OF HIGHLY

FLUORINATED POLYMERS SUCH AS THE ACTIVE INGREDIENT OF MRV CAN CAUSE A TEMPORARY FLU-LIKE CONDITION CALLED "POLYMER FUME FEVER", "METAL FUME FEVER" OR "FOUNDRYMAN'S FEVER." THE SYMPTOMS USUALLY OCCUR WITHIN SEVERAL HOURS AFTER EXPOSURE, AND USUALLY SUBSIDE WITHIN 24 HOURS, EVEN IN THE ABSENCE OF TREATMENT. ATTACKS OF "POLYMER FUME FEVER" DO NOT CAUSE PERMANENT INJURY AND THE EFFECTS ARE NOT CUMULATIVE.

THE OCCURRENCE OF "POLYMER FUME FEVER" INDICATES THAT VENTILATION IS NOT ADEQUATE AND SHOULD BE IMPROVED OR SMOKING OF CONTAMINATED TOBACCO PRODUCTS HAS OCCURRED. IT HAS NOT BEEN POSSIBLE TO PRODUCE THE SAME SYMPTOMS IN LABORATORY ANIMALS, NOR IS IT KNOWN AT WHAT TEMPERATURES THE PRODUCT OR PRODUCTS WHICH MAY OCCASION THESE SYMPTOMS BEGIN TO BE EVOLVED. WHEN SUCH AN ATTACK DOES OCCUR, IT USUALLY FOLLOWS EXPOSURE TO VAPORS GIVEN OFF BY THE POLYMER AT HIGH TEMPERATURES, OR FROM SMOKING TOBACCO CONTAMINATED WITH THE POLYMER EITHER FROM THE FINGERS OF THE USER OR FROM THE SETTLING OF AIR-BORNE PARTICLES ON LIGHTED OR UNLIGHTED TOBACCO PRODUCTS. THEREFORE, NOT ONLY SHOULD ADEQUATE MECHANICAL VENTILATION BE PROVIDED WHEN HEATING THE POLYMER BUT, IN ADDITION, SMOKING SHOULD NOT BE PERMITTED IN THE AREA WHEN THE MATERIAL IS BEING HANDLED. EMPLOYEES HANDLING MRV SHOULD BE INSTRUCTED TO WASH THEIR HANDS BEFORE SMOKING AND TO KEEP THEIR TOBACCO PRODUCTS WELL AWAY FROM THE WORK AREA. SEVERE ATTACKS OF "POLYMER FUME FEVER" SIMILAR TO ACUTE PNEUMONIA MAY BE ACCOMPANIED BY A SHORTAGE OF BREATH. THE USE OF OXYGEN TO AID BREATHING IS HELPFUL IN THESE CASES. THIS IS THE ONLY ADVERSE AFFECT OBSERVED IN HUMANS TO DATE.

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AVAILABILITY

MRV'S ARE OFFERED FOR SALE IN THE FOLLOWING PACKAGES:

5-GALLON PAILS	32 LBS. - 38 LBS.
1-GALLON CANS	6 LBS. - 8 LBS.
AEROSOL CANS	12 OZS.

IIB-37 04/03
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