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SECTION I

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mfg. code id : E628-G35 Revision level : 4-05/11/2015  
 trade name : 28A SOLID FILM LUBRICANT - MIL-L-23398/MIL-PRF-46147

SECTION II HAZARD IDENTIFICATION



Danger



Danger



Warning



Danger



Warning

HAZARD CLASSIFICATION:

FLAMMABLE LIQUID: CATEGORY 2  
 SKIN SENSITIZER: CATEGORY 1B  
 EYE IRRITANT: CATEGORY 2B  
 ACUTE TOXICITY: CATEGORY 4  
 STOT SE: CATEGORY 3  
 FLAMMABLE GAS: CATEGORY 1  
 FLAMMABLE AEROSOL: CATEGORY 1  
 STOT RE: CATEGORY 2  
 GASES UNDER PRESSURE-LIQUEFIED GAS

HAZARD STATEMENTS:

FLAMMABILITY

KEEP LIQUID AND VAPOR AWAY FROM HEAT, SPARKS, AND FLAME. EXTINGUISH PILOT LIGHTS, CIGARETTES AND TURN OFF OTHER POSSIBLE SOURCES OF IGNITION PRIOR TO USE AND UNTIL VAPORS ARE GONE. SURFACES THAT ARE SUFFICIENTLY HOT MAY IGNITE PRODUCT IN THE ABSENCE OF SPARKS OR FLAME. VAPORS MAY ACCUMULATE AND TRAVEL TO IGNITION SOURCES DISTANT FROM HANDLING SITE. KEEP CONTAINERS CLOSED WHEN NOT IN USE. USE WITH ADEQUATE VENTILATION. CONTAINERS, EVEN IF EMPTY, CAN CONTAIN EXPLOSIVE VAPORS. DO NOT CUT, DRILL, GRIND, OR WELD NEAR CONTAINERS.

EYE CONTACT

BASED ON THE PRESENCE OF COMPONENTS 1, 2, 4 AND 7 PRODUCT IS PRESUMED TO BE MODERATELY IRRITATING TO THE EYES. EXPOSURE MAY CAUSE CORNEAL INJURY. BASED ON THE PRESENCE OF COMPONENTS 2, 5 AND 7 PRODUCT VAPORS MAY ALSO BE IRRITATING TO THE EYES.

SKIN CONTACT

BASED ON THE PRESENCE OF COMPONENTS 2, 5 AND 7 PRODUCT IS PRESUMED TO BE MODERATELY IRRITATING TO THE SKIN. PROLONGED CONTACT MAY CAUSE DAMAGE TO THE SKIN. BASED ON THE PRESENCE OF COMPONENT 4 ABSORPTION THROUGH THE SKIN MAY RESULT IN SYMPTOMS OF EXPOSURE AS THOSE DESCRIBED FOR INHALATION AND INGESTION. BASED ON THE PRESENCE OF COMPONENTS 1, 2 AND 5 PROLONGED OR REPEATED CONTACT MAY RESULT IN DEFATTING AND DRYING OF THE SKIN WHICH MAY RESULT IN DERMATITIS.

INHALATION

EXPOSURE MAY PRODUCE IRRITATION TO THE NOSE, THROAT, RESPIRATORY TRACT, AND OTHER MUCOUS MEMBRANES. BASED ON THE PRESENCE OF COMPONENTS 2, 4, 5 AND 7 EXPOSURE TO HIGH CONCENTRATIONS OF VAPOR MAY PRODUCE CENTRAL NERVOUS SYSTEM DEPRESSION. BASED ON THE PRESENCE OF COMPONENT 7 EXPOSURE TO HIGH CONCENTRATIONS OF VAPOR MAY PRODUCE CARDIAC ARRHYTHMIAS. BASED ON THE PRESENCE OF

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COMPONENTS 1, 2 AND 7 EXPOSURE MAY PRODUCE IRRITATION TO THE NOSE, THROAT, RESPIRATORY TRACT AND OTHER MUCOUS MEMBRANES.

INGESTION

THIS PRODUCT MAY BE IRRITATING TO THE GASTROINTESTINAL TRACT IF INGESTED. BASED ON THE PRESENCE OF COMPONENTS 1, 2 AND 4 INGESTION MAY CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION. BASED ON THE PRESENCE OF COMPONENTS 1 AND 2 THIS PRODUCT MAY BE IRRITATING TO THE GASTROINTESTINAL TRACT IF INGESTED.

SIGNS AND SYMPTOMS

EYE, SKIN, RESPIRATORY, AND GASTRO-INTESTINAL IRRITATION AS NOTED ABOVE. BASED ON THE PRESENCE OF COMPONENTS 1, 2, 4, 5 AND 7 CENTRAL NERVOUS SYSTEM DEPRESSION MAY BE EVIDENCED BY HEADACHE, DIZZINESS, NAUSEA AND SYMPTOMS OF INTOXICATION; IN EXTREME CASES, UNCONSCIOUSNESS AND DEATH MAY OCCUR.

AGGRAVATED MEDICAL CONDITIONS

PREEXISTING SKIN, EYE AND RESPIRATORY DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT. IMPAIRED CENTRAL NERVOUS SYSTEM FUNCTIONS FROM PREEXISTING DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT.

OTHER HEALTH EFFECTS

BASED ON THE PRESENCE OF COMPONENT 4 CHRONIC OVEREXPOSURE MAY CAUSE INJURY TO THE KIDNEYS AND LIVER. BASED ON THE PRESENCE OF COMPONENT 5 CHRONIC OVEREXPOSURE MAY CAUSE DAMAGE TO THE KIDNEYS. BASED ON THE PRESENCE OF COMPONENT 7 CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED.

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PRECAUTIONARY STATEMENTS:

USE ONLY IN A WELL-VENTILATED AREA OR IN A HOOD WHERE NO FLAME OR OTHER IGNITION SOURCES ARE PRESENT. DO NOT USE PRODUCT IN FOOD-PROCESSING OR FOOD-HANDLING EQUIPMENT OR ON SURFACES THAT MAY CONTACT FOOD. DO NOT ALLOW PRODUCT TO CONTAMINATE FOODSTUFFS. DO NOT EAT, DRINK OR SMOKE WHEN USING PRODUCT. WASH HANDS THOROUGHLY AFTER HANDLING. DO NOT BREATHE VAPORS. WEAR SUITABLE EYE AND SKIN PROTECTION. KEEP CONTAINER CLOSED WHEN NOT IN USE. PROTECT FROM TEMPERATURE EXTREMES. IN CASE OF SPILL OR LEAK, REMOVE IGNITION SOURCES AND VENTILATE AREA.

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SECTION III

COMPOSITION/INFORMATION ON INGREDIENTS:

no.	component	CAS#	% by wt.	SARA	vapor pressure (mm Hg @ 20 C)	LEL (@ 25 C)
1	2-PROPOXYPROPANOL	1569-01-3	10 - 15	NO	1.70	1.50
2	1,3-DIOXOLANE	646-06-0	10 - 15	NO	70.00	N/A
3	EPICHLOROHYDRIN/BISPHENOL A POLYMER	25036-25-3	1 - 5	NO	N/A	N/A
4	PROPYLENE GLYCOL METHYL ETHER ACETATE	108-65-6	10 - 15	NO	3.70	1.50 @ 200 C
5	ACETONE	67-64-1	5 - 10	NO	182.00	2.60
6	MOLYBDENUM DISULFIDE	1317-33-5	5 - 10	NO	N/A	N/A
7	DIMETHYL ETHER	115-10-6	30 - 35	NO	71.20 @ 25 C	3.40

(N/A = not applicable)

SECTION IV

FIRST AID MEASURES

EYE CONTACT

IMMEDIATELY FLUSH EYES WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES WHILE HOLDING EYELIDS OPEN. SEEK PROMPT MEDICAL ATTENTION.

SKIN CONTACT

REMOVE CONTAMINATED CLOTHING AND SHOES. WIPE EXCESS FROM SKIN AND FLUSH WITH WATER USING SOAP IF AVAILABLE. SEEK MEDICAL ATTENTION IF IRRITATION OCCURS. DO NOT REUSE CLOTHING UNTIL THOROUGHLY DECONTAMINATED.

INHALATION

REMOVE VICTIM TO FRESH AIR AND TREAT SYMPTOMATICALLY. PROVIDE OXYGEN IF BREATHING IS DIFFICULT. GIVE ARTIFICIAL RESPIRATION IF THE VICTIM IS NOT BREATHING. SEEK PROMPT MEDICAL ATTENTION.

INGESTION

DILUTE WITH LIQUID UNLESS THE VICTIM IS UNCONSCIOUS OR VERY DROWSY. IF VOMITING SPONTANEOUSLY OCCURS, KEEP THE VICTIM'S HEAD BELOW THE HIPS TO PREVENT ASPIRATION INTO THE LUNGS. CONSULT A PHYSICIAN, HOSPITAL OR POISON CONTROL CENTER AND/OR TRANSPORT TO AN EMERGENCY FACILITY IMMEDIATELY.

SECTION V

FIRE FIGHTING MEASURES

flammability classification - OSHA : FLAMMABLE GAS  
 - DOT : FLAMMABLE GAS

EXTINGUISHING MEDIA

USE WATER FOG, FOAM, DRY CHEMICAL OR CARBON DIOXIDE.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS

WARNING. FLAMMABLE CLEAR FIRE AREA OF UNPROTECTED PERSONNEL. DO NOT ENTER CONFINED FIRE SPACE WITHOUT HELMET, FACE SHIELD, BUNKER COAT, GLOVES, RUBBER BOOTS, AND A POSITIVE PRESSURE NIOSH-APPROVED SELF-CONTAINED BREATHING APPARATUS.

UNUSUAL FIRE AND EXPLOSION HAZARDS

CONTAINERS EXPOSED TO INTENSE HEAT FROM FIRES SHOULD BE COOLED WITH WATER TO PREVENT VAPOR PRESSURE BUILDUP WHICH COULD RESULT IN CONTAINER RUPTURE. CONTAINER AREAS EXPOSED TO DIRECT FLAME CONTACT SHOULD BE COOLED WITH LARGE QUANTITIES OF WATER AS NEEDED TO PREVENT WEAKENING OF CONTAINER STRUCTURE.

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SECTION VI

ACCIDENTAL RELEASE MEASURES

SPILL OR LEAK PROCEDURES

LARGE SPILLS >> EVACUATE THE HAZARD AREA OF UNPROTECTED PERSONNEL. WEAR APPROPRIATE RESPIRATOR AND PROTECTIVE CLOTHING. SHUT OFF SOURCE OF LEAK ONLY IF SAFE TO DO SO. DIKE AND CONTAIN. IF VAPOR CLOUD FORMS, WATER FOG MAY BE USED TO SUPPRESS; CONTAIN RUN-OFF. REMOVE WITH VACUUM TRUCKS OR PUMP TO STORAGE/SALVAGE VESSELS. SOAK UP RESIDUE WITH AN ABSORBENT SUCH AS CLAY, SAND OR OTHER SUITABLE MATERIAL; PLACE IN NON-LEAKING CONTAINERS FOR PROPER DISPOSAL. FLUSH AREA WITH WATER TO REMOVE TRACE RESIDUE; DISPOSE OF FLUSH SOLUTIONS AS ABOVE. SMALL SPILLS >> TAKE UP WITH AN ABSORBENT MATERIAL AND PLACE IN NON-LEAKING CONTAINERS; SEAL TIGHTLY FOR PROPER DISPOSAL.

SECTION VII

HANDLING AND STORAGE

FLAMMABILITY

KEEP LIQUID AND VAPOR AWAY FROM HEAT, SPARKS, AND FLAME. EXTINGUISH PILOT LIGHTS, CIGARETTES AND TURN OFF OTHER POSSIBLE SOURCES OF IGNITION PRIOR TO USE AND UNTIL VAPORS ARE GONE. SURFACES THAT ARE SUFFICIENTLY HOT MAY IGNITE PRODUCT IN THE ABSENCE OF SPARKS OR FLAME. VAPORS MAY ACCUMULATE AND TRAVEL TO IGNITION SOURCES DISTANT FROM HANDLING SITE. KEEP CONTAINERS CLOSED WHEN NOT IN USE. USE WITH ADEQUATE VENTILATION. CONTAINERS, EVEN IF EMPTY, CAN CONTAIN EXPLOSIVE VAPORS. DO NOT CUT, DRILL, GRIND, OR WELD NEAR CONTAINERS.

KEEP AWAY FROM SOURCES OF IGNITION: HEAT, SPARKS AND OPEN FLAME. NO SMOKING. HANDLE IN ACCORDANCE WITH GOOD INDUSTRIAL HYGIENE AND SAFETY PRACTICES. KEEP CONTAINER TIGHTLY CLOSED. STORE PROTECTED FROM TEMPERATURE EXTREMES. KEEP AWAY FROM FOOD AND DRINK. SEE SECTION 10 FOR CONDITIONS TO AVOID.

SECTION VIII

EMPLOYEE PROTECTION

RESPIRATORY PROTECTION

AVOID PROLONGED OR REPEATED BREATHING OF VAPORS/MIST. IF EXPOSURE EXCEEDS TLV USE A NIOSH-APPROVED POSITIVE PRESSURE SUPPLIED AIR RESPIRATOR TO PREVENT OVER EXPOSURE.

PROTECTIVE CLOTHING

AVOID CONTACT WITH EYES. WEAR GOGGLES IF THERE IS A LIKELIHOOD OF CONTACT WITH EYES. DO NOT GET ON SKIN OR ON CLOTHING.

ADDITIONAL PROTECTIVE MEASURES

USE VENTILATION AS REQUIRED TO CONTROL VAPOR/DUST CONCENTRATIONS. EYE WASH FOUNTAINS AND SAFETY SHOWERS SHOULD BE AVAILABLE FOR USE IN AN EMERGENCY.

SECTION IX

PHYSICAL PROPERTIES

% volatile by volume	: 91.78 +/- 2%	weight per gallon	: 7.81 +/- .2
% volatile by weight	: 77.06 +/- 2%	VOC as supplied is	5.2565 pounds per gallon.

ODOR	: STRONG SOLVENT	PHYSICAL STATE	: AEROSOL
pH	: N/A	SPECIFIC GRAVITY	: 0.9375

flash point : -40 +/- 2 degrees F. SETAFDASH

SECTION X

STABILITY AND REACTIVITY

STABILITY	: STABLE	HAZARDOUS POLYMERIZATION	: MAY OCCUR
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CONDITIONS AND MATERIALS TO AVOID

BASED ON THE PRESENCE OF COMPONENTS 1, 2, 4, 6 AND 7 AVOID OXIDIZING MATERIALS. BASED ON THE PRESENCE OF COMPONENTS 2, 5 AND 7 AVOID STRONG ACIDS.

HAZARDOUS DECOMPOSITION PRODUCTS

CARBON DIOXIDE, CARBON MONOXIDE AND UNIDENTIFIED ORGANIC COMPOUNDS MAY BE FORMED DURING COMBUSTION.

SECTION XI TOXICOLOGICAL INFORMATION

no.	(OSHA) PEL/TWA	PEL/CEILING	PEL/STEL	skin
1	N/E	N/E	N/E	N/E
2	N/E	N/E	N/E	N/E
3	N/E	N/E	N/E	N/E
4	N/E	N/E	N/E	N/E
5	750ppm	N/E	N/E	N/E
6	10 mg/m3	N/E	N/E	N/E
7	N/E	N/E	N/E	N/E

no.	(ACGIH) TLV/TWA	TLV/CEILING	TLV/STEL	skin
1	N/E	N/E	N/E	N/E
2	N/E	N/E	N/E	N/E
3	N/E	N/E	N/E	N/E
4	N/E	N/E	N/E	N/E
5	750ppm	N/E	1000ppm	N/E
6	10 mg/m3	N/E	N/E	N/E
7	N/E	N/E	N/E	N/E

>> The dried film of this product may become a dust nuisance when removed by sanding or grinding. OSHA recommends a PEL/TWA of 15 mg/m3 for total dust and 5 mg/m3 for the respirable fraction. ACGIH recommends a TLV/TWA of 10 mg/m3 for total dust.

>> (SKIN) absorption may contribute to the overall exposure to this material. Take appropriate measures to prevent skin contact.  
(N/E = not established)

>> None of the components of this product are recognized as carcinogenic.

SECTION XII ECOLOGICAL INFORMATION

CAS#	Component	Harmful to Aquatic Life	Not Harmful to Aquatic Life	May be Harmful to Aquatic
001569-01-3	2-PROPOXYPROPANOL	: N	: N	: Y
000646-06-0	1,3-DIOXOLANE	: N	: Y	: N
025036-25-3	EPICHLOROHYDRIN/BISPHENOL A POLYMER	: N	: Y	: N
000108-65-6	PROPYLENE GLYCOL METHYL ETHER ACETATE	: Y	: N	: Y
000067-64-1	ACETONE	: Y	: N	: Y
001317-33-5	MOLYBDENUM DISULFIDE	: N	: Y	: N

SECTION XII

ECOLOGICAL INFORMATION CONTINUED

000115-10-6 DIMETHYL ETHER

Harmful to Aquatic Life : N Not Harmful to Aquatic Life: N May be Harmful to Aquatic: Y

SECTION XIII

DISPOSAL CONSIDERATIONS

WASTE DISPOSAL

WASTE CHARACTERIZATIONS AND COMPLIANCE WITH APPLICABLE LAWS ARE THE SOLE RESPONSIBILITY OF THE END USER. ALL DISPOSAL PRACTICES USED FOR THIS PRODUCT AND ITS' CONTAINER(S) MUST BE IN COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS. THE INFORMATION PRESENTED IN THIS MSDS PERTAINS ONLY TO THE PRODUCT AS SHIPPED.

SECTION XIV

TRANSPORTATION INFORMATION

Land Transport

USDOT

Proper shipping name: CONSUMER COMMODITY ORMD  
 NOS Components :  
 Hazard class:  
 ID-number:  
 Packing group:  
 Aquatic Toxicity: YES aerosols are not applicable

Sea Transport

IMDG

Proper shipping name: AEROSOLS, FLAMMABLE  
 NOS Components :  
 Hazard class: 2.1  
 ID-number: UN1950  
 Packing group:  
 Aquatic Toxicity: YES aerosols are not applicable

Air Transport

IATA/ICAO

Proper shipping name: AEROSOLS, FLAMMABLE  
 NOS Components :  
 Hazard class: 2.1  
 ID-number: UN1950  
 Packing group:  
 Aquatic Toxicity: YES aerosols are not applicable

SECTION XV

REGULATORY INFORMATION

CAS# Component

001569-01-3 2-PROPOXYPROPANOL

US TSCA Inventory	: YES	Canada Domestic Substance List	: YES	EC	: YES
Philippines	: YES	Japan	: UNKNOWN	Korea	: UNKNOWN
China	: YES	Australia	: YES		

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SECTION XV

REGULATORY INFORMATION

000646-06-0 1,3-DIOXOLANE  
 US TSCA Inventory : YES Canada Domestic Substance List : YES EC : YES  
 Philippines : YES Japan : YES Korea : YES  
 China : YES Australia : NO

025036-25-3 EPICHLOROHYDRIN/BISPHENOL A POLYMER  
 US TSCA Inventory : YES Canada Domestic Substance List : YES EC : YES  
 Philippines : YES Japan : YES Korea : YES  
 China : YES Australia : YES

000108-65-6 PROPYLENE GLYCOL METHYL ETHER ACETATE  
 US TSCA Inventory : YES Canada Domestic Substance List : YES EC : YES  
 Philippines : YES Japan : YES Korea : YES  
 China : UNKNOWN Australia : YES

000067-64-1 ACETONE  
 US TSCA Inventory : YES Canada Domestic Substance List : YES EC : YES  
 Philippines : YES Japan : YES Korea : YES  
 China : YES Australia : YES

001317-33-5 MOLYBDENUM DISULFIDE  
 US TSCA Inventory : YES Canada Domestic Substance List : YES EC : YES  
 Philippines : YES Japan : YES Korea : YES  
 China : YES Australia : YES

000115-10-6 DIMETHYL ETHER  
 US TSCA Inventory : YES Canada Domestic Substance List : YES EC : YES  
 Philippines : YES Japan : YES Korea : YES  
 China : YES Australia : YES

PROPOSITION 65: THIS PRODUCT CONTAINS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM

no.	component	CAS#	SARA
1	2-PROPOXYPROPANOL	1569-01-3	NO
2	1,3-DIOXOLANE	646-06-0	NO
3	EPICHLOROHYDRIN/BISPHENOL A POLYMER	25036-25-3	NO
4	PROPYLENE GLYCOL METHYL ETHER ACETATE	108-65-6	NO
5	ACETONE	67-64-1	NO
6	MOLYBDENUM DISULFIDE	1317-33-5	NO
7	DIMETHYL ETHER	115-10-6	NO

SECTION XVI

OTHER INFORMATION

- H M I S -

HEALTH	: 2
FLAMMABILITY	: 4
REACTIVITY	: 0
PERSONAL PROTECT.:	X

(X = ask your supervisor for specialized handling directions)

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CONTAINERS CAN CONTAIN HAZARDOUS PRODUCT RESIDUES EVEN WHEN EMPTY. WASH WITH SOAP AND WATER BEFORE EATING, DRINKING, SMOKING, OR USING TOILET FACILITIES.

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THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE CORRECT. HOWEVER, WE MAKE  
NO WARRANTY, EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THIS DATA OR THE RESULTS TO BE OBTAINED FROM THE USE  
THEREOF. WE ASSUME NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.  
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