

MSDS Data

CRUDE OIL (ANS TYPE)

RS00197

Cherry Point Information

ARCO Hazard Rating:

Health	Fire	Reactivity
3	3	0

4-Extreme, 3-High, 2-Moderate,  
1-Slight, 0-No Significant Hazard

ARCO Hazard Warning:

- Carcinogen (H)
- CNS Depressant
- Contains Benzene
- Flammable
- Irritant
- May Contain/Emit H2S
- Reproductive (M,F,D)

Nickname(s) :

- Alaska North Slope (ANS) Crude
- Alberta Crude
- Maya Crude
- Oman Crude
- Rainbow Crude

Cherry Point Personal Protective Equipment (PPE)

Safe Handling Methods:

Operations- When draining pumps, vessels, exchangers, or larger systems that have been in benzene service, an organic vapor respirator is required and neoprene or nitrile gloves if there will be skin contact with liquid streams. The area must be flagged off with "benzene warning" tape.

Maintenance- When opening pump case, lines, placing blinds or removing exchangers or benzene containing systems, wear an organic vapor respirator and neoprene or nitrile gloves. If the work may involve splashing, than rain gear or chemical resistant suit is needed.

Refer to standard equipment procedures "Draining and Opening Large Equipment in Benzene Service" for more details.

Specific MSDS's for alternate crudes are available. Rainbow Crude is included within this MSDS for ANS. Canedon Seco and Imperial are found under RS00295 and Oriente and Cano Limon are found under RS00296. Canedon Seco/Imperial contain lower benzene and sulfur levels (less H2S). Oriente and Cano Limon are lower in benzene.

DOT Information:

Shipping Name: Petroleum Crude Oil  
 Hazard Class: 3, PG I  
 UN/NA#: UN 1267

\*\*\* End of Cherry Point Information \*\*\*

GENERAL INFORMATION (PROD & CO ID)

DATE: 9808 CP

MSDS NO.: RS197 VER. 5  
 REV. DATE: 08/03/1998

**IMPORTANT: READ THIS MSDS BEFORE HANDLING AND DISPOSING OF THIS PRODUCT AND**

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PASS THIS INFORMATION ON TO EMPLOYEES, CUSTOMERS, AND USERS OF THIS PRODUCT.

MATERIAL IDENTITY: CRUDE OIL (ANS TYPE)

TRADE NAME(S): ANS CRUDE, OMAN CRUDE, RAINBOW CRUDE, MESA 30, KOCH ALBERTA CRUDE, MAYA CRUDE

OTHER NAME(S): ALASKA NORTH SLOPE (ANS) CRUDE OIL, PETROLEUM OIL, ROCK OIL, EARTH OIL

CHEMICAL DESCRIPTION: THIS MATERIAL IS A C1 TO C50 HYDROCARBON LIQUID WHICH CONTAINS UP TO .6 VOL. % BENZENE AND OTHER LIGHT AROMATICS AND APPROXIMATELY .8 TO 1.5 WT% SULFUR COMPOUNDS.

MANUFACTURER'S ADDRESS: ARCO PRODUCTS COMPANY  
DIVISION OF ATLANTIC RICHFIELD COMPANY  
333 SOUTH HOPE STREET  
LOS ANGELES, CALIFORNIA 90071

TELEPHONE NUMBERS: EMERGENCY  
213-222-3212 LA POISON  
800-424-9300 CHEMTREC  
CUSTOMER SERVICE  
800-322-2726 INFO ONLY

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**HEALTH & FIRST AID (HAZARD IDENTIFICATION)**

IMMEDIATE HAZARDS

DANGER. HIGHLY FLAMMABLE! OSHA/NFPA CLASS 1B FLAMMABLE LIQUID. KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME! CONTAINS PETROLEUM DISTILLATES! AVOID BREATHING VAPORS OR MISTS. USE ONLY WITH ADEQUATE VENTILATION. IF SWALLOWED, DO NOT INDUCE VOMITING SINCE ASPIRATION INTO THE LUNGS MAY CAUSE CHEMICAL PNEUMONIA. OBTAIN PROMPT MEDICAL ATTENTION.

MAY CAUSE IRRITATION OR MORE SERIOUS SKIN DISORDERS! MAY BE HARMFUL IF INHALED! MAY CAUSE IRRITATION OF THE NOSE, THROAT, AND LUNGS, HEADACHE, DIZZINESS, DROWSINESS, LOSS OF COORDINATION, FATIGUE, NAUSEA AND LABORED BREATHING. MAY CAUSE IRREGULAR HEARTBEATS. AVOID PROLONGED OR REPEATED LIQUID, MIST, AND VAPOR CONTACT WITH EYES, SKIN, AND RESPIRATORY TRACT. WASH HANDS THOROUGHLY AFTER HANDLING.

SULFUR COMPOUNDS IN THIS MATERIAL MAY DECOMPOSE TO RELEASE HYDROGEN SULFIDE GAS WHICH MAY ACCUMULATE TO POTENTIALLY LETHAL CONCENTRATIONS IN ENCLOSED AIR SPACES. VAPOR CONCENTRATIONS OF HYDROGEN SULFIDE ABOVE 50 PPM, OR PROLONGED EXPOSURE AT LOWER CONCENTRATIONS, MAY SATURATE HUMAN ODOR PERCEPTIONS SO THAT THE SMELL OF GAS MAY NOT BE APPARENT. DO NOT DEPEND ON THE SENSE OF SMELL TO DETECT HYDROGEN SULFIDE!

CONTAINS BENZENE, A CHEMICAL KNOWN TO CAUSE CANCER IN HUMANS! MAY CAUSE DISEASES OF THE BLOOD FORMING ORGANS, SUCH AS LEUKEMIA, ADVERSE EFFECTS ON THE IMMUNE SYSTEM AND ADVERSE REPRODUCTIVE EFFECTS. BENZENE MAY CAUSE IRRITATION TO THE EYES, SKIN AND LUNGS, CENTRAL NERVOUS SYSTEM EFFECTS AND IRREGULAR HEARTBEATS.

LONG-TERM TESTS SHOW THAT SIMILAR CRUDE OILS HAVE PRODUCED SKIN TUMORS ON LABORATORY ANIMALS.

CRUDE OILS CONTAIN SOME POLYCYCLIC AROMATIC HYDROCARBONS WHICH HAVE BEEN SHOWN TO BE CARCINOGENIC AFTER PROLONGED OR REPEATED SKIN CONTACT IN LABORATORY ANIMALS.

ACUTE HEALTH HAZARDS

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ROUTES OF EXPOSURE / SIGNS AND SYMPTOMS

INHALATION: VAPORS OR MISTS FROM THIS MATERIAL, AT CONCENTRATIONS GREATER THAN THE RECOMMENDED EXPOSURE LIMITS IN COMPOSITION & EXPOSURE LIMITS (COMPONENTS AND EXP LIMITS) SECTION, CAN CAUSE IRRITATION OF THE NOSE, THROAT, AND LUNGS, HEADACHE, DIZZINESS, DROWSINESS, LOSS OF COORDINATION, FATIGUE, NAUSEA AND LABORED BREATHING. AIRBORNE CONCENTRATIONS ABOVE THE RECOMMENDED EXPOSURE LIMITS ARE NOT ANTICIPATED DURING NORMAL WORKPLACE ACTIVITIES DUE TO THE SLOW EVAPORATION OF THIS MATERIAL AT AMBIENT TEMPERATURES.

EXPOSURE TO MODERATE AIRBORNE CONCENTRATIONS OF HYDROGEN SULFIDE (LESS THAN 50 PPM) CAN RESULT IN IRRITATION OF THE EYES, NOSE AND THROAT, HEADACHE, DIZZINESS, SHORTNESS OF BREATH, NAUSEA AND NERVOUSNESS. EXPOSURE TO HYDROGEN SULFIDE VAPOR ABOVE 200 PPM MAY CAUSE IRRITATION OF MUCOUS MEMBRANES, INFLAMMATION OF THE LUNGS, ACCUMULATION OF FLUID IN THE LUNGS, IRREGULAR HEARTBEATS, UNCONSCIOUSNESS WITH CONVULSIONS OR IMPAIRED BREATHING WITH SUFFOCATION. EXPOSURE TO HIGHER CONCENTRATIONS OF HYDROGEN SULFIDE VAPOR (ABOVE 500 PPM) MAY CAUSE RAPID DEATH.

EYE CONTACT: CONTACT MAY CAUSE IRRITATION AND REDNESS OF THE EYES.

SKIN CONTACT: MODERATE SKIN IRRITATION MAY OCCUR UPON SHORT-TERM EXPOSURE. EXPOSURE TO SUNLIGHT MAY INCREASE THE DEGREE OF SKIN IRRITATION. ABSORPTION THROUGH THE SKIN MAY OCCUR AND PRODUCE TOXIC EFFECTS (SEE SUMMARY OF CHRONIC HAZARDS).

INGESTION: MAY CAUSE IRRITATION OF THE MOUTH, THROAT AND GASTROINTESTINAL TRACT LEADING TO NAUSEA, VOMITING, DIARRHEA, AND RESTLESSNESS. MAY CAUSE HEADACHE, DIZZINESS, DROWSINESS, LOSS OF COORDINATION, FATIGUE, NAUSEA AND LABORED BREATHING.

ASPIRATION HAZARD: THIS MATERIAL CAN ENTER THE LUNGS DURING SWALLOWING OR VOMITING AND MAY CAUSE LUNG INFLAMMATION AND DAMAGE WHICH IN SEVERE CASES MAY BE FATAL.

SUMMARY OF CHRONIC HAZARDS AND SPECIAL HEALTH EFFECTS: PERSONNEL WITH PREEXISTING CENTRAL NERVOUS SYSTEM DISEASE, SKIN DISORDERS, OR CHRONIC RESPIRATORY DISEASES SHOULD BE EVALUATED BY AN APPROPRIATE HEALTH PROFESSIONAL BEFORE EXPOSURE TO THIS MATERIAL.

PROLONGED/REPEATED SKIN EXPOSURE, INHALATION OR INGESTION OF THIS MATERIAL MAY RESULT IN ADVERSE DERMAL OR SYSTEMIC EFFECTS. AVOID PROLONGED OR REPEATED EXPOSURE.

MAY BE HARMFUL IF ABSORBED THROUGH THE SKIN. PROLONGED OR REPEATED CONTACT MAY CREATE CANCER RISK, ORGAN DAMAGE, AND ADVERSELY AFFECT REPRODUCTION, FETAL DEVELOPMENT AND FETAL SURVIVAL. AVOID ALL SKIN CONTACT. REPRODUCTIVE AND NEUROTOXIC EFFECTS HAVE BEEN ASSOCIATED WITH N-HEXANE, A COMPONENT OF THIS MATERIAL. AVOID PROLONGED OR REPEATED EXPOSURE.

CONTAINS BENZENE, A CHEMICAL KNOWN TO CAUSE CANCER IN HUMANS. REPEATED AND PROLONGED EXPOSURE TO BENZENE VAPORS MAY CAUSE LEUKEMIA, APLASTIC ANEMIA, OR OTHER BLOOD DISORDERS, IMMUNOTOXICITY, REPRODUCTIVE HARM OR FETAL TOXICITY. GENERALLY, HUMAN EXPOSURES TO CRUDE OIL ARE CONSIDERABLY LOWER THAN LEVELS WHICH HAVE CAUSED ADVERSE HEALTH EFFECTS IN ANIMAL STUDIES OR HUMAN CASE STUDIES. ADVERSE HEALTH EFFECTS ARE NOT EXPECTED TO OCCUR AT EXPOSURE LEVELS TYPICALLY ENCOUNTERED DURING NORMAL WORKPLACE ACTIVITIES DUE TO THE SLOW EVAPORATION OF THIS MATERIAL AT AMBIENT TEMPERATURES. SEE TOXICOLOGICAL INFORMATION SECTION FOR ADDITIONAL TOXICOLOGICAL INFORMATION.

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**HEALTH & FIRST AID (EMERGENCY AND FIRST AID)**

INHALATION: IMMEDIATELY REMOVE PERSONNEL TO AREA OF FRESH AIR. FOR RESPIRATORY DISTRESS, GIVE OXYGEN, RESCUE BREATHING, OR ADMINISTER CPR (CARDIOPULMONARY RESUSCITATION) IF NECESSARY. OBTAIN PROMPT MEDICAL ATTENTION.

EYE CONTACT: FLUSH EYES WITH CLEAN, LOW-PRESSURE WATER FOR AT LEAST 15 MINUTES, OCCASIONALLY LIFTING THE EYELIDS. IF PAIN OR REDNESS PERSISTS AFTER FLUSHING, OBTAIN MEDICAL ATTENTION.

SKIN CONTACT: IMMEDIATELY REMOVE CONTAMINATED CLOTHING. WASH AFFECTED SKIN THOROUGHLY WITH SOAP AND WATER. IF IRRITATION PERSISTS, OBTAIN MEDICAL ATTENTION.

INGESTION: DO NOT INDUCE VOMITING SINCE ASPIRATION INTO THE LUNGS MAY CAUSE LIPOID PNEUMONIA. OBTAIN PROMPT MEDICAL ATTENTION.

EMERGENCY MEDICAL TREATMENT PROCEDURES: SEE ABOVE PROCEDURES. PERSONNEL WITH PRE-EXISTING CENTRAL NERVOUS SYSTEM DISEASE, SKIN DISORDERS, CHRONIC RESPIRATORY DISEASES, OR IMPAIRED LIVER OR KIDNEY FUNCTION SHOULD AVOID EXPOSURE TO THIS PRODUCT.

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**TOXICOLOGICAL INFORMATION**

THE INFORMATION FOUND IN THIS SECTION IS WRITTEN FOR MEDICAL, TOXICOLOGY, OCCUPATIONAL HEALTH AND SAFETY. THIS SECTION PROVIDES TECHNICAL INFORMATION ON THE TOXICITY TESTING OF THIS OR SIMILAR MATERIALS OR ITS COMPONENTS. IF CLARIFICATION OF THE TECHNICAL CONTENT IS NEEDED, CONSULT A PROFESSIONAL IN THE AREAS OF EXPERTISE LISTED ABOVE.

PROLONGED/REPEATED EXPOSURES: IARC HAS DETERMINED THERE IS "LIMITED EVIDENCE FOR THE CARCINOGENICITY IN EXPERIMENTAL ANIMALS OF CRUDE OIL" AND "INADEQUATE EVIDENCE FOR THE CARCINOGENICITY IN HUMANS OF CRUDE OIL." IARC CONCLUDES THAT "CRUDE OIL IS NOT CLASSIFIABLE AS TO ITS CARCINOGENICITY TO HUMANS (GROUP 3)."

CRUDE OIL ADMINISTERED ORALLY TO PREGNANT RATS DURING GESTATION PRODUCED INCREASED NUMBER OF RESORPTIONS AND DECREASE IN FETAL WEIGHT AND LENGTH.

EXPOSURE TO OTHER COMPONENTS OF CRUDE OIL SUCH AS BENZENE, TOLUENE AND N-HEXANE HAVE ALSO BEEN SHOWN TO AFFECT REPRODUCTIVE CAPACITY AND/OR FETAL DEVELOPMENT IN LABORATORY ANIMALS. THE EXACT RELATIONSHIP BETWEEN THESE EFFECTS AND HUMANS IS NOT KNOWN. EXPOSURE TO N-HEXANE AT CONCENTRATIONS CONSIDERABLY HIGHER THAN THE CURRENT PERMISSIBLE EXPOSURE LIMIT HAS REPORTEDLY BEEN ASSOCIATED WITH PERIPHERAL NEUROPATHY.

CONTAINS BENZENE, A CHEMICAL KNOWN TO CAUSE CANCER IN HUMANS. REPEATED AND PROLONGED EXPOSURE TO BENZENE VAPORS MAY CAUSE ADVERSE EFFECTS AND CENTRAL NERVOUS SYSTEM, DISEASES OF THE BLOOD FORMING ORGANS, SUCH AS LEUKEMIA, AND ADVERSE EFFECTS ON THE IMMUNE SYSTEM. IN ANIMAL STUDIES AND IN WORKERS WITH CHRONIC BENZENE POISONING, ALTERATIONS IN STRUCTURE OF CHROMOSOMES IN BONE MARROW AND WHITE BLOOD CELLS HAVE BEEN OBSERVED. STUDIES WITH LABORATORY ANIMALS INDICATE THAT EXPOSURE TO HIGH LEVELS OF BENZENE VAPOR MAY CAUSE REPRODUCTIVE EFFECTS AND ADVERSE EFFECTS ON OFFSPRING OF PREGNANT ANIMALS.

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**COMPOSITION & EXPOSURE LIMITS (COMPONENTS AND EXP LIMITS)**

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COMPONENT1	CAS NO.	% COMPOSITION BY VOLUME2	EXPOSURE LIMITS			UNITS	TYPE
			ACGIH TLV	OSHA PEL3	ARCO EL		
CRUDE OIL, PETROLEUM	8002-05-9	EQ 100	N/AP	N/AP	N/AP		
WHICH CONTAINS:							
BENZENE	(1) (2) (3) (4) 71-43-2	AP 0.2 - 0.6	2.5 0.5	5 1	N/AP 1	PPM PPM	STEL TWA
BUTANE	106-97-8	AP 1.5 - 2.5	800	800	N/AP	PPM	TWA
PENTANE	109-66-0	AP 1.5 - 2.5	N/AP 600	750 600	N/AP N/AP	PPM PPM	STEL TWA
HEXANE (N-HEXANE)	110-54-3	AP 0.5 - 1.8	50	50	N/AP	PPM	TWA
TOLUENE	108-88-3	AP 0.5 - 1.5	N/AP 50	150 100	N/AP N/AP	PPM PPM	STEL TWA
XYLENE	1330-20-7	AP 0.3 - 1.4	150 100	150 100	N/AP N/AP	PPM PPM	STEL TWA
ISOPENTANE	78-78-4	AP 0.5 - 1.8	N/AP 600	750 600	N/AP N/AP	PPM PPM	STEL TWA

## OTHER APPLICABLE EXPOSURE GUIDELINES:

COAL TAR PITCH VOLATILES, AS BENZENE SOLUBLES (4)	65996-93-2		0.2	0.2	N/AP	MG/M3	TWA
OIL MIST, MINERAL	8012-95-1		10 5	N/AP 5	N/AP N/AP	MG/M3 MG/M3	STEL TWA
STODDARD SOLVENT	8052-41-3		100	100	N/AP	PPM	TWA

STODDARD SOLVENT EXPOSURE LIMITS ARE LISTED AS AN EXPOSURE GUIDELINE FOR HYDROCARBON VAPORS THAT MAY BE SIMILAR TO THOSE DERIVED FROM CRUDE OIL. SINCE SPECIFIC EXPOSURE STANDARDS OR CONTROL LIMITS HAVE NOT BEEN ESTABLISHED FOR THIS MATERIAL, THE EXPOSURE LIMITS SHOWN HERE ARE SUGGESTED AS MINIMUM CONTROL GUIDELINES.

1 CARCINOGEN DISPLAYED AFTER COMPONENT NAME. LISTED BY (1) NTP, (2) IARC, (3) OSHA, (4) OTHER

2 SEE ABBREVIATIONS ON LAST PAGE

3 THE OSHA EXPOSURE LIMITS WERE CHANGED IN 1993 DUE TO A FEDERAL COURT RULING. ARCO HAS CHOSEN TO LIST THE 1989 OSHA EXPOSURE LIMITS IN THIS DOCUMENT AS THEY ARE GENERALLY MORE STRINGENT AND THEREFORE MORE PROTECTIVE THAN THE CURRENT EXPOSURE LIMITS. (REFER TO 29 CFR 1910.1000).

## FIRE &amp; EXPLOSION HAZARD DATA (FIRE AND EXPLOSION)

FLASH POINT (METHOD)\* (BASED ON NFPA PETROLEUM, CRUDE): AP 20F TO 90F

AUTOIGNITION TEMPERATURE (METHOD)\*: N/DA

FLAMMABLE LIMITS (% VOL. IN AIR)\*: LOWER: AP 1 +  
UPPER: AP 8 +

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\* AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE  
+ BASED ON NFPA 325

NFPA HAZARD RATING: HEALTH: 2 = MODERATE  
FIRE: 3 = HIGH  
REACTIVITY: 0 = INSIGNIFICANT  
SPECIAL: = ---

FIRE AND EXPLOSION HAZARDS: HIGHLY FLAMMABLE! THIS MATERIAL RELEASES FLAMMABLE VAPORS AT OR BELOW AMBIENT TEMPERATURES. WHEN MIXED WITH AIR IN CERTAIN PROPORTIONS AND EXPOSED TO AN IGNITION SOURCE, THESE VAPORS CAN BURN IN THE OPEN OR EXPLODE IN CONFINED SPACES. FLAMMABLE VAPORS MAY TRAVEL LONG DISTANCES ALONG THE GROUND BEFORE REACHING A POINT OF IGNITION AND FLASHING BACK.

OPEN TOP TANKS INVOLVED IN A FIRE HAVE A POTENTIAL FOR "BOIL-OVER" IF WATER OR WATER-IN-OIL EMULSION IS AT THE BOTTOM OF THE TANK. BOIL-OVER MAY RESULT IN A LARGE EXPULSION OF BURNING OIL FROM THE TANK, GREATLY INCREASING THE FIRE AREA. FOR DETERMINING NATIONAL ELECTRICAL CODE (NEC) HAZARDOUS (CLASSIFIED) LOCATION REQUIREMENTS FOR ELECTRICAL INSTALLATIONS, CONSIDER THIS MATERIAL CLASS 1, GROUP D.

EXTINGUISHING MEDIA: FOAM, DRY CHEMICAL, CARBON DIOXIDE.

SPECIAL FIREFIGHTING PROCEDURES: FOR FIRES INVOLVING THIS MATERIAL, DO NOT ENTER ANY ENCLOSED OR CONFINED FIRE SPACE WITHOUT PROPER PROTECTIVE EQUIPMENT. THIS MAY INCLUDE SELF-CONTAINED BREATHING APPARATUS TO PROTECT AGAINST THE HAZARDOUS EFFECTS OF COMBUSTION PRODUCTS AND OXYGEN DEFICIENCIES. COOL TANKS AND CONTAINERS EXPOSED TO FIRE WITH WATER. IF FIREFIGHTERS CANNOT WORK UPWIND TO THE FIRE, RESPIRATORY PROTECTIVE EQUIPMENT MUST BE WORN UNLESS AND UNTIL ATMOSPHERIC MONITORING INDICATES THAT SUCH PROTECTION IS NOT REQUIRED. IMPROPER USE OF WATER AND EXTINGUISHING MEDIA CONTAINING WATER MAY CAUSE FROTHING WHICH CAN SPREAD THE FIRE OVER A LARGER AREA. WATER FOG OR SPRAY ARE OF VALUE FOR COOLING TANK SHELLS AND SURFACES EXPOSED TO FIRE, BUT MAY NOT ACHIEVE EXTINGUISHMENT.

**FIRE & EXPLOSION HAZARD DATA (STABILITY AND REACTIVITY)**

STABILITY: STABLE  
HAZARDOUS POLYMERIZATION: NOT EXPECTED TO OCCUR  
OTHER CHEMICAL REACTIVITY: N/AP

CONDITIONS TO AVOID: HEAT, SPARKS, AND OPEN FLAME.  
MATERIALS TO AVOID: STRONG ACIDS, ALKALIS, AND OXIDIZERS SUCH AS LIQUID CHLORINE AND OXYGEN.

HAZARDOUS OR DECOMPOSITION PRODUCTS: BURNING OR EXCESSIVE HEATING MAY PRODUCE CARBON MONOXIDE AND OTHER HARMFUL GASES OR VAPORS INCLUDING OXIDES OF SULFUR AND NITROGEN.

**PHYSICAL & CHEMICAL DATA (PHYSICAL AND CHEMICAL PROPERTIES)**

BOILING POINT: ..... AP -54F TO 1100 F  
VISCOSITY UNITS, TEMP. (METHOD): ..... N/DA  
DRY POINT: ..... N/AP  
FREEZING POINT: ..... N/DA  
VAPOR PRESSURE, TEMP. (METHOD): ..... AP 2.6 TO 6.4 AT 100F  
..... (REID-PSIA)

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..... (REID PSI AT 100 DEGREES)  
VOLATILE CHARACTERISTICS: ..... APPRECIABLE  
SPECIFIC GRAVITY (H<sub>2</sub>O = 1 AT 39.2F): ... AP 0.85 TO 0.87  
VAPOR SP. GR. (AIR = 1.0 AT 60-90F): ... N/DA  
SOLUBILITY IN WATER: ..... NEGLIGIBLE  
PH: ..... N/AP

APPEARANCE AND ODOR: THICK LIGHT YELLOW TO DARK BLACK COLORED LIQUID.  
PETROLEUM HYDROCARBON ODOR.

OTHER PHYSICAL AND CHEMICAL PROPERTIES: TOTAL SULFUR = APPROX. 0.9 TO 1.05  
WT%

HYDROGEN SULFIDE CONTENT IS LESS THAN 5 PPM DISSOLVED IN LIQUID  
VANADIUM = APPROX. 26 TO 100 PPM

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MFG. PROTECTIVE GEAR (EXPOSURE CONTROLS/PERSONAL PROTECTION)

ENGINEERING CONTROLS: WHERE POSSIBLE, USE ADEQUATE VENTILATION TO KEEP VAPOR AND MIST CONCENTRATIONS OF THIS MATERIAL BELOW THE OCCUPATIONAL EXPOSURE LIMITS SHOWN IN COMPOSITION & EXPOSURE LIMITS (COMPONENTS AND EXP LIMITS) SECTION. ELECTRICAL EQUIPMENT SHOULD COMPLY WITH NATIONAL ELECTRICAL CODE (NEC) STANDARDS.

RESPIRATORY: A NIOSH/MSHA-APPROVED AIR-PURIFYING RESPIRATOR WITH AN ORGANIC VAPOR CARTRIDGE MAY BE APPROPRIATE UNDER CERTAIN CIRCUMSTANCES WHERE AIRBORNE CONCENTRATIONS MAY EXCEED THE EXPOSURE LIMITS IN COMPOSITION & EXPOSURE LIMITS (COMPONENTS AND EXP LIMITS) SECTION. WHERE WORK CONDITIONS MAY GENERATE AIRBORNE MISTS OF THE MATERIAL, ALSO USE A HIGH-EFFICIENCY PARTICULATE PRE-FILTER.

NOTE: THE PROTECTION PROVIDED BY AIR-PURIFYING RESPIRATORS IS LIMITED. USE A POSITIVE PRESSURE AIR-SUPPLIED RESPIRATOR IF THERE IS ANY POTENTIAL FOR AN UNCONTROLLED RELEASE, IF EXPOSURE LEVELS ARE NOT KNOWN, OR IF CONCENTRATIONS EXCEED THE PROTECTION LIMITS OF THE AIR-PURIFYING RESPIRATOR. CONSULT A HEALTH AND SAFETY PROFESSIONAL FOR GUIDANCE IN RESPIRATOR SELECTION. RESPIRATOR USE SHOULD COMPLY WITH OSHA 29 CFR 1910.134.

EYES: EYE PROTECTION SHOULD BE WORN. IF THERE IS POTENTIAL FOR SPLASHING OR SPRAYING, CHEMICAL PROTECTIVE GOGGLES AND/OR A FACE SHIELD SHOULD BE WORN. IF CONTACT LENSES ARE WORN, CONSULT AN EYE SPECIALIST OR A SAFETY PROFESSIONAL FOR ADDITIONAL PRECAUTIONS. SUITABLE EYE WASH WATER SHOULD BE AVAILABLE IN CASE OF EYE CONTACT WITH THIS MATERIAL.

SKIN: AVOID ALL SKIN CONTACT WITH THIS MATERIAL. IF CONDITIONS OF USE PRESENT ANY POTENTIAL FOR SKIN CONTACT, CLEAN AND IMPERVIOUS CLOTHING SUCH AS GLOVES, APRON, BOOTS, AND FACIAL PROTECTION SHOULD BE WORN. NEOPRENE, NITRILE, BUTYL RUBBER OR VITON GLOVE MATERIAL IS RECOMMENDED. WHEN WORKING AROUND EQUIPMENT OR PROCESSES WHICH MAY CREATE THE POTENTIAL FOR SKIN CONTACT, FULL BODY COVERAGE SHOULD CONSIST OF IMPERVIOUS BOOTS AND OIL-RESISTANT COATED TYVEK SUIT OR OTHER IMPERVIOUS JACKET AND PANTS.

NON-IMPERVIOUS CLOTHING WHICH ACCIDENTALLY BECOMES CONTAMINATED WITH THIS MATERIAL SHOULD BE REMOVED PROMPTLY AND NOT REWORN UNTIL THE CLOTHING IS WASHED THOROUGHLY AND THE CONTAMINATION IS EFFECTIVELY REMOVED. DISCARD SOAKED LEATHER GOODS.

OTHER HYGIENIC AND WORK PRACTICES: USE GOOD PERSONAL HYGIENE PRACTICES. IF SKIN CONTACT SHOULD OCCUR, MATERIAL SHOULD BE REMOVED FROM THE SKIN WITH A WATERLESS HAND CLEANER, AND THE AFFECTED AREA SHOULD THEN BE WASHED WITH A

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MILD SOAP AND WATER. WASH HANDS AND OTHER EXPOSED AREAS THOROUGHLY BEFORE EATING, DRINKING, SMOKING OR USING TOILET FACILITIES.

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**ACCIDENTAL RELEASE MEASURES**

PRECAUTIONS IF MATERIAL IS SPILLED OR RELEASED: CONTAIN SPILL, EVACUATE NON-ESSENTIAL PERSONNEL, AND SAFELY STOP FLOW. ON HARD SURFACES, SPILLED MATERIAL MAY CREATE A SLIPPING HAZARD. EQUIP CLEANUP CREWS WITH PROPER PROTECTIVE EQUIPMENT (AS SPECIFIED IN MFG. PROTECTIVE GEAR (EXPOSURE CONTROLS/PERSONAL PROTECTION) SECTION) AND ADVISE OF HAZARDS. CLEAN UP BY RECOVERING AS MUCH SPILLED OR CONTAMINATED MATERIALS AS POSSIBLE AND PLACING INTO CLOSED CONTAINERS. CONSULT WITH AN ENVIRONMENTAL PROFESSIONAL FOR THE FEDERAL, STATE AND LOCAL CLEANUP AND REPORTING REQUIREMENTS FOR SPILLS AND RELEASES.

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**HANDLING AND STORAGE**

HANDLING, STORAGE AND DECONTAMINATION PROCEDURES: STORE AND TRANSPORT IN ACCORDANCE WITH ALL APPLICABLE LAWS. KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME! KEEP CONTAINERS CLOSED, PLAINLY LABELED AND OUT OF CLOSED VEHICLES! CONTAINERS SHOULD BE ABLE TO WITHSTAND PRESSURES EXPECTED FROM WARMING OR COOLING IN STORAGE. GROUND ALL DRUMS AND TRANSFER VESSELS WHEN HANDLING. STORE IN COOL (80F OR BELOW), WELL-VENTILATED LOCATION. ALL ELECTRICAL EQUIPMENT IN STORAGE AND/OR HANDLING AREAS SHOULD BE INSTALLED IN ACCORDANCE WITH APPLICABLE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC). KEEP OUT OF REACH OF CHILDREN! EMPTY CONTAINERS RETAIN SOME LIQUID AND VAPOR RESIDUES, AND HAZARD PRECAUTIONS MUST BE OBSERVED WHEN HANDLING EMPTY CONTAINERS.

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**ECOLOGICAL INFORMATION**

NOT AVAILABLE

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**DISPOSAL CONSIDERATIONS**

WASTE DISPOSAL METHODS: MAXIMIZE RECOVERY FOR REUSE OR RECYCLING. CONSULT ENVIRONMENTAL PROFESSIONAL TO DETERMINE IF STATE OR FEDERAL REGULATIONS WOULD CLASSIFY SPILLED OR CONTAMINATED MATERIALS AS A HAZARDOUS WASTE. USE ONLY APPROVED TRANSPORTERS, RECYCLERS, TREATMENT, STORAGE OR DISPOSAL FACILITIES. COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS PERTAINING TO WASTE MANAGEMENT.

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**TRANSPORT INFORMATION**

UN PROPER SHIPPING NAME: PETROLEUM CRUDE OIL  
UN HAZARD CLASS: 3  
UN NUMBER: UN1267  
UN PACKING GROUP: PGI

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**REGULATORY INFORMATION**

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA), TITLE III SECTION 311/312 HAZARD CATEGORIES:

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IMMEDIATE (ACUTE) HEALTH HAZARD  
DELAYED (CHRONIC) HEALTH HAZARD  
FIRE HAZARD

SECTION 313:

THIS PRODUCT CONTAINS THE FOLLOWING CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS ESTABLISHED BY SARA TITLE III

BENZENE  
TOLUENE

TOXIC SUBSTANCES CONTROL ACT (TSCA)  
ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY.

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT (CERCLA)

THIS MATERIAL IS COVERED BY CERCLA'S PETROLEUM EXEMPTION.  
(REFER TO 40 CFR 307.14)

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 - PROPOSITION 65

PROP 65 WARNING LABEL:

CHEMICALS KNOWN TO THE STATE TO CAUSE CANCER, BIRTH DEFECTS, OR OTHER REPRODUCTIVE HARM ARE FOUND IN GASOLINE, CRUDE OIL, AND MANY OTHER PETROLEUM PRODUCTS AND THEIR VAPORS, OR RESULT FROM THEIR USE. READ AND FOLLOW LABEL DIRECTIONS AND USE CARE WHEN HANDLING OR USING ALL PETROLEUM PRODUCTS.

WARNING: THIS PRODUCT CONTAINS THE FOLLOWING CHEMICAL(S) LISTED BY THE STATE OF CALIFORNIA AS KNOWN TO CAUSE CANCER OR BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

BENZENE (C) (R)  
TOLUENE (R)

OTHER PROP 65 CHEMICALS MAY RESULT FROM THE USE OF THIS MATERIAL. FOR EXAMPLE, BURNING FUELS PRODUCES COMBUSTION PRODUCTS INCLUDING CARBON MONOXIDE, A PROP 65 REPRODUCTIVE TOXIN. FURTHER EVALUATION FOR PROP 65 COMPLIANCE MAY BE REQUIRED WHEN USING THIS MATERIAL.

(C) = CARCINOGEN  
(R) = BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM

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OTHER INFORMATION

GENERAL COMMENTS: THE INFORMATION AND CONCLUSIONS HEREIN REFLECT NORMAL OPERATING CONDITIONS AND MAY BE FROM SOURCES OTHER THAN DIRECT TEST DATA ON THE MIXTURE ITSELF.

ABBREVIATIONS:

EQ = EQUAL	AP = APPROXIMATELY	N/P = NO APPLICABLE INFORMATION FOUND
LT = LESS THAN	UK = UNKNOWN	N/AP = NOT APPLICABLE
GT = GREATER THAN	TR = TRACE	N/DA = NO DATA AVAILABLE

DISCLAIMER OF LIABILITY: THE INFORMATION IN THIS MSDS WAS OBTAINED FROM SOURCES WHICH WE BELIEVE ARE RELIABLE. HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, REGARDING ITS CORRECTNESS.

THE CONDITIONS OR METHODS OF HANDLING, STORAGE, USE AND DISPOSAL OF THE

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MSDS Data

CRUDE OIL (ANS TYPE)

RS00197

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PRODUCT ARE BEYOND OUR CONTROL AND MAY BE BEYOND OUR KNOWLEDGE. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.

THIS MSDS WAS PREPARED AND IS TO BE USED ONLY FOR THIS PRODUCT. IF THE PRODUCT IS USED AS A COMPONENT IN ANOTHER PRODUCT, THIS MSDS INFORMATION MAY NOT BE APPLICABLE.

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