

Diesel  
(LOW ROAD)



MARATHON ASHLAND  
Petroleum LLC

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: MAPLLC NO. 2 FUEL OIL (0.05% SULFUR MAX)  
MSDS NO: 0115MAR019

THE FOLLOWING INFORMATION IS FURNISHED SUBJECT TO THE DISCLAIMER ON THE BOTTOM OF THIS FORM

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

PRODUCT NAME: MAPLLC NO. 2 FUEL OIL (0.05% SULFUR MAX)

MANUFACTURER / DISTRIBUTOR:  
MARATHON ASHLAND PETROLEUM LLC  
539 SOUTH MAIN STREET  
FINDLAY OH 45840

SYNONYMS:  
D-GRADE NO. 2 DIESEL FUEL; LOW SULFUR NO. 2 DIESEL FUEL; LOW SULFUR NO. 2 FUEL OIL; MAPLLC NO. 2 FUEL OIL (0.05% SULFUR MAX); NO. 2 DIESEL FUEL 0.05 SULFUR MAX; NO. 2 FUEL OIL 0.05 SULFUR MAX

EMERGENCY PHONE NUMBERS:  
(877) 627-5463  
(800) 424-9300

CHEMICAL FAMILY: PETROLEUM HYDROCARBON  
CHEMICAL FORMULA: MIXTURE  
PRODUCT CODE: NONE

MSDS INFORMATION: (419) 421-3070  
MSDS REVISION DATE: 07/28/1998

INFORMATION SUPPLIED BY: CRAIG M. PARKER  
MANAGER, TOXICOLOGY AND PRODUCT SAFETY

2. COMPOSITION / INFORMATION ON INGREDIENTS

PRODUCT INFORMATION:

MAPLLC NO. 2 FUEL OIL (0.05% SULFUR MAX) (CAS # 68476-30-2) IS A/AN COMPLEX MIXTURE OF PARAFFINS, CYCLOPARAFFINS, OLEFINS AND AROMATIC HYDROCARBONS HAVING HYDROCARBON CHAIN LENGTHS PREDOMINANTLY IN THE RANGE OF C11 THROUGH C20. CONTAINS MINOR AMOUNTS OF SULFUR (<0.05%). MAY CONTAIN A TRACE AMOUNT OF BENZENE (<0.01%).

\*\*\*  
CAN CONTAIN SMALL AMOUNTS OF OTHER ADDITIVES (>0.15%) WHICH ARE NOT CONSIDERED HAZARDOUS AT THE CONCENTRATIONS USED.

| COMPONENTS:   | PERCENT RANGE | CAS NUMBER |
|---|---------------|------------|
| SATURATED HYDROCARBONS (PARAFFINS AND CYCLOPARAFFINS) | 54.00- 85.00  | MIXTURE    |
| AROMATIC HYDROCARBONS                                 | 15.00- 45.00  | MIXTURE    |
| UNSATURATED HYDROCARBONS (OLEFINS)                    | 1.00- 6.00    | MIXTURE    |

| EXPOSURE GUIDELINES | LIMIT | TYPE | SOURCE |
|---------------------|-------|------|--------|
|---------------------|-------|------|--------|

|  |      |             |  |
|--|------|-------------|--|
| PRODUCT:                                 |      |             |  |
| MAPLLC NO. 2 FUEL OIL (0.05% SULFUR MAX) | NONE | ESTABLISHED |  |

|                        |      |             |  |
|------------------------|------|-------------|--|
| COMPONENTS:            |      |             |  |
| SATURATED HYDROCARBONS | NONE | ESTABLISHED |  |



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**2. COMPOSITION / INFORMATION ON INGREDIENTS (CON'T)**

| <u>EXPOSURE GUIDELINES</u> | <u>LIMIT</u>     | <u>TYPE</u> | <u>SOURCE</u> |
|----------------------------|------------------|-------------|---------------|
| AROMATIC HYDROCARBONS      | NONE ESTABLISHED |             |               |
| UNSATURATED HYDROCARBONS   | NONE ESTABLISHED |             |               |

**3. HAZARDS IDENTIFICATION**

\*\*\*\*\* EMERGENCY OVERVIEW \*\*\*\*\*

\* NO. 2 FUEL OIL IS A CLEAR TO AMBER LIQUID. NO. 2 FUEL OIL IS CONSIDERED TO  
 \* BE A COMBUSTIBLE LIQUID PER THE OSHA HAZARD COMMUNICATION STANDARD AND  
 \* SHOULD BE KEPT AWAY FROM HEAT, FLAME AND SOURCES OF IGNITION. NEVER SIPHON  
 \* THIS PRODUCT BY MOUTH. IF SWALLOWED, FUEL OIL MAY GET SUCKED INTO THE  
 \* LUNGS (ASPIRATED) AND CAUSE LUNG DAMAGE OR EVEN DEATH. PROLONGED OR  
 \* REPEATED SKIN CONTACT CAN CAUSE DEFATTING AND DRYING OF THE SKIN WHICH MAY  
 \* PRODUCE SEVERE IRRITATION OR DERMATITIS.

\* OSHA WARNING LABEL:

\* WARNING!  
 \* COMBUSTIBLE LIQUID.  
 \* ASPIRATION (INADVERTENT SUCTION) OF LIQUID INTO THE LUNGS  
 \* CAN PRODUCE CHEMICAL PNEUMONIA OR EVEN DEATH.  
 \* PRODUCES SKIN IRRITATION UPON PROLONGED OR REPEATED CONTACT.

\*\*\*\*\*

POTENTIAL HEALTH EFFECTS

EYE:

PRODUCES LITTLE OR NO IRRITATION ON DIRECT CONTACT WITH THE EYE.

SKIN:

PROLONGED AND REPEATED LIQUID CONTACT CAN CAUSE DEFATTING AND DRYING OF THE SKIN WHICH MAY PRODUCE SEVERE IRRITATION OR DERMATITIS.

INHALATION:

HIGH VAPOR CONCENTRATIONS MAY PRODUCE HEADACHE, GIDDINESS, VERTIGO, AND ANESTHETIC STUPOR.

INGESTION:

INGESTION MAY RESULT IN NAUSEA, VOMITING, DIARRHEA AND RESTLESSNESS. ASPIRATION (INADVERTENT SUCTION) OF LIQUID INTO THE LUNGS MUST BE AVOIDED AS EVEN SMALL QUANTITIES IN THE LUNGS CAN PRODUCE CHEMICAL PNEUMONITIS, PULMONARY EDEMA/HEMORRHAGE AND EVEN DEATH.



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3. HAZARDS IDENTIFICATION (CON'T)

CARCINOGEN LISTING:

THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) HAS DETERMINED THAT THERE IS INADEQUATE EVIDENCE FOR THE CARCINOGENICITY OF FUEL OIL IN HUMANS.

IARC HAS DETERMINED THAT THERE IS SUFFICIENT EVIDENCE FOR THE CARCINOGENICITY IN EXPERIMENTAL ANIMALS OF WHOLE ENGINE EXHAUST AND EXTRACTS OF DIESEL ENGINE EXHAUST PARTICLES. IARC DETERMINED THAT THERE IS ONLY LIMITED EVIDENCE FOR THE CARCINOGENICITY IN HUMANS OF DIESEL ENGINE EXHAUST. HOWEVER, IARC'S OVERALL EVALUATION HAS RESULTED IN THE IARC DESIGNATION OF DIESEL ENGINE EXHAUST AS PROBABLY CARCINOGENIC TO HUMANS (GROUP 2A) BECAUSE OF THE PRESENCE OF CERTAIN ENGINE EXHAUST COMPONENTS.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

PREEXISTING SKIN CONDITIONS AND RESPIRATORY DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO COMPONENTS OF FUEL OILS.

4. FIRST AID MEASURES

EYE:

FLUSH EYES WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. IF SYMPTOMS OR IRRITATION OCCUR, CALL A PHYSICIAN.

SKIN:

WASH WITH SOAP AND LARGE AMOUNTS OF WATER. REMOVE CONTAMINATED CLOTHING. IF SYMPTOMS OF IRRITATION OCCUR, CALL A PHYSICIAN.

INHALATION:

IF AFFECTED, MOVE PERSON TO FRESH AIR. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. IF NOT BREATHING OR NO HEARTBEAT, GIVE ARTIFICIAL RESPIRATION OR CARDIOPULMONARY RESUSCITATION (CPR). IMMEDIATELY CALL A PHYSICIAN.

INGESTION:

DO NOT INDUCE VOMITING. DO NOT GIVE LIQUIDS. IMMEDIATELY CALL A PHYSICIAN.

NOTES TO PHYSICIAN:

NO DATA AVAILABLE.



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5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

FLASH POINT: 130-190 F  
AUTOIGNITION TEMP: 637 F  
EXPLOSIVE LIMITS (% BY VOLUME IN AIR)  
LOWER: 0.7  
UPPER: 5.0

FIRE AND EXPLOSION HAZARDS:

THIS PRODUCT HAS BEEN DETERMINED TO BE A COMBUSTIBLE LIQUID PER THE OSHA HAZARD COMMUNICATION STANDARD AND SHOULD BE HANDLED ACCORDINGLY. FOR ADDITIONAL FIRE RELATED INFORMATION, SEE NFPA 30 OR THE NORTH AMERICAN EMERGENCY RESPONSE GUIDE 128.

EXTINGUISHING MEDIA:

FOR SMALL FIRES, CLASS B FIRE EXTINGUISHING MEDIA SUCH AS CO2, DRY CHEMICAL, FOAM (AFFF/ATC) OR WATER SPRAY CAN BE USED. FOR LARGE FIRES, WATER SPRAY, FOG OR FOAM (AFFF/ATC) CAN BE USED. FIRE FIGHTING SHOULD BE ATTEMPTED ONLY BY THOSE WHO ARE ADEQUATELY TRAINED AND EQUIPPED WITH PROPER PROTECTIVE EQUIPMENT.

SPECIAL FIRE FIGHTING INSTRUCTIONS:

AVOID USE OF STRAIGHT WATER STREAMS. WATER SPRAY AND FOAM (AFFF/ATC) MUST BE APPLIED CAREFULLY TO AVOID FROTHING. AVOID EXCESSIVE APPLICATION. USE WATER SPRAY TO COOL EXPOSED SURFACES FROM AS FAR A DISTANCE AS POSSIBLE. KEEP RUN-OFF WATER OUT OF SEWERS AND WATER SOURCES.

6. ACCIDENTAL RELEASE MEASURES

ISOLATE AND EVACUATE AREA. SHUT OFF SOURCE IF SAFE TO DO SO. ELIMINATE ALL IGNITION SOURCES. ADVISE NATIONAL RESPONSE CENTER (800-424-8802) IF SUBSTANCE HAS ENTERED A WATERWAY. NOTIFY LOCAL HEALTH AND POLLUTION CONTROL AGENCIES, IF APPROPRIATE. CONTAIN LIQUID WITH SAND OR SOIL. RECOVER AND RETURN FREE LIQUID TO PROPER CONTAINERS. USE SUITABLE ABSORBENT MATERIALS SUCH AS VERMICULITE, SAND, OR CLAY TO CLEAN UP RESIDUAL LIQUIDS.



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**7. HANDLING AND STORAGE**

COMPLY WITH ALL APPLICABLE OSHA, NFPA AND CONSISTENT LOCAL REQUIREMENTS. USE APPROPRIATE GROUNDING AND BONDING PRACTICES. STORE IN PROPERLY CLOSED CONTAINERS THAT ARE APPROPRIATELY LABELED AND IN A COOL, WELL-VENTILATED AREA. DO NOT EXPOSE TO HEAT, OPEN FLAME, STRONG OXIDIZERS OR OTHER SOURCES OF IGNITION. DO NOT CUT, DRILL, GRIND OR WELD ON EMPTY CONTAINERS SINCE THEY MAY CONTAIN EXPLOSIVE RESIDUES. AVOID REPEATED AND PROLONGED SKIN CONTACT. EXERCISE GOOD PERSONAL HYGIENE INCLUDING REMOVAL OF SOILED CLOTHING AND PROMPT WASHING WITH SOAP AND WATER. NEVER SIPHON THIS PRODUCT BY MOUTH.

**8. EXPOSURE CONTROL / PERSONAL PROTECTION**

ENGINEERING CONTROLS:

LOCAL OR GENERAL EXHAUST REQUIRED WHEN SPRAYING OR USING AT ELEVATED TEMPERATURES.

PERSONAL PROTECTIVE EQUIPMENT:

RESPIRATORY PROTECTION:

USE APPROVED ORGANIC VAPOR CHEMICAL CARTRIDGE OR SUPPLIED AIR RESPIRATORS WHEN MATERIAL PRODUCES VAPORS THAT EXCEED PERMISSIBLE LIMITS OR EXCESSIVE VAPORS ARE GENERATED. OBSERVE RESPIRATOR PROTECTION FACTOR CRITERIA CITED IN ANSI Z88.2. SELF-CONTAINED BREATHING APPARATUS SHOULD BE USED FOR FIRE FIGHTING.

SKIN PROTECTION:

NEOPRENE, NITRILE, POLYVINYL ALCOHOL (PVA), POLYVINYL CHLORIDE AND POLYURETHANE GLOVES TO PREVENT SKIN CONTACT.

EYE PROTECTION:

NO SPECIAL EYE PROTECTION IS NORMALLY REQUIRED. WHERE SPLASHING IS POSSIBLE, WEAR SAFETY GLASSES WITH SIDE SHIELDS.

OTHER PROTECTIVE EQUIPMENT:

NO SPECIAL PROTECTIVE CLOTHING IS NORMALLY REQUIRED. SELECT PROTECTIVE CLOTHING DEPENDING ON INDUSTRIAL OPERATIONS.

USE MECHANICAL VENTILATION EQUIPMENT THAT IS EXPLOSION-PROOF.



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9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: 400-640 F  
MELTING POINT: NO DATA AVAILABLE  
SPECIFIC GRAVITY (H2O=1): C.A. 0.8  
PACKING DENSITY (KG/M3): NO DATA AVAILABLE  
% SOLUBILITY IN WATER: NEGLIGIBLE  
VAPOR DENSITY (AIR=1): 4-5  
VAPOR PRESSURE: 1-10 MMHG @ 100 F  
PH INFORMATION: NO DATA AVAILABLE  
% VOLATILES BY VOL: NO DATA AVAILABLE  
EVAPORATION RATE: NO DATA AVAILABLE  
APPEARANCE: CLEAR TO AMBER LIQUID  
ODOR: SLIGHT HYDROCARBON  
ODOR THRESHOLD (PPM): NO DATA AVAILABLE

ADDITIONAL PROPERTIES:

DENSITY: 6.76 LBS/GALLON  
AVERAGE MOLECULAR WEIGHT: 180

10. STABILITY AND REACTIVITY

STABILITY:

THE MATERIAL IS STABLE AT 70 F, 760MM PRESSURE.

CONDITIONS TO AVOID:

EXCESSIVE HEAT, SOURCES OF IGNITION.

HAZARDOUS DECOMPOSITION PRODUCTS:

CARBON MONOXIDE, ALDEHYDES, AROMATIC, OTHER HYDROCARBONS.

INCOMPATIBLE MATERIALS:

STRONG OXIDIZERS SUCH AS NITRATES, PERCHLORATES, CHLORINE, FLUORINE.

HAZARDOUS POLYMERIZATION:

WILL NOT OCCUR.

CONDITIONS TO AVOID:

NO DATA AVAILABLE.

ADDITIONAL COMMENTS:

NO DATA AVAILABLE.



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### 11. TOXICOLOGICAL INFORMATION

LIFETIME SKIN PAINTING STUDIES IN ANIMALS WITH SIMILAR DISTILLATE FUELS HAVE PRODUCED WEAK TO MODERATE CARCINOGENIC ACTIVITY FOLLOWING PROLONGED AND REPEATED EXPOSURE. SIMILAR MIDDLE DISTILLATES, WHEN TESTED AT NONIRRITATING DOSE LEVELS, DID NOT SHOW ANY SIGNIFICANT CARCINOGENIC ACTIVITY INDICATING THAT THIS TUMORIGENIC RESPONSE IS LIKELY RELATED TO CHRONIC IRRITATION AND NOT TO DOSE. REPEATED DERMAL APPLICATION HAS PRODUCED SEVERE IRRITATION AND SYSTEMIC TOXICITY IN SUBACUTE TOXICITY STUDIES. SOME COMPONENTS OF DISTILLATE FUELS, I.E., PARAFFINS AND OLEFINS, HAVE BEEN SHOWN TO PRODUCE A SPECIES SPECIFIC, SEX HORMONAL DEPENDENT KIDNEY LESION IN MALE RATS FROM REPEATED ORAL OR INHALATION EXPOSURE. SUBSEQUENT RESEARCH HAS SHOWN THAT THE KIDNEY DAMAGE DEVELOPS VIA THE FORMATION OF ALPHA-2U-GLOBULIN, A MECHANISM UNIQUE TO THE MALE RAT. HUMANS DO NOT FORM ALPHA-2U-GLOBULIN, THEREFORE, THE KIDNEY EFFECTS RESULTING FROM THIS MECHANISM ARE NOT RELEVANT IN HUMANS. KEROSENE AND NO.1 FUEL OIL WERE FOUND TO BE POSITIVE IN A FEW MUTAGENICITY TESTS WHILE NEGATIVE IN THE MAJORITY OF OTHERS. THE EXACT RELATIONSHIP BETWEEN THESE RESULTS AND HUMAN HEALTH IS NOT KNOWN.

COMBUSTION OF KEROSENE AND/OR DIESEL FUELS PRODUCES GASES AND PARTICULATES WHICH INCLUDE CARBON MONOXIDE, CARBON DIOXIDE, OXIDES OF NITROGEN AND/OR SULFUR AND HYDROCARBONS. EXPOSURE TO HIGH CONCENTRATIONS OF CARBON MONOXIDE CAN CAUSE HYPOXIA VIA THE FORMATION OF CARBOXYHEMOGLOBIN. CHRONIC INHALATION STUDIES OF WHOLE DIESEL ENGINE EXHAUST IN MICE AND RATS PRODUCED A SIGNIFICANT INCREASE IN LUNG TUMORS.

### 12. ECOLOGICAL INFORMATION

LIQUID CAN BE TOXIC TO AQUATIC LIFE AND CAUSE FOULING OF THE SHORELINE AT HIGH CONCENTRATIONS. THE AQUATIC 24 HOUR TLM IS 2,990 PPM IN FRESHWATER BLUEGILL FISH. HOWEVER, KEROSENE AND FUEL OILS DO NOT BIOCONCENTRATE IN THE FOOD CHAIN. IF PRODUCT IS RELEASED TO SOIL OR WATER, IT IS EXPECTED TO BIODEGRADE UNDER BOTH AEROBIC AND ANAEROBIC CONDITIONS.

### 13. DISPOSAL CONSIDERATIONS

THIS PRODUCT AS PRODUCED IS NOT SPECIFICALLY LISTED AS AN EPA RCRA HAZARDOUS WASTE ACCORDING TO FEDERAL REGULATIONS (40 CFR 260-271). HOWEVER, WHEN DISCARDED OR DISPOSED OF, IT MAY MEET THE CRITERIA OF AN "IGNITABLE" HAZARDOUS WASTE. THIS MATERIAL COULD ALSO BECOME A HAZARDOUS WASTE IF MIXED OR CONTAMINATED WITH A LISTED HAZARDOUS WASTE. IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE IF DISPOSAL MATERIAL IS HAZARDOUS ACCORDING TO FEDERAL, STATE AND LOCAL REGULATIONS.



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14. TRANSPORTATION INFORMATION

49 CFR 172.101:

PROPER SHIPPING NAME: FUEL OIL, NO. 2  
DOT CLASSIFICATION: 3  
DOT IDENTIFICATION NUMBER: NA 1993  
PACKING GROUP: PG III

15. REGULATORY INFORMATION

THE FOLLOWING REGULATIONS APPLY TO THIS PRODUCT:

OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200):

THIS PRODUCT HAS BEEN EVALUATED AND DETERMINED TO BE HAZARDOUS AS DEFINED IN OSHA'S HAZARD COMMUNICATION STANDARD.

EPA TOXIC SUBSTANCES CONTROL ACT (40 CFR PART 710):

THIS PRODUCT AND/OR ITS COMPONENTS ARE LISTED ON THE TSCA CHEMICAL INVENTORY.

EPA SARA TITLE III (SUPERFUND AMENDMENTS & REAUTHORIZATION ACT) - SECTIONS 302, 304, 311, 312 AND 313:

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR PART 355): NONE.

SECTION 304 - EMERGENCY RELEASE NOTIFICATIONS (40 CFR PART 355): NONE.

SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR PART 370):

THE FOLLOWING EPA HAZARD CATEGORIES APPLY TO THIS PRODUCT:

IMMEDIATE (ACUTE) HEALTH HAZARD  
FIRE HAZARD

MSDS'S OR A LIST OF MSDS'S AND THEIR HAZARDS (SEE EPA HAZARD CATEGORIES ABOVE) MAY BE REQUIRED TO BE SUBMITTED TO THE STATE EMERGENCY RESPONSE COMMISSION (SERC), LOCAL EMERGENCY PLANNING COMMITTEE (LEPC) AND LOCAL FIRE DEPARTMENT (LFD) PER SECTION 311 REQUIREMENTS.

PER SECTION 312 REQUIREMENTS, A TIER II OR TIER I FORM MAY BE REQUIRED TO BE SUBMITTED ANNUALLY TO THE SERC, LEPC AND LFD IF APPLICABLE THRESHOLD REPORTING QUANTITIES ARE EXCEEDED. CURRENT FEDERAL THRESHOLDS ARE:

10,000 POUNDS OR MORE OF AN OSHA HAZARDOUS SUBSTANCE  
OR  
500 POUNDS OR THE THRESHOLD PLANNING QUANTITY WHICHEVER IS LESS,  
OF AN EXTREMELY HAZARDOUS SUBSTANCE.

NOTE: THRESHOLDS MAY VARY ACCORDING TO LOCAL AND STATE REGULATIONS.

SECTION 313 - TOXIC CHEMICAL RELEASE REPORTING (40 CFR PART 372):

THIS PRODUCT CONTAINS THE FOLLOWING COMPONENT(S) (AT A LEVEL OF 1% OR GREATER IF HAZARDOUS; 0.1% OR GREATER IF CARCINOGENIC) THAT IS/ARE IDENTIFIED ON THE SECTION 313 TOXIC CHEMICAL LIST: NONE.





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16. OTHER INFORMATION

NFPA CLASSIFICATION

HEALTH: 1  
FIRE: 2  
REACTIVITY: 1  
OTHER: -

HMS CLASSIFICATION

HEALTH: 1  
FIRE: 2  
REACTIVITY: 1  
PERSONAL PROTECTION: \*

HAZARD RATING

0 - LEAST  
1 - SLIGHT  
2 - MODERATE  
3 - HIGH  
4 - EXTREME

COMMENTS:

\* SEE SECTION 8 FOR GUIDANCE IN SELECTION OF PERSONAL PROTECTIVE EQUIPMENT.

\*\*\* DISCLAIMER \*\*\*

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