======================================================================= Mixer

 Mixer

 PROGRAM MIXER Mixer

 ============= Mixer

 VERSION 76-1 (NOVEMBER 1976) Mixer

 VERSION 81-1 (APRIL 1981) \*IBM VERSION Mixer

 VERSION 82-1 (AUGUST 1982) \*COMPUTER INDEPENDENT VERSION Mixer

 VERSION 84-1 (JUNE 1984) \*SPECIAL I/O ROUTINES TO GUARANTEE Mixer

 ACCURACY OF ENERGY. Mixer

 \*DOUBLE PRECISION TREATMENT OF ENERGY Mixer

 (REQUIRED FOR NARROW RESONANCES). Mixer

 VERSION 86-1 (JANUARY 1986)\*FORTRAN-77/H VERSION Mixer

 VERSION 88-1 (JULY 1988) \*OPTION...INTERNALLY DEFINE ALL I/O Mixer

 FILE NAMES (SEE, SUBROUTINE FILIO1 Mixer

 AND FILIO2 FOR DETAILS). Mixer

 \*IMPROVED BASED ON USER COMMENTS. Mixer

 VERSION 89-1 (JANUARY 1989)\*PSYCHOANALYZED BY PROGRAM FREUD TO Mixer

 INSURE PROGRAM WILL NOT DO ANYTHING Mixer

 CRAZY. Mixer

 \*UPDATED TO USE NEW PROGRAM CONVERT Mixer

 KEYWORDS. Mixer

 \*ADDED LIVERMORE CIVIC COMPILER Mixer

 CONVENTIONS. Mixer

 VERSION 92-1 (JANUARY 1992)\*UPDATED BASED ON USER COMMENTS Mixer

 \*ADDED PHOTON CROSS SECTIONS Mixer

 \*ADDED FORTRAN SAVE OPTION Mixer

 \*OUTPUT IN ENDF/B-VI FORMAT Mixer

 \*COMPLETELY CONSISTENT I/O ROUTINES - Mixer

 TO MINIMIZE COMPUTER DEPENDENCE. Mixer

 \*NOTE, CHANGE IN INPUT PARAMETER Mixer

 FORMAT. Mixer

 VERSION 94-1 (JANUARY 1994)\*VARIABLE ENDF/B DATA FILENAMES Mixer

 TO ALLOW ACCESS TO FILE STRUCTURES Mixer

 (WARNING - INPUT PARAMETER FORMAT Mixer

 HAS BEEN CHANGED) Mixer

 \*CLOSE ALL FILES BEFORE TERMINATING Mixer

 (SEE, SUBROUTINE ENDIT) Mixer

 \*INCREASED INCORE PAGE SIZE FROM Mixer

 1002 TO 4008. Mixer

 VERSION 96-1 (JANUARY 1996) \*COMPLETE RE-WRITE Mixer

 \*IMPROVED COMPUTER INDEPENDENCE Mixer

 \*ALL DOUBLE PRECISION Mixer

 \*ON SCREEN OUTPUT Mixer

 \*UNIFORM TREATMENT OF ENDF/B I/O Mixer

 \*IMPROVED OUTPUT PRECISION Mixer

 \*DEFINED SCRATCH FILE NAMES Mixer

 \*INCREASED INCORE PAGE SIZE FROM Mixer

 4008 TO 12000. Mixer

 VERSION 99-1 (MARCH 1999) \*CORRECTED CHARACTER TO FLOATING Mixer

 POINT READ FOR MORE DIGITS Mixer

 \*UPDATED TEST FOR ENDF/B FORMAT Mixer

 VERSION BASED ON RECENT FORMAT CHANGE Mixer

 \*GENERAL IMPROVEMENTS BASED ON Mixer

 USER FEEDBACK Mixer

 VERSION 99-2 (JUNE 1999) \*ASSUME ENDF/B-VI, NOT V, IF MISSING Mixer

 MF=1, MT-451. Mixer

 VERS. 2000-1 (FEBRUARY 2000)\*GENERAL IMPROVEMENTS BASED ON Mixer

 USER FEEDBACK Mixer

 VERS. 2002-1 (MAY 2002) \*OPTIONAL INPUT PARAMETERS Mixer

 VERS. 2004-1 (MARCH 2004) \*ADDED INCLUDE FOR COMMON Mixer

 \*INCREASED INCORE PAGE SIZE FROM Mixer

 12000 TO 60000. Mixer

 VERS. 2005-1 (OCT. 2005) \*CORRECTED MERGE ERROR Mixer

 VERS. 2007-1 (JAN. 2007) \*CHECKED AGAINST ALL ENDF/B-VII Mixer

 \*INCREASED INCORE PAGE SIZE FROM Mixer

 60,000 TO 240,000. Mixer

 VERS. 2007-2 (DEC. 2007) \*72 CHARACTER FILE NAMES. Mixer

 VERS. 2008-1 (JUNE 2008) \*ADDED GRAMS OR ATOMS INPUT Mixer

 VERS. 2010-1 (Apr. 2010) \*General update based on user feedback Mixer

 VERS. 2012-1 (Aug. 2012) \*Added CODENAME Mixer

 \*32 and 64 bit Compatible Mixer

 \*Added ERROR stop Mixer

 VERS. 2015-1 (Jan. 2015) \*Extended OUT9. Mixer

 \*Replaced ALL 3 way IF Statements. Mixer

 Mixer

 OWNED, MAINTAINED AND DISTRIBUTED BY Mixer

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 THE NUCLEAR DATA SECTION Mixer

 INTERNATIONAL ATOMIC ENERGY AGENCY Mixer

 P.O. BOX 100 Mixer

 A-1400, VIENNA, AUSTRIA Mixer

 EUROPE Mixer

 Mixer

 ORIGINALLY WRITTEN BY Mixer

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 Dermott E. Cullen Mixer

 Mixer

 PRESENT CONTACT INFORMATION Mixer

 --------------------------- Mixer

 Dermott E. Cullen Mixer

 1466 Hudson Way Mixer

 Livermore, CA 94550 Mixer

 U.S.A. Mixer

 Telephone 925-443-1911 Mixer

 E. Mail RedCullen1@Comcast.net Mixer

 Website http://home.comcast.net/~redcullen1 Mixer

 Mixer

 PURPOSE Mixer

 ------- Mixer

 THIS PROGRAM IS DESIGNED TO CALCULATE THE ENERGY DEPENDENT CROSS Mixer

 SECTION FOR A COMPOSITE MIXTURE OF UP TO 10 DIFFERENT MATERIALS. Mixer

 Mixer

 THE PRESENT VERSION WILL ONLY CALCULATE THE CROSS SECTION FOR ONE Mixer

 FINAL REACTION (ENDF/B SECTION), E.G. TOTAL CROSS SECTION, BUT NOT Mixer

 ANY OTHER REACTION. Mixer

 Mixer

 NOTE, THIS PROGRAM WILL NOT COMBINE ALL REACTIONS FOR A MIXTURE Mixer

 OF MATERIALS DURING A SINGLE RUN - ONLY ONE REACTION WILL BE Mixer

 CREATED PER RUN. Mixer

 Mixer

 EVALUATED DATA FORMAT Mixer

 --------------------- Mixer

 THE CROSS SECTIONS ARE READ FROM THE ENDF/B FORMAT AND THE Mixer

 COMPOSITE CROSS SECTION IS CONVERTED TO AN EQUIVALENT BARNS/ATOM Mixer

 FORM AND OUTPUT IN THE ENDF/B FORMAT WITH AN EQUIVALENT ATOMIC Mixer

 WEIGHT. THE USER MUST SPECIFY THE COMPOSITION BY GIVING THE ZA, Mixer

 MT AND GRAMS OR ATOMS OF EACH CONSTITUENT. IN ADDITION THE USER Mixer

 IDENTIFY THE COMPOSITE CROSS SECTION BY SPECIFYING THE ZA, MAT Mixer

 AND MT TO BE USED IN THE ENDF/B FORMATTED OUTPUT. Mixer

 Mixer

 SINCE ONLY THE CROSS SECTIONS IN FILE 3 AND 23 ARE USED, AND THE Mixer

 FORMAT FOR FILE 3/23 IS THE SAME IN ALL VERSIONS ON ENDF/B, THIS Mixer

 PROGRAM MAY BE USED WITH ANY VERSION OF ENDF/B DATA (I.E., Mixer

 ENDF/B-I, II, III, IV, V OR VI). DURING A SINGLE RUN IT MAY EVEN Mixer

 BE USED TO READ AND COMBINE EVALUATIONS WHICH ARE IN DIFFERENT Mixer

 VERSIONS OF THE ENDF/B FORMAT. Mixer

 Mixer

 ENDF/B FORMATTED OUTPUT WILL BE IN THE ENDF/B-VI FORMAT REGARDLESS Mixer

 OF THE FORMAT OF THE INPUT ENDF/B DATA. THIS WILL ONLY EFFECT THE Mixer

 HOLLERITH SECTION (MF=1, MT=451). THE FORMAT OF CROSS SECTIONS Mixer

 (MF=3) IS THE SAME IN ALL VERSION OF THE ENDF/B FORMAT. Mixer

 Mixer

 IN ORDER TO GUARANTEE PROPER OPERATION OF THIS PROGRAM THE DATA Mixer

 MUST BE PROPERLY CODED IN THE ENDF/B FORMAT. NO ERROR CHECKING IS Mixer

 PERFORMED. IT IS PARTICULARLY IMPORTANT THAT THE FOLLOWING DATA Mixer

 BE CORRECT Mixer

 Mixer

 (1) ZA, MF, MT - MUST BE CORRECT IN ORDER TO ALLOW PROGRAM TO Mixer

 SELECT THE APPROPRIATE SECTIONS TO BE COMBINED. Mixer

 (2) AWRE - ATOMIC WEIGHT RATIO MUST BE CORRECT TO ALLOW PROGRAM Mixer

 TO CONVERT THE USER SPECIFIED GRAMS INTO ATOMS FOR Mixer

 PROPER ATOM RATIO MIXING. Mixer

 (3) (ENERGIES, CROSS SECTIONS) - MUST BE CORRECT, LINEARLY Mixer

 ======== Mixer

 INTERPOLABLE, IN ASCENDING ENERGY ORDER OF (E, BARNS). Mixer

 ============ Mixer

 Mixer

 TO CONVERT ENDF/B FORMATTED DATA TO THE REQUIRED INPUT FORM Mixer

 THE FOLLOWING PROGRAMS MAY BE USED, Mixer

 LINEAR - CONVERT TABULATED CROSS SECTIONS TO LINEARLY Mixer

 INTERPOLABLE FORM. Mixer

 RECENT - RECONSTRUCT RESONANCE CONTRIBUTION, ADD TO BACKGROUND Mixer

 CROSS SECTION AND OUTPUT THE COMBINATION IN LINEARLY Mixer

 INTERPOLABLE FORM. Mixer

 SIGMA1 - DOPPLER BROADEN CROSS SECTIONS TO ANY TEMPERATURE AND Mixer

 OUTPUT THE RESULT IN LINEARLY INTERPOLABLE FORM. Mixer

 Mixer

 DOCUMENTATION Mixer

 ------------- Mixer

 THE FACT THAT THIS PROGRAM HAS COMBINED THE DATA IS DOCUMENTED Mixer

 IN THE OUTPUT ENDF/B FORMAT IN THE HOLLERITH SECTION BY FIRST Mixer

 IDENTIFYING THE VERSION OF THIS PROGRAM THAT WAS USED, IN THE FORM Mixer

 Mixer

 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*( PROGRAM MIXER 2015-1) \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Mixer

 Mixer

 THIS IS FOLLOWED BY THE TWO LINE IDENTIFICATION INPUT BY THE USER. Mixer

 THIS IS FOLLOWED BY COMPOSITION INPUT BY THE USER. Mixer

 Mixer

 NEUTRON OR PHOTON DATA Mixer

 ---------------------- Mixer

 THIS PROGRAM WILL ALLOW YOU TO PROCESS EITHER NEUTRON OR PHOTON Mixer

 CROSS SECTIONS - BUT YOU CANNOT MIX THE TWO TYPES TOGETHER. BY Mixer

 INPUT YOU CAN SPECIFY THE OUTPUT MF = 3 (NEUTRONS) OR 23 (PHOTONS) Mixer

 WHATEVER TYPE YOU SPECIFIED FOR OUTPUT IS THE ONLY TYPE OF DATA Mixer

 WHICH WILL BE PROCESSED BY THIS PROGRAM. Mixer

 Mixer

 DEFINING THE COMPOSITION Mixer

 ------------------------ Mixer

 THE USER MAY SPECIFY UP TO 10 DIFFERENT SECTIONS OF DATA TO BE Mixer

 COMBINED, EACH SECTION IDENTIFIED BY ZA AND MT NUMBER. THE Mixer

 AMOUNT OF EACH MATERIAL IS SPECIFIED BY DEFINING THE NUMBER OF Mixer

 GRAMS OF EACH MATERIAL IN THE COMPOSITE MIXTURE. THIS CAN BE Mixer

 DERIVED FROM THE VOLUME FRACTION SIMPLY BY MULTIPLYING THE STP Mixer

 DENSITY OF EACH MATERIAL BY ITS VOLUME FRACTION. NOTE, DO NOT Mixer

 INPUT ATOM FRACTIONS. Mixer

 Mixer

 THE LIST OF SECTIONS TO BE COMBINED MAY BE SPECIFIED IN ANY Mixer

 ORDER, I.E. THEY NEED NOT BE IN ZA ORDER OR THE ORDER THAT THE Mixer

 EVALUATED DATA APPEARS ON THE ENDF/B FORMATTED TAPE. Mixer

 Mixer

 IF ANY REQUESTED SECTION OF DATA IS NOT FOUND ON THE ORIGINAL Mixer

 ENDF/B FORMATTED FILE, THE PROGRAM WILL PRINT A LIST OF THE Mixer

 MISSING SECTIONS AND TERMINATE. IF ALL REQUESTED SECTIONS ARE Mixer

 FOUND THE PROGRAM WILL PRODUCE A COMPOSITE SECTION USING THE Mixer

 UNION OF ALL ENERGIES FOUND IN ANY SECTION. THE COMPOSITE SECTION Mixer

 WILL NOT BE THINNED. Mixer

 Mixer

 PRIOR TO LATER USE IN ANY APPLICATION THE NUMBER OF ENERGY POINTS Mixer

 IN THE COMPOSITE CROSS SECTION MAY BE MINIMIZED BY USING PROGRAM Mixer

 LINEAR, UCRL-50400, VOL. 17, PART B TO THIN THE DATA. Mixer

 Mixer

 ONLY LINEARLY INTERPOLABLE DATA Mixer

 ------------------------------- Mixer

 THE CROSS SECTIONS TO BE COMBINED MUST BE IN LINEARLY INTERPOLABLE Mixer

 TABULATED FORM (I. E., FILE 3 OR 23, INTERPOLATION LAW 2). Mixer

 Mixer

 TO CONVERT TABULATED CROSS SECTIONS TO LINEARLY INTERPOLABLE FORM Mixer

 SEE, PROGRAM LINEAR, UCRL-50400, VOL. 17, PART A. Mixer

 Mixer

 TO CONVERT RESONANCE PARAMETERS TO LINEARLY INTERPOLABLE FORM SEE, Mixer

 PROGRAM RECENT, UCRL-50400, VOL. 17, PART C. Mixer

 Mixer

 TO DOPPLER BROADEN LINEARLY INTERPOLABLE DATA TO ANY TEMPERATURE Mixer

 SEE PROGRAM SIGMA1, UCRL-50400, VOL. 17, PART B. Mixer

 Mixer

 PAGING SYSTEM Mixer

 ------------- Mixer

 THERE IS NO LIMIT TO THE THE NUMBER OF DATA POINTS IN EACH OF THE Mixer

 SECTIONS TO BE COMBINED, NOR IS THERE A LIMIT TO THE NUMBER OF Mixer

 DATA POINTS IN THE COMPOSITE MIXTURE CROSS SECTION. Mixer

 Mixer

 ALL REQUIRED SECTIONS OF DATA ARE READ FROM THE ORIGINAL ENDF/B Mixer

 FORMATTED FILE. ANY SECTION OF 60000 OR FEWER POINTS WILL BE Mixer

 TOTALLY CORE RESIDENT. LARGER SECTIONS ARE LOADED INTO A PAGING Mixer

 SYSTEM USING A SCRATCH FILE WITH ONLY 60000 POINTS PER SECTION Mixer

 CORE RESIDENT AT ANY ONE TIME. SIMILARLY THE COMPOSITE SECTION Mixer

 WILL BE TOTALLY CORE RESIDENT IF IT CONTAINS 60000 OR FEWER POINTS Mixer

 AND LARGER COMPOSITE SECTIONS WILL BE LOADED INTO A PAGING Mixer

 SYSTEM WHERE ONLY 60000 POINTS ARE CORE RESIDENT AT ANY TIME. SINC Mixer

 A PAGING SYSTEM MAY BE USED BY ANY SECTION OF DATA THERE IS NO Mixer

 LIMIT TO THE SIZE OF EITHER THE ORIGINAL SECTIONS, NOR TO THE Mixer

 COMPOSITE SECTION, E.G. A SECTION MAY CONTAIN 100,000 ENERGIES Mixer

 AND CROSS SECTIONS TO DESCRIBE A GIVEN REACTION. Mixer

 Mixer

 PAGE SIZE Mixer

 --------- Mixer

 THE PAGE SIZE USED IN THIS PROGRAM IS DEFINED BY THE PARAMETER Mixer

 NPAGE AND THE DIMENSIONS OF THE ARRAYS XTAB AND YTAB. IN ORDER Mixer

 TO ADAPT THIS PROGRAM FOR USE ON ANY COMPUTER THE PAGE SIZE MAY Mixer

 BE INCREASED OR DECREASED BUT THE FOLLOWING RULES MUST BE FOLLOWED Mixer

 ==== Mixer

 Mixer

 (1) NPAGE - MUST BE A MULTIPLE OF 3 IN ORDER TO ALLOW THE PROGRAM Mixer

 TO READ FULL CARDS OF ENDF/B DATA (3 POINTS PER LINE). FAILURE Mixer

 TO FOLLOW THIS RULE CAN LEAD TO LOSS OF DATA AND/OR PROGRAM Mixer

 ERRORS DURING EXECUTION. Mixer

 (3) YTAB - THE DIMENSION OF YTAB MUST BE (NPAGE,11). Mixer

 (4) XTAB - THE DIMENSION OF XTAB MUST BE (NPAGE,11). Mixer

 Mixer

 DOPPLER BROADENING Mixer

 ------------------ Mixer

 THE COMPOSITE CROSS SECTION OUTPUT FROM THIS PROGRAM SHOULD NOT Mixer

 BE DOPPLER BROADENED USING PROGRAM SIGMA1, OR THE EQUIVALENT. THE Mixer

 ATOMIC WEIGHT USED TO IDENTIFY THE COMPOSITE MIXTURE IS BASED ON Mixer

 THE ATOM FRACTION OF EACH CONSTITUENT AND CANNOT BE USED TO Mixer

 CHARACTERIZE THE BROADENING OF ANY GIVEN RESONANCE IN THE MIXTURE Mixer

 DUE TO THE CONTRIBUTION OF ONE CONSTITUENT. IN ORDER TO CONSIDER Mixer

 DOPPLER BROADENING FIRST USE PROGRAM SIGMA1 TO BROADEN THE CROSS Mixer

 SECTION FOR EACH OF THE CONSTITUENTS AND THEN COMBINE THE Mixer

 BROADENED DATA USING PROGRAM MIXER. Mixer

 Mixer

 EXAMPLE USE Mixer

 ----------- Mixer

 THE OUTPUT FROM THIS PROGRAM HAS BEEN FOUND TO BE EXTREMELY Mixer

 USEFUL IN THE FOLLOWING APPLICATIONS... Mixer

 Mixer

 (1) CALCULATE A COMPOSITE TOTAL CROSS SECTON FOR LATER USE AS Mixer

 A WEIGHTING FUNCTION IN SELF-SHIELDING THE CROSS SECTIONS Mixer

 OF EACH CONSTITUENT OF THE MIXTURE SEPARATELY. Mixer

 Mixer

 PROGRAM GROUPIE CAN USE THE CALCULATED COMPOSITE TOTAL CROSS Mixer

 SECTION AS THE TOTAL CROSS SECTION FOR EACH CONSTITUENT OF Mixer

 THE MIXTURE IN ORDER TO CALCULATE SELF-SHIELDED CROSS SECTION Mixer

 FOR EACH CONSTITUENT OF THE MIXTURE. Mixer

 Mixer

 (2) CALCULATE COMPOSITE TOTAL AND FISSION CROSS SECTIONS IN Mixer

 ORDER TO CALCULATE THE TRANSMISSION AND SELF-INDICATION Mixer

 THROUGH COMPOSITE MATERIALS. GENERALLY IN THIS CASE THE Mixer

 TOTAL CROSS SECTION WILL BE CALCULATED FOR THE COMPOSITION Mixer

 OF THE SAMPLE AND THE FISSION CROSS SECTION WILL BE Mixer

 CALCULATED FOR THE COMPOSITION OF THE FISSION CHAMBER Mixer

 (WHICH GENERALLY WILL HAVE A DIFFERENT COMPOSITION THAN THE Mixer

 SAMPLE). Mixer

 Mixer

 PROGRAM VIRGIN CAN USE THE OUTPUT FROM THIS PROGRAM TO Mixer

 PERFORM TRANSMISSION AND SELF-INDICATION CALCULATIONS. Mixer

 PROGRAM VIRGIN WILL ANALYTICALLY CALCULATE THE UNCOLLIDED Mixer

 (I.E. VIRGIN) FLUX TRANSMITTED AND REACTION RATE DUE TO ANY Mixer

 TABULATED LINEARLY INTERPOLABLE INCIDENT SPECTRUM. RESULTS Mixer

 WILL BE PRESENTLY FOR UP TO 10 DIFFERENT SAMPLE THICKNESSES Mixer

 AND BINNED INTO ENERGY GROUPS IN ORDER TO SIMULATE AN Mixer

 EXPERIMENTAL MEASUREMENT. Mixer

 Mixer

 (3) THE OUTPUT FROM THIS PROGRAM IS VERY USEFUL TO PLOT IN ORDER Mixer

 TO SEE THE IMPORTANCE OF SPECIFIC CROSS SECTION FEATURES IN Mixer

 THE COMPOSITE CROSS SECTION. Mixer

 Mixer

 PROGRAM COMPLOT CAN BE USED TO PLOT THE OUTPUT FROM THIS Mixer

 PROGRAM AND IF REQUIRED EXAMINE ANY PARTICULAR ENERGY RANGE Mixer

 IN DETAIL. IN ORDER TO DO THIS THE (ZA, MT) EQUIVALENCE OPTION Mixer

 OF PROGRAM COMPLOT SHOULD BE USED. TO COMPARE ANY CONSTITUENT Mixer

 CROSS SECTION TO THE COMPOSITE CROSS SECTION THE INPUT TO Mixer

 COMPLOT SHOULD EQUATE THE (ZA,MT) OF THE COMPOSITE TO THE Mixer

 (ZA,MT) OF ONE CONSTITUENT AND THE MULTIPLIER INPUT TO Mixer

 COMPLOT SHOULD BE THE ATOM FRACTION FOR THE CONSTITUENT (THE Mixer

 ATOM FRACTIONS ARE DEFINED IN THE OUTPUT LISTING FROM PROGRAM Mixer

 MIXER). Mixer

 Mixer

 INPUT FILES Mixer

 ----------- Mixer

 UNIT DESCRIPTION Mixer

 ---- ----------- Mixer

 2 INPUT CARDS (BCD - 80 CHARACTERS/RECORD) Mixer

 10 ORIGINAL EVALUATED DATA IN ENDF/B FORMAT Mixer

 (BCD - 80 CHARACTERS/RECORD) Mixer

 Mixer

 OUTPUT FILES Mixer

 ------------ Mixer

 UNIT DESCRIPTION Mixer

 ---- ----------- Mixer

 3 OUTPUT LISTING (BCD - 120 CHARACTERS/RECORD) Mixer

 11 COMPOSITE EVALUATED DATA IN ENDF/B FORMAT Mixer

 (BCD - 80 CHARACTERS/RECORD) Mixer

 Mixer

 SCRATCH FILES Mixer

 ------------- Mixer

 UNIT DESCRIPTION Mixer

 ---- ----------- Mixer

 12 SCRATCH FILE FOR EACH OF THE 10 SECTIONS WHICH Mixer

 13 WILL BE ADDED TOGETHER TO DEFINE THE FINAL Mixer

 . SECTION (BINARY - 60000 AND 480000 WORDS/RECORD) Mixer

 . . Mixer

 . . Mixer

 20 . Mixer

 21 . Mixer

 22 SCRATCH FILE FOR COMBINED SECTION. Mixer

 (BINARY - 2004 WORDS/RECORD) Mixer

 Mixer

 STANDARD FILE NAMES (SEE SUBROUTINES FILIO1 AND FILIO2) Mixer

 ---------------------------------------------------------------- Mixer

 UNIT FILE NAME Mixer

 ---- ---------- Mixer

 2 MIXER.INP Mixer

 3 MIXER.LST Mixer

 10 ENDFB.IN Mixer

 11 ENDFB.OUT Mixer

 12-22 (SCRATCH) Mixer

 Mixer

 INPUT CARDS Mixer

 ----------- Mixer

 LINE COLS. FORMAT NAME DESCRIPTION Mixer

 ---- ----- ------ ------- ---------- Mixer

 1-2 1-66 16A4,A2 TITLE TWO LINE TITLE DESCRIBING PROBLEM Mixer

 (THIS TITLE IS USED TO IDENTIFY THE Mixer

 OUTPUT LISTING AND IS ALSO WRITTEN Mixer

 IN MF=1, MT=451 (HOLLERITH SECTION) Mixer

 OF THE ENDF/B FORMATTED OUTPUT TO Mixer

 IDENTIFY THE COMPOSITE MIXTURE). Mixer

 3 1-72 ENDF/B INPUT DATA FILENAME Mixer

 (STANDARD OPTION = ENDFB.IN) Mixer

 4 1-72 ENDF/B OUTPUT DATA FILENAME Mixer

 (STANDARD OPTION = ENDFB.OUT) Mixer

 5 1-11 I11 IZAOUT ZA IDENTIFICATION FOR COMBINATION Mixer

 5 12-17 I6 MATOUT MAT IDENTIFICATION FOR COMBINATION Mixer

 5 18-19 I2 MFOUT MF IDENTIFICATION FOR COMBINATION Mixer

 5 20-22 I3 MTOUT MT IDENTIFICATION FOR COMBINATION Mixer

 5 23-33 I11 DEFINE INPUT DENSITY Mixer

 = 0 = GRAMS = BACKWARDS COMPATIBLE Mixer

 > 0 = ATOMS = NEW IN 2008 Mixer

 6-N 1-11 I11 IZAGET ZA (1000\*Z+A) OF MATERIAL Mixer

 6-N 12-22 I11 MTGET MT OF REACTION Mixer

 6-N 23-33 E11.4 DENSE MATERIAL DENSITY (ATOMS OR GRAMS) Mixer

 Mixer

 THE SIXTH LINE IS REPEATED FOR EACH SECTION (FROM 2 TO 10). Mixer

 SINCE THE ENDF/B FORMATTED OUTPUT IS IN BARNS/ATOM FORM A MINIMUM Mixer

 OF TWO SECTIONS MUST BE COMBINED (I.E., IF ONLY ONE SECTION IS Mixer

 SPECIFIED THE OUTPUT WOULD BE IDENTICAL TO THE INPUT AND AS SUCH Mixer

 THE PROGRAM WILL CONSIDER THIS TO BE AN ERROR AND NOT PERFORM THE Mixer

 CALCULATION). THE LIST OF SECTIONS IS TERMINATED BY A BLANK LINE. Mixer

 Mixer

 THE LIST OF SECTIONS TO BE COMBINED MAY BE SPECIFIED IN ANY Mixer

 ORDER, I.E. THEY NEED NOT BE IN ZA ORDER OR THE ORDER THAT THE Mixer

 EVALUATED DATA APPEARS ON THE ENDF/B FORMATTED TAPE. Mixer

 Mixer

 EXAMPLE INPUT NO. 1 Mixer

 ------------------- Mixer

 CREATE THE TOTAL CROSS SECTION (MT=1) FOR STAINLESS STEEL AND Mixer

 IDENTIFY THE COMBINED MATERIAL WITH ZA=26800 AND MAT=4000, Mixer

 THE COMPOSITION BY VOLUME OF THE STEEL WILL BE... Mixer

 Mixer

 THE DATA FROM \ENDFB6\K300\LIBRARY.DAT AND WRITE DATA TO Mixer

 \MIXER\STEEL.DAT Mixer

 Mixer

 IRON - 74.8 PER-CENT Mixer

 CHROMIUM - 16.0 Mixer

 NICKEL - 6.0 Mixer

 MANGANESE - 2.0 Mixer

 SILICON - 1.0 Mixer

 CARBON - 0.2 Mixer

 Mixer

 THE INPUT MUST SPECIFY THE COMPOSITION BY GRAMS OR ATOMS. THIS IS Mixer

 DEFINED AS THE PRODUCT OF THE STANDARD DENSITY (GRAMS) Mixer

 TIMES THE VOLUME FRACTION. FOR THIS EXAMPLE THE FOLLOWING 12 Mixer

 INPUT CARDS ARE REQUIRED.... Mixer

 Mixer

 STAINLESS STEEL. COMPOSITION BY PER-CENT VOLUME IS 74.8-IRON, Mixer

 16-CHROME, 6-NICKEL, 2-MANGANESE, 1-SILICON, 0.2-CARBON Mixer

 \ENDFB6\K300\LIBRARY.DAT Mixer

 \MIXER\STEEL.DAT Mixer

 26800 4000 3 1 0 Mixer

 26000 1 5.88676 (NOTE, GRAMS INPUT FOR EACH Mixer

 24000 1 1.150448 CONSTITUENT, E.G. FOR IRON THE Mixer

 28000 1 0.533928 STP DENSITY IS 7.87 GRAMS. Mixer

 25055 1 0.1486 THE INPUT VALUE OF 5.88676 IS Mixer

 14000 1 0.0233 0.748 X 7.87,I.E. VOLUME Mixer

 6012 1 0.0044958 FRACTION TIMES STP DENSITY). Mixer

 (BLANK LINE TERMINATES INPUT LIST) Mixer

 Mixer

 EXAMPLE INPUT NO. 2 Mixer

 ------------------- Mixer

 THE SAME EXAMPLE AS THE ABOVE PROBLEM, ONLY USE THE STANDARD Mixer

 ENDF/B DATA FILENAMES - ENDFB.IN AND ENDFB.OUT (THIS CAN BE Mixer

 DONE BY LEAVING THE THIRD AND FOURTH INPUT LINES BLANK). Mixer

 FOR THIS EXAMPLE THE FOLLOWING 12 INPUT CARDS ARE REQUIRED.... Mixer

 Mixer

 STAINLESS STEEL. COMPOSITION BY PER-CENT VOLUME IS 74.8-IRON, Mixer

 16-CHROME, 6-NICKEL, 2-MANGANESE, 1-SILICON, 0.2-CARBON Mixer

 (NOTE - THIS LINE IS REALLY BLANK) Mixer

 (NOTE - THIS LINE IS REALLY BLANK) Mixer

 26800 4000 3 1 Mixer

 26000 1 5.88676 (NOTE, GRAMS INPUT FOR EACH Mixer

 24000 1 1.150448 CONSTITUENT, E.G. FOR IRON THE Mixer

 28000 1 0.533928 STP DENSITY IS 7.87 GRAMS. Mixer

 25055 1 0.1486 THE INPUT VALUE OF 5.88676 IS Mixer

 14000 1 0.0233 0.748 X 7.87,I.E. VOLUME Mixer

 6012 1 0.0044958 FRACTION TIMES STP DENSITY). Mixer

 (BLANK LINE TERMINATES INPUT LIST) Mixer

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