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Bayer

MATERIAL SAFETY DATA SHEET

0336558-001

BAYER CORPORATION
PRODUCT SAFETY & REGULATORY AFFAIRS
100 Bayer Road
Pittsburgh, PA 15205-9741

6/11/98

TRANSPORTATION EMERGENCY
CALL CHEMTREC: 800-424-9300
DISTRICT OF COLUMBIA: 202-483-7616

NON-TRANSPORTATION
BAYER EMERGENCY PHONE...: (412) 923-1800
BAYER INFORMATION PHONE.: (800) 662-2927

1. CHEMICAL PRODUCT IDENTIFICATION:

PRODUCT NAME.....: ABS 433-4000 Black Super 10
PRODUCT CODE.....: P1511335
CHEMICAL FAMILY.....: Thermoplastic Polymer
CHEMICAL NAME.....: Acrylonitrile/Butadiene/Styrene Terpolymer
SYNONYMS.....: ABS
FORMULA.....: Not applicable--polymeric material

2. COMPOSITION/INFORMATION ON INGREDIENTS:

INGREDIENT NAME /CAS NUMBER	EXPOSURE LIMITS			CONCENTRATION (%)
***** HAZARDOUS INGREDIENTS *****				
Residual Styrene Monomer 100-42-5	OSHA:	100.00 ppm	TWA	Below 0.25 %
		200.00 ppm	CEIL	
	ACGIH:	20.00 ppm	TWA	
		40.00 ppm	STEL	

The following are potentially hazardous ingredient(s) used to formulate this product. In this supply form, the ingredient(s) is bound in the polymer matrix. Because it is bound in the matrix, it is not expected to create any unusual hazards when handled and processed according to good manufacturing and industrial hygiene practices and the guidelines provided in this MSDS.

Carbon Black 1333-86-4	OSHA:	3.5 mg/m3	TWA	1 - 5%
	ACGIH:	3.5 mg/m3	TWA	

3. HAZARDS IDENTIFICATION:

****
* EMERGENCY OVERVIEW *
*
* CAUTION! Color: Black; Form: Cubes; Odor: Slight sweet *
* aromatic; Causes a slipping hazard if spilled; Contact with *
* hot material will cause thermal burns; Toxic gases/fumes are *
* given off during burning or thermal decomposition; Melted *
* product is flammable and produces intense heat and dense *
* smoke during burning. *
****

POTENTIAL HEALTH EFFECTS:

ROUTE(S) OF ENTRY.....: Inhalation; Eye Contact; Skin Contact

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:

ACUTE EFFECTS OF EXPOSURE.....: Material is a non-reactive solid. Mechanical irritation (i.e. abrasion) to the eyes may occur due to exposure to fines. Eyes may become red and scratchy and may tear. Several ABS resins have been tested for potential to produce allergic skin reaction in controlled skin contact studies with human volunteers. A potential for cumulative irritation was demonstrated but primary irritation and allergic skin reactions were not observed. Gases and fumes evolved from this material may irritate the eyes, skin or respiratory tract. At processing temperatures small amounts of styrene, ethylbenzene and acrylonitrile may be emitted. Prolonged and repeated exposure of high concentrations of these vapors and fumes (due to inadequate ventilation, etc.) could cause nausea, drowsiness and headache.

CHRONIC EFFECTS OF EXPOSURE...: In October 1988, the National Institute for Occupational Safety and Health (NIOSH) concluded that "...there seems to be little basis from experimental animal investigations or epidemiologic studies to conclude at this time that styrene is carcinogenic." Additionally, both EPA's Scientific Advisory Board and the Expert Committee of the commission of the European Communities evaluating the same information found insufficient evidence to classify styrene as a carcinogen.
Epidemiological studies of workers in the carbon black producing industries show no evidence of clinically significant, adverse health effects due to occupational exposure to carbon black.

CARCINOGENICITY

NTP.....: Not listed

IARC.....: Styrene (CAS# 100-42-5) and Carbon Black (CAS# 1333-86-4); Classified as IARC Possible Human Carcinogen (Group 2B) - "The chemical or group of chemicals is possibly carcinogenic for humans."

OSHA.....: Not regulated

3. HAZARDS IDENTIFICATION (Continued)

MEDICAL CONDITIONS
AGGRAVATED BY EXPOSURE.....: Preexisting eye, skin or respiratory tract sensitivities.
EXPOSURE LIMITS.....: For product fines the OSHA-PEL for nuisance dust of 15 mg/m3 total dust, 5 mg/m3 respirable dust is recommended. In addition, the ACGIH-TLV for Particulates Not Otherwise Classified (PNOC) of 10 mg/m3 is recommended. Observe a more stringent limit for product fines if applicable. See Section 2. For product gases and fumes refer to the exposure limits listed in Section 2.

4. FIRST AID MEASURES:

FIRST AID FOR EYES.....: Flush eyes with plenty of lukewarm water. See physician if irritation persists.
FIRST AID FOR SKIN.....: Wash affected areas with soap and water. See physician if thermal burn occurs.
FIRST AID FOR INHALATION: Remove to fresh air. If breathing is difficult, get medical attention.
FIRST AID FOR INGESTION.: Contact a physician.

5. FIRE FIGHTING MEASURES:

FLASH POINT.....: 730-752F (388-400C)
FLAMMABLE LIMITS:
UPPER EXPLOSIVE LIMIT (UEL)(%): Not applicable
LOWER EXPLOSIVE LIMIT (LEL)(%): Not applicable
AUTO-IGNITION TEMPERATURE.....: 923-950F (495-510C)
EXTINGUISHING MEDIA.....: Water; Dry Chemical; Carbon Dioxide; Foam
SPECIAL FIRE FIGHTING PROCEDURES: Full emergency equipment with self-contained breathing apparatus should be worn by firefighters. During a fire irritating and toxic gases and aerosols may be generated by thermal decomposition and combustion. See Section 10.
UNUSUAL FIRE / EXPLOSION HAZARDS: Dust from flaked material or secondary operations (regrinding, etc.) may form explosive mixtures in air. Vent storage bins, conveyors, dust collectors, etc. See Section 7.

6. ACCIDENTAL RELEASE MEASURES:

SPILL OR LEAK PROCEDURES.....: Remove mechanically by method which minimizes generation of airborne dust.

7. HANDLING and STORAGE:

STORAGE TEMPERATURE(MIN/MAX): Max 180F (82C)
SHELF LIFE.....: Not Established
SPECIAL SENSITIVITY.....: Moisture
HANDLING/STORAGE PRECAUTIONS: When handling flaked material or during secondary operations, vent storage bins, conveyors, dust collectors, etc. Ground handling equipment. Keep open flames, sparks and heat away from dusty areas. Maintain highest standards of housekeeping to prevent accumulation of dust.
OTHER NOTES.....: Material should be stored in a clean, dry environment in sealed containers. Material must be dried before processing.

8. PERSONAL PROTECTION:

EYE PROTECTION REQUIREMENTS.....: Safety glasses recommended.
SKIN PROTECTION REQUIREMENTS.....: None required, but fabric gloves are recommended when handling molten material.
VENTILATION REQUIREMENTS.....: Provide natural or mechanical ventilation to control exposure levels below airborne exposure limits. See Section 2. Local mechanical exhaust ventilation should be used at sources of air contamination, such as open process equipment, or during purging operations, to capture gases and fumes that may be emitted. Standard reference sources regarding industrial ventilation (i.e. ACGIH Industrial Ventilation) should be consulted for guidance about adequate ventilation.
RESPIRATOR REQUIREMENTS.....: NIOSH/MSHA approved dust respirator recommended if the airborne dust concentration is near or exceeds the nuisance dust exposure limits. If ventilation is not sufficient to control processing gases and fumes, A NIOSH approved respirator should be selected and worn based on contamination levels found in the workplace.
ADDITIONAL PROTECTIVE MEASURES.....: The greatest potential for injury occurs when working with molten polymeric resins such as during a purge of a molding machine, extruder and the like. During this type of operation it is essential that all workers in the immediate area wear eye protection and skin protection (sleeves, gloves, etc.) as protection from thermal burns. Purgings should be collected as small flat thin shapes or thin strands to allow for rapid cooling. Precautions should be taken against auto-ignition of hot, thick masses of the plastic. Quench with water. Grinder dust is an exposure hazard.
Fumes or vapors emitted from the hot melted plastic during converting operations may condense on cool overhead metal surfaces or exhaust duct. That condensate, usually in the form of a soft grease-like, semi solid, may contain substances which can be irritating or toxic. Avoid contact of that material with the skin. Wear rubber or other impermeable protective gloves when cleaning contaminated surfaces.

9. PHYSICAL and CHEMICAL PROPERTIES:

PHYSICAL FORM.....: Cubes
COLOR.....: Black
ODOR.....: Slight sweet aromatic
ODOR THRESHOLD.....: Not Established
pH.....: Not Applicable
BOILING POINT.....: Not Applicable
MELTING/FREEZING POINT....: See Softening Point
SOFTENING POINT.....: 180-225F (82-107C)
SOLUBILITY IN WATER.....: Insoluble
SOLUBILITY (NON AQUEOUS)..: Acetone, Methyl Ethyl Ketone (MEK), and Dimethylformamide (DMF)
SPECIFIC GRAVITY.....: Approx. 1.05
BULK DENSITY.....: Approx. 300-450 kg/m3
% VOLATILE BY WEIGHT.....: Negligible
EVAPORATION RATE.....: Negligible (Butyl acetate = 1)
VAPOR PRESSURE.....: Negligible
VAPOR DENSITY.....: Negligible (Air = 1)

10. STABILITY and REACTIVITY:

STABILITY.....: This is a stable material
HAZARDOUS POLYMERIZATION...: Will not occur.
INCOMPATIBILITIES.....: None known.
INSTABILITY CONDITIONS.....: None known.
DECOMPOSITION TEMPERATURE..: Begins at approx. 500F (260C)
DECOMPOSITION PRODUCTS.....: By fire or thermal decomposition: carbon dioxide, water, carbon monoxide, hydrocarbons, hydrogen cyanide, and some original monomers such as styrene and acrylonitrile.

11. TOXICOLOGICAL INFORMATION:

TOXICITY DATA FOR: Similar ABS resins
ACUTE TOXICITY
EYE EFFECTS.....: Non-irritating to slightly irritating (rabbit)
SKIN EFFECTS.....: Non-irritating to slightly irritating (rabbit)
OTHER ACUTE EFFECTS: Practically non-toxic orally (rat) or after skin application (rabbit)

TOXICITY DATA FOR: Styrene
ACUTE TOXICITY
OTHER ACUTE EFFECTS: Slightly toxic to practically nontoxic in oral feeding

11. TOXICOLOGICAL INFORMATION (Continued)

studies (rats) and skin application studies (rabbits).
SUBCHRONIC TOXICITY...: Repeated inhalation studies in rats for 3 weeks reported effects suggestive of a hearing impairment.
CHRONIC TOXICITY.....: Repeated inhalation exposures produced lung irritation in guinea pigs and organ weight changes in rats.
CARCINOGENICITY.....: An oral study in mice reported slight increases in lung tumors and lymphomas, but the National Cancer institute reported no convincing evidence for carcinogenicity in repeated oral studies with rats and mice.
MUTAGENICITY.....: In standard tests for genetic effects, both positive and negative genetic changes were reported.
DEVELOPMENTAL TOXICITY: No birth defects occurred in rats given styrene orally; some toxic effects on the fetus were noted in a limited inhalation study using repeated, extremely high doses.

TOXICITY DATA FOR: Carbon Black
ACUTE TOXICITY
CHRONIC TOXICITY.....: Chronic inflammation, lung fibrosis, and lung tumors have been observed in some rats experimentally exposed, for long periods of time, to excessive concentrations of carbon black and several other insoluble fine dust particles. Tumors have not been observed in other animal species (i.e., mouse and hamster) under similar circumstances and study conditions. Many researchers conducting rat inhalation studies believe that these effects most likely result from the massive accumulation of small dust particles in the lung which overwhelm the natural lung clearance mechanisms, known as the "lung overload" phenomenon, rather than from a specific chemical effect of the dust particles in the lung.
CARCINOGENICITY.....: Several inhalation studies in female rats have shown increases in benign and malignant lung tumors. Although a large body of data on possible mechanisms of carcinogenicity in rats was considered by the IARC Working Group, it was not possible to state with confidence that the mechanisms of carcinogenicity in rats correlate to exposure in humans.*

* IARC Monograph Volume 65: Printing Processes and Printing Inks, Carbon Black, and Some Nitro Compounds, April 12, 1996.

12. ECOLOGICAL INFORMATION:

NO ECOLOGICAL INFORMATION AVAILABLE

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD.....: Material may be incinerated or landfilled in compliance with federal, state, and local environmental control regulations.

14. TRANSPORTATION INFORMATION:

TECHNICAL SHIPPING NAME.....: Acrylonitrile/Butadiene/Styrene Terpolymer
FREIGHT CLASS BULK.....: Plastic Materials
FREIGHT CLASS PACKAGE.....: Plastic Materials, NOI
PRODUCT LABEL.....: Label established

DOT (DOMESTIC SURFACE)

HAZARD CLASS OR DIVISION .....: Non-Regulated

IMO / IMDG CODE (OCEAN)

HAZARD CLASS DIVISION NUMBER...: Non-Regulated

ICAO / IATA (AIR)

HAZARD CLASS DIVISION NUMBER...: Non-Regulated

15. REGULATORY INFORMATION:

OSHA STATUS.....: This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.
CERCLA REPORTABLE QUANTITY..: None reported
SARA TITLE III:
SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES:
None
SECTION 311/312
HAZARD CATEGORIES.....: Immediate Health Hazard; Delayed Health Hazard
SECTION 313 TOXIC CHEMICALS:
Styrene (CAS# 100-42-5) Less than 0.25%.
RCRA STATUS.....: If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

CHEMICAL INVENTORY LIST(S)

UNITED STATES TSCA STATUS...: On TSCA Inventory

15. REGULATORY INFORMATION (Continued)

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

COMPONENT NAME /CAS NUMBER	CONCENTRATION	STATE CODE
Styrene/Acrylonitrile Copolymer		
9003-54-7	>1.0%	NJ4, PA3
Acrylonitrile/Butadiene/Styrene Terpolymer		
9003-56-9	>1.0%	NJ4, PA3
N,N-Ethylenebisstearamide		
110-30-5	>1.0%	NJ4
Carbon Black		
1333-86-4	1 - 5%	MA1, NJ1, PA1
Residual Styrene Monomer		
100-42-5	Below 0.25 %	MA1, NJ3
Residual Acrylonitrile Monomer		
107-13-1	Below 0.01 %	CA1, MA1

CA1 = This chemical is known to the state of California to cause cancer.
MA1 = Massachusetts Hazardous Substance List
NJ1 = New Jersey Hazardous Substance List
NJ3 = New Jersey Special Health Hazardous Substance List
NJ4 = New Jersey Other - included in 5 predominant ingredients > 1%
PA1 = Pennsylvania Hazardous Substance List
PA3 = Pennsylvania Non-hazardous present at 3% or greater.

16. OTHER INFORMATION:

HMIS RATINGS:

Health	Flammability	Reactivity
1	0	0

0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe

Bayer's method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. HMIS ratings are provided by Bayer as a customer service.

REASON FOR ISSUE.....: Updated MSDS for carbon black
PREPARED BY.....: P. E. Malichky
APPROVED BY.....: J. H. Chapman
APPROVAL DATE.....: 05/11/1998
SUPERSEDES DATE.....: 04/08/1998
MSDS NUMBER.....: 33421

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