

MATERIAL SAFETY DATA SHEET

1. Chemical Product & Company Identification

Product Name : Nutricote Total 13-13-13 Controlled Release Fertilizer
 General Use : Fertilizer
 Product Description : Ammonium nitrate based fertilizer
 Manufacturer : Chisso-Asahi Fertilizer Co.,Ltd. Tokyo, Japan
 7-12, Koraku 1-chome, Bunkyo-ku, Tokyo, Japan
 Telephone: +81-3-3814-6311 Telefax: +81-3-3814-6327
 Emergency Phone No. CHEMTREC
 United States: (800)424-9300 24 hours Everyday
 International: +1-(703)527-3887(Collect) 24 hours Everyday

2. Composition / Information on Ingredients

Chemical Composition(Typical Analysis)

Chemical Name	wt%	CAS NO.	Chemical Formula
Ammonium Nitrate	24.5	6484-52-2	NH ₄ NO ₃
Monobasic Ammonium Phosphate	19.2	7722-76-1	NH ₄ H ₂ PO ₄
Calcium Phosphate	2.9	7757-93-9	CaHPO ₄
Potassium Nitrate	18.7	7757-79-1	KNO ₃
Potassium Sulfate	8.2	7778-80-5	K ₂ SO ₄
Magnesium Sulfate Hydrate	9.7	7487-88-9	MgSO ₄ .nH ₂ O
EDTA-Fe(III)	1.43	15708-41-5	C ₁₀ H ₁₂ F _e N ₂ O ₈ N _a
Manganese Sulfate Hydrate	0.18	15244-36-7	MnSO ₄ .nH ₂ O
Copper Sulfate Hydrate	0.13	7758-99-8	CuSO ₄ .nH ₂ O
Boric acid	0.12	10043-35-3	H ₃ BO ₃
Disodium Molybdate Hydrate	0.045	10102-40-6	Na ₂ MoO ₄ .nH ₂ O
Zinc Sulfate Hydrate	0.043	7746-20-0	ZnSO ₄ .nH ₂ O
Others	*1	5.9	—
Polyolefin	*2	4.5	—
Talc		4.5	14807-96-6

*1 Others contain salts of Gypsum, Tricalcium Phosphate etc. *2 Polyolefin contain polyethylen etc.

3. Hazards Identification

Emergency Overview: When heated to decomposition it emits toxic gases of Nox, ammonia.

Potential Health Effects :

Inhalation: Inhalation of dust may irritate nose, throat, and lungs.
 Eye contact: Dust from this product may cause particulate discomfort to eyes.
 Skin contact: Prolonged or repeated direct contact with fertilizer may irritate skin.
 Ingestion: Ingestion of large quantities may lead to symptoms such as headache, dizziness and vomiting.

4. First-Aid Measures

Inhalation: In case of accidental inhalation of fumes from overheating or combustion, move to fresh air.
 If needed, seek medical attention.
 Eye contact: In case of dust or granule in the eyes, flush with plenty of running water.
 Skin contact: Wash thoroughly with soap and water.
 Ingestion: If conscious, give plenty of water to drink and provoke vomiting. If needed call a doctor.

5. Fire-Fighting Measures

Extinguishing agents: Water
 Hazards/preventive measures: Remove the product from organic materials as it may support combustion of them.
 When heated to decomposition, it emits toxic fumes of Nox and ammonia.
 Remove the product from the source of fire.
 Do not enter fire area without self-contained breathing apparatus. If it is difficult to move, flush with plenty of water.

6. Accidental Release Measures

Sweep up and shovel into suitable containers for disposal. Avoid contact with combustibles. Reuse as fertilizer, if possible.

7. Handling & Storage

Handling:	Handle in accordance with good industrial hygiene and safety practice. Avoid mixing with combustible organism and strong alkaline agents.
Storage:	The product is hygroscopic and should therefore be stored in a dry place. Store away from reducing agents. Keep out of reach of children.

8. Exposure Controls / Personal Protection

Engineering controls:	No specific controls are needed.
Personal protective equipment:	Nomally not required. In extremely dusty conditions, appropriate protective equipment is recommended: Respiration: dust mask with particle filter Eyes: Safety goggles Hands: rubber gloves Wash hands at the end of work and contaminated clothing before
Exposure guidelines:	Not applicable in TLVs of ACGIH.

9. Physical & Chemical Properties

Appearance and odor:	Grey prills. Odourless		
Melting point:	n.d.	Vapour pressure:	n.a.
Boiling point:	n.d.	vapour density:	n.a.
Freezing point:	n.a.	Evaporate rate:	n.a.
Specific gravity(H2O=1):	1.0	Solubility in water:	none
Flammability:	none		
	n.a. = not applicable n.d. = not determined		

10. Stability & Reactivity

Chemical stability:	Stable
Conditions to avoid:	High Heating. See section5
Incompatibility with other materials	Strong alkaline agents.
Hazardous decomposition product	Nitrogen oxides(Nox). Ammonia.

11. Toxicological Information

Acute & chronic toxicity:	No data for mixture.
Primary irritation effects:	
Skin:	Not irritating.
Eyes:	Not irritating. Prills may cause temporary mechanical eye irritation.
Inhalation:	Gases of nitrogen oxides and ammonia (formed by decomposition of the heated product) are toxic.
Ingestion:	Intake of large quantities may lead to symptoms such as headache, dizziness and vomiting.
Carcinogenicity/Teratogenicity/Mutagenicity/Reproductive effects :	None known.

12. Ecological Information

Persistence and degradability:	Fertilizer granules are soluble in water and biodegradable.Coating materials are persistent and not biodegradable.
Aquatic toxicity:	Large amounts of product released to water systems will be harmful to aquatic plant and animal life

13. Disposal Consideration

Safe disposal methods:	Uncontaminated product may be reused as fertilizer.
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14. Transport Information

IMO/IMDG CODE :	UN 2071, Class 9, Ammonium Nitrate Based Fertilizer, PG III
Ems: F-H, S-Q	
	(CFR49. 172.101 Class9, Ammonium Nitrate Fertilizers, UN 2071, PG III)

15. Regulatory Information

Labelling according to IMO/IMDG and ICAO: 9
National regulations: Existing national and local regulations applicable to chemical products have to be observed.

16. Other Information

Additional comment: This information is furnished without warranty. express or implied, except that it is accurate to the best knowledge of Chisso-Asahi Fertilizer Co.,Ltd.

MATERIAL SAFETY DATA SHEET

1. Chemical Product & Company Identification

Product Name : Nutricote Regular 14-14-14 Controlled Release Fertilizer
 General Use : Fertilizer
 Product Description : Ammonium nitrate based fertilizer
 Manufacturer : Chisso-Asahi Fertilizer Co.,Ltd. Tokyo, Japan
 7-12, Koraku 1-chome, Bunkyo-ku, Tokyo, Japan
 Telephone: +81-3-3814-6311 Telefax: +81-3-3814-6327
 Emergency Phone No. CHEMTREC
 United States: (800)424-9300 24 hours Everyday
 International: +1-(703)527-3887(Collect) 24 hours Everyday

2. Composition / Information on Ingredients

Chemical Composition(Typical Analysis)

Chemical Name	wt%	CAS NO.	Chemical Formula
Ammonium Nitrate	27.9	6484-52-2	NH ₄ NO ₃
Monobasic Ammonium Phosphate	21.2	7722-76-1	NH ₄ H ₂ PO ₄
Calcium Phosphate	5.3	7757-93-9	CaHPO ₄
Potassium Nitrate	21.3	7757-79-1	KNO ₃
Potassium Sulfate	8.8	7778-80-5	K ₂ SO ₄
Others	*1	6.9	—
Polyolefin	*2	4.3	—
Talc		4.3	14807-96-6

*1 Others contain salts of Gypsum, Tricalcium Phosphate etc. *2 Polyolefin contain polyethylen etc.

3. Hazards Identification

Emergency Overview: When heated to decomposition it emits toxic gases of Nox, ammonia.

Potential Health Effects :

Inhalation: Inhalation of dust may irritate nose, throat, and lungs.
 Eye contact: Dust from this product may cause particulate discomfort to eyes.
 Skin contact: Prolonged or repeated direct contact with fertilizer may irritate skin.
 Ingestion: Ingestion of large quantities may lead to symptoms such as headache, dizziness and vomiting.

4. First-Aid Measures

Inhalation: In case of accidental inhalation of fumes from overheating or combustion, move to fresh air.
 In needed, seek medical attention.
 Eye contact: In case of dust or granule in the eyes, flush with plenty of running water.
 Skin contact: Wash thoroughly with soap and water.
 Ingestion: If conscious, give plenty of water to drink and provoke vomiting. If needed call a doctor.

5. Fire-Fighting Measures

Extinguishing agents: Water
 Hazards/preventive measures: Remove the product from organic materials as it may support combustion of them.
 When heated to decomposition, it emits toxic fumes of Nox and ammonia.
 Remove the product from the source of fire.
 Do not enter fire area without self-contained breathing apparatus. If it is difficult to move, flush with plenty of water.

6. Accidental Release Measures

Sweep up and shovel into suitable containers for disposal. Avoid contact with combustibles. Reuse as fertilizer, if possible.

7. Handling & Storage

Handling: Handle in accordance with good industrial hygiene and safety practice.
 Avoid mixing with combustible organism and strong alkaline agents.
 Storage: The product is hygroscopic and should therefore be stored in a dry place.
 Store away from reducing agents. Keep out of reach of children.

8. Exposure Controls / Personal Protection

Engineering controls:	No specific controls are needed.		
Personal protective equipment:	Normally not required. In extremely dusty conditions, appropriate protective equipment is recommended: Respiration: dust mask with particle filter Eyes: Safety goggles Hands: rubber gloves Wash hands at the end of work and contaminated clothing before		
Exposure guidelines:	Not applicable in TLVs of ACGIH.		

9. Physical & Chemical Properties

Appearance and odor:	Grey prills. Odourless		
Melting point:	n.d.	Vapour pressure:	n.a.
Boiling point:	n.d.	vapour density:	n.a.
Freezing point:	n.a.	Evaporate rate:	n.a.
Specific gravity(H2O=1):	1.0	Solubility in water:	none
Flammability:	none		
	n.a. = not applicable n.d. = not determined		

10. Stability & Reactivity

Chemical stability:	Stable
Conditions to avoid:	High Heating. See section5
Incompatibility with other materials	Strong alkaline agents.
Hazardous decomposition product	Nitrogen oxides(Nox). Ammonia.

11. Toxicological Information

Acute & chronic toxicity:	No data for mixture.
Primary irritation effects:	
Skin:	Not irritating.
Eyes:	Not irritating. Prills may cause temporary mechanical eye irritation.
Inhalation:	Gases of nitrogen oxides and ammonia (formed by decomposition of the heated product) are toxic.
Ingestion:	Intake of large quantities may lead to symptoms such as headache, dizziness and vomiting.
Carcinogenicity/Teratogenicity/Mutagenicity/Reproductive effects :	None known.

12. Ecological Information

Persistence and degradability: Fertilizer granules are soluble in water and biodegradable. Coating materials are persistent and not biodegradable.
Aquatic toxicity: Large amounts of product released to water systems will be harmful to aquatic plant and animal life

13. Disposal Consideration

Safe disposal methods: Uncontaminated product may be reused as fertilizer.

14. Transport Information

IMO/IMDG CODE : UN 2071, Class 9, Ammonium Nitrate Based Fertilizer, PG III
Ems: F-H, S-Q
(CFR49. 172.101 Class9, Ammonium Nitrate Fertilizers, UN 2071, PG III)

15. Regulatory Information

Labelling according to IMO/IMDG and ICAO: 9
National regulations: Existing national and local regulations applicable to chemical products have to be observed.

16. Other Information

Additional comment: This information is furnished without warranty, express or implied, except that it is accurate to the best knowledge of Chisso-Asahi Fertilizer Co.,Ltd.

MATERIAL SAFETY DATA SHEET

1. Chemical Product & Company Identification

Product Name : Nutricote Regular 20-7-10 Controlled Release Fertilizer
 General Use : Fertilizer
 Product Description : Ammonium nitrate based fertilizer
 Manufacturer : Chisso-Asahi Fertilizer Co.,Ltd. Tokyo, Japan
 7-12, Koraku 1-chome, Bunkyo-ku, Tokyo, Japan
 Telephone: +81-3-3814-6311 Telefax: +81-3-3814-6327
 Emergency Phone No. CHEMTREC
 United States: (800)424-9300 24 hours Everyday
 International: +1-(703)527-3887(Collect) 24 hours Everyday

2. Composition / Information on Ingredients

Chemical Composition(Typical Analysis)

Chemical Name	wt%	CAS NO.	Chemical Formula
Ammonium Nitrate	49.4	6484-52-2	NH ₄ NO ₃
Monobasic Ammonium Phosphate	8.8	7722-76-1	NH ₄ H ₂ PO ₄
Calcium Phosphate	4.2	7757-93-9	CaHPO ₄
Potassium Nitrate	17.1	7757-79-1	KNO ₃
Potassium Sulfate	4.4	7778-80-5	K ₂ SO ₄
Others	*1	7.3	—
Polyolefin	*2	4.4	—
Talc		4.4	14807-96-6

*1 Others contain salts of Gypsum, Tricalcium Phosphate etc. *2 Polyolefin contain polyethylen etc.

3. Hazards Identification

Emergency Overview: When heated to decomposition it emits toxic gases of Nox, ammonia.

Potential Health Effects :

Inhalation: Inhalation of dust may irritate nose, throat, and lungs.
 Eye contact: Dust from this product may cause particulate discomfort to eyes.
 Skin contact: Prolonged or repeated direct contact with fertilizer may irritate skin.
 Ingestion: Ingestion of large quantities may lead to symptoms such as headache, dizziness and vomiting.

4. First-Aid Measures

Inhalation: In case of accidental inhalation of fumes from overheating or combustion, move to fresh air.
 In needed, seek medical attention.
 Eye contact: In case of dust or granule in the eyes, flush with plenty of running water.
 Skin contact: Wash thoroughly with soap and water.
 Ingestion: If conscious, give plenty of water to drink and provoke vomiting. If needed call a doctor.

5. Fire-Fighting Measures

Extinguishing agents: Water
 Hazards/preventive measures: Remove the product from organic materials as it may support combustion of them.
 When heated to decomposition, it emits toxic fumes of Nox and ammonia.
 Remove the product from the source of fire.
 Do not enter fire area without self-contained breathing apparatus. If it is difficult to move, flush with plenty of water.

6. Accidental Release Measures

Sweep up and shovel into suitable containers for disposal. Avoid contact with combustibles. Reuse as fertilizer, if possible.

7. Handling & Storage

Handling: Handle in accordance with good industrial hygiene and safety practice.
 Avoid mixing with combustible organism and strong alkaline agents.
 Storage: The product is hygroscopic and should therefore be stored in a dry place.
 Store away from reducing agents. Keep out of reach of children.

8. Exposure Controls / Personal Protection

Engineering controls:	No specific controls are needed.		
Personal protective equipment:	Normally not required. In extremely dusty conditions, appropriate protective equipment is recommended:		
	Respiration:	dust mask with particle filter	
	Eyes:	Safety goggles	
	Hands:	rubber gloves	
	Wash hands at the end of work and contaminated clothing before		
Exposure guidelines:	Not applicable in TLVs of ACGIH.		

9. Physical & Chemical Properties

Appearance and odor:	Grey prills. Odourless		
Melting point:	n.d.	Vapour pressure:	n.a.
Boiling point:	n.d.	vapour density:	n.a.
Freezing point:	n.a.	Evaporate rate:	n.a.
Specific gravity(H ₂ O=1):	1.0	Solubility in water:	none
Flammability:	none		
	n.a. = not applicable n.d. = not determined		

10. Stability & Reactivity

Chemical stability:	Stable
Conditions to avoid:	High Heating. See section 5
Incompatibility with other materials:	Strong alkaline agents.
Hazardous decomposition product:	Nitrogen oxides(Nox). Ammonia.

11. Toxicological Information

Acute & chronic toxicity:	No data for mixture.
Primary irritation effects:	
Skin:	Not irritating.
Eyes:	Not irritating. Prills may cause temporary mechanical eye irritation.
Inhalation:	Gases of nitrogen oxides and ammonia (formed by decomposition of the heated product) are toxic.
Ingestion:	Intake of large quantities may lead to symptoms such as headache, dizziness and vomiting.
Carcinogenicity/Teratogenicity/Mutagenicity/Reproductive effects :	None known.

12. Ecological Information

Persistence and degradability:	Fertilizer granules are soluble in water and biodegradable. Coating materials are persistent and not biodegradable.
Aquatic toxicity:	Large amounts of product released to water systems will be harmful to aquatic plant and animal life

13. Disposal Consideration

Safe disposal methods:	Uncontaminated product may be reused as fertilizer.
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14. Transport Information

IMO/IMDG CODE :	UN 2071, Class 9, Ammonium Nitrate Based Fertilizer, PG III
Ems:	F-H, S-Q
	(CFR49. 172.101 Class9, Ammonium Nitrate Fertilizers, UN 2071, PG III)

15. Regulatory Information

Labelling according to IMO/IMDG and ICAO:	9
National regulations:	Existing national and local regulations applicable to chemical products have to be observed.

16. Other Information

Additional comment:	This information is furnished without warranty, express or implied, except that it is accurate to the best knowledge of Chisso-Asahi Fertilizer Co.,Ltd.
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MATERIAL SAFETY DATA SHEET

1. Chemical Product & Company Identification

Product Name : Nutricote Total 18-6-8 Controlled Release Fertilizer
 General Use : Fertilizer
 Product Description : Ammonium nitrate based fertilizer
 Manufacturer : Chisso-Asahi Fertilizer Co.,Ltd. Tokyo, Japan
 7-12, Koraku 1-chome, Bunkyo-ku, Tokyo, Japan
 Telephone: +81-3-3814-6311 Telefax: +81-3-3814-6327
 Emergency Phone No. CHEMTREC
 United States: (800)424-9300 24 hours Everyday
 International: +1-(703)527-3887(Collect) 24 hours Everyday

2. Composition / Information on Ingredients

Chemical Composition(Typical Analysis)

Chemical Name	wt%	CAS NO.	Chemical Formula
Ammonium Nitrate	45.7	6484-52-2	NH ₄ NO ₃
Monobasic Ammonium Phosphate	9.6	7722-76-1	NH ₄ H ₂ PO ₄
Calcium Phosphate	2.1	7757-93-9	CaHPO ₄
Potassium Nitrate	11.7	7757-79-1	KNO ₃
Potassium Sulfate	4.8	7778-80-5	K ₂ SO ₄
Magnesium Sulfate Hydrate	9.7	7487-88-9	MgSO ₄ .nH ₂ O
EDTA-Fe(III)	1.45	15708-41-5	C ₁₀ H ₁₂ F _e N ₂ O ₈ N _a
Manganese Sulfate Hydrate	0.22	15244-36-7	MnSO ₄ .nH ₂ O
Copper Sulfate Hydrate	0.13	7758-99-8	CuSO ₄ .nH ₂ O
Boric acid	0.13	10043-35-3	H ₃ BO ₃
Disodium Molybdate Hydrate	0.045	10102-40-6	Na ₂ MoO ₄ .nH ₂ O
Zinc Sulfate Hydrate	0.045	7746-20-0	ZnSO ₄ .nH ₂ O
Others	*1	5.2	—
Polyolefin	*2	4.6	—
Talc		4.6	14807-96-6

*1 Others contain salts of Gypsum, Tricalcium Phosphate etc. *2 Polyolefin contain polyethylen etc.

3. Hazards Identification

Emergency Overview: When heated to decomposition it emits toxic gases of Nox, ammonia.

Potential Health Effects :

Inhalation: Inhalation of dust may irritate nose, throat, and lungs.
 Eye contact: Dust from this product may cause particulate discomfort to eyes.
 Skin contact: Prolonged or repeated direct contact with fertilizer may irritate skin.
 Ingestion: Ingestion of large quantities may lead to symptoms such as headache, dizziness and vomiting.

4. First-Aid Measures

Inhalation: In case of accidental inhalation of fumes from overheating or combustion, move to fresh air.
 In needed, seek medical attention.
 Eye contact: In case of dust or granule in the eyes, flush with plenty of running water.
 Skin contact: Wash thoroughly with soap and water.
 Ingestion: If conscious, give plenty of water to drink and provoke vomiting. If needed call a doctor.

5. Fire-Fighting Measures

Extinguishing agents: Water
 Hazards/preventive measures: Material is essentially non-flammable but has slight oxidizing properties. Remove the product from organic materials as it may support combustion of them. When heated to decomposition, it emits toxic fumes of Nox and ammonia. Remove the product from the source of fire.
 Do not enter fire area without self-contained breathing apparatus. If it is difficult to move, flush with plenty of water.

6. Accidental Release Measures

Sweep up and shovel into suitable containers for disposal. Avoid contact with combustibles. Reuse as fertilizer, if possible.

7. Handling & Storage

Handling:	Handle in accordance with good industrial hygiene and safety practice. Avoid mixing with combustible organism and strong alkaline agents.
Storage:	The product is hygroscopic and should therefore be stored in a dry place. Store away from reducing agents. Keep out of reach of children.

8. Exposure Controls / Personal Protection

Engineering controls:	No specific controls are needed.
Personal protective equipment:	Nomally not required. In extremely dusty conditions, appropriate protective equipment is recommended: Respiration: dust mask with particle filter Eyes: Safety goggles Hands: rubber gloves Wash hands at the end of work and contaminated clothing before
Exposure guidelines:	Not applicable in TLVs of ACGIH.

9. Physical & Chemical Properties

Appearance and odor:	Grey prills. Odourless		
Melting point:	n.d.	Vapour pressure:	n.a.
Boiling point:	n.d.	vapour density:	n.a.
Freezing point:	n.a.	Evaporate rate:	n.a.
Specific gravity(H2O=1):	1.0	Solubility in water:	none
Oxidizing properties:	slight	Flammability:	none
	n.a. = not applicable n.d. = not determined		

10. Stability & Reactivity

Chemical stability:	Stable
Conditions to avoid:	High Heating. See section5
Incompatibility with other materials	Strong alkaline agents.
Hazardous decomposition product	Nitrogen oxides(Nox). Ammonia.

11. Toxicological Information

Acute & chronic toxicity:	No data for mixture.
Primary irritation effects:	
Skin:	Not irritating.
Eyes:	Not irritating. Prills may cause temporary mechanical eye irritation.
Inhalation:	Gases of nitrogen oxides and ammonia (formed by decomposition of the heated product) are toxic.
Ingestion:	Intake of large quantities may lead to symptoms such as headache, dizziness and vomiting.
Carcinogenicity/Teratogenicity/Mutagenicity/Reproductive effects :	None known.

12. Ecological Information

Persistence and degradability: Fertilizer granules are soluble in water and biodegradable. Coating materials are persistent and not biodegradable.
Aquatic toxicity: Large amounts of product released to water systems will be harmful to aquatic plant and animal life

13. Disposal Consideration

Safe disposal methods: Uncontaminated product may be reused as fertilizer.

14. Transport Information

IMO/IMDG CODE : UN 2067, Class 5.1, Ammonium Nitrate Based Fertilizer, PG III

Ems: F-H, S-Q

(CFR49. 172.101 Class5.1, Ammonium Nitrate Fertilizers, UN 2067, PG III)

15. Regulatory Information

Labelling according to IMO/IMDG and ICAO: 5.1

National regulations: Existing national and local regulations applicable to chemical products have to be observed.

16. Other Information

Additional comment: This information is furnished without warranty. express or implied, except that it is accurate to the best knowledge of Chisso-Asahi Fertilizer Co.,Ltd.