

## 1. Identification

- A. Product name : FLEXIBLE ADDITIVE FA-200
- B. Recommended Use and Restriction on Use
- 1) General use : Automotive refinish
  - 2) Restriction on use : Recommendations for purposes other use restrictions.
- C. Manufacturer / Supplier / distributor information
- 1) Company name : NOROO Paint & Coatings Co., Ltd.
  - 2) Address : 351, Bakdal-ro, Manan-gu, Anyang-si, Gyeonggi-do, Korea
  - 3) Emergency telephone number : +82-31-467-6114

## 2. Hazard identification

- A. GHS Classification : Flammable liquids Category 2 ▷Acute toxicity (dermal) Category 4 ▷Acute toxicity (inhalation: vapor) Category 4 ▷Reproductive toxicity Category 2 ▷Serious eye damage/irritation Category 2A ▷Specific target organ toxicity(Single exposure) Category 3 ▷Specific target organ toxicity(Repeated exposure) Category 1 ▷Specific target organ toxicity(Repeated exposure) Category 2 ▷Skin corrosion/irritation Category 2 ▷Aspiration hazard Category 1

- B. GHS label elements

- 1)Hazard symbols :



- 2)Signal words : DANGER

- 3)Hazard statements : Highly flammable liquid and vapour ▷Harmful in contact with skin ▷Harmful if inhaled  
 ▷Suspected of damaging fertility or the unborn child ▷Causes serious eye irritation ▷May cause respiratory irritation, May cause drowsiness and dizziness. ▷Causes damage to organs through prolonged or repeated exposure ▷May cause damage to organs through prolonged or repeated exposure ▷Causes skin irritation ▷May be fatal if swallowed and enters airways

- 4)Precautionary statements

- Keep away from heat/sparks/open flames/hot surfaces. No smoking. ▷Keep container tightly closed. ▷Ground/bond container and receiving equipment. ▷Use explosion-proof electrical/ventilating/lighting/equipment. ▷Use only non-sparking tools. Flammable liquids (chapter 2.6) 1, 2, 3 ▷Take precautionary measures against static discharge. ▷Wear protective gloves/protective clothing/eye protection/face protection. ▷Avoid breathing dust/fume/gas/mist/vapours/spray. ▷Use only outdoors or in a well-ventilated area. ▷Obtain special instructions before use. ▷Do not handle until all safety precautions have been read and understood. ▷Use personal protective equipment as required. ▷Wash hands thoroughly after handling. ▷Do not breathe dust/fume/gas/mist/vapours/spray. ▷Do not eat, drink or smoke when using this product.
- Response : IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. ▷In case of fire: Use Suitable extinguishing media for extinction ▷IF ON SKIN: Wash with plenty of soap and water. ▷Call a POISON CENTER or doctor/physician if you feel unwell. ▷Specific measures ▷Wash contaminated clothing before reuse. ▷IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. ▷Specific treatment. ▷If exposed or concerned: Get medical advice/attention. ▷IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. ▷If eye irritation persists: Get medical advice/attention. ▷Get medical advice/attention if you feel unwell. ▷If skin irritation occurs: Get medical advice/attention. ▷Take off contaminated clothing and wash before reuse. ▷IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. ▷Do NOT induce vomiting.
- Storage : Store in a well-ventilated place. Keep cool. ▷Store locked up. ▷Store in a well-ventilated

place. Keep container tightly closed.

- Disposal :Dispose of contents/container in accordance with local/regional/national/international regulation

C. Other hazards which do not result in classification : (NFPA Classification)

Chemical Name	NFPA grade		
	Health	Flammability	Reactivity
1,3-Dioxolan-2-one polymer with 1,6-hexanediol and 1,5-pentanediol	NO DATA	NO DATA	NO DATA
Toluene	2	3	0
Xylene	NO DATA	NO DATA	NO DATA

### 3. Composition/information on ingredients

Chemical Name	Trade names and Synonyms	CAS-NO	Content (%)
1,3-Dioxolan-2-one polymer with 1,6-hexanediol and 1,5-pentanediol	-	-	36~46
Toluene	Toluene	108-88-3	29~39
Xylene	Xylene	1330-20-7	27~37

### 4. First-aid measures

- A. Eye Contact : If irritation, pain, swelling, and tears or glaring may occur, immediately take a doctor's treatment  
Rinse exposed eyes with plenty of water for at least 15minutes.
- B. Skin Contact : Immediately wash off with soap and water for at least 15 minutes. If irritation or pain may occur, take a doctor's examination on exposed area. Discard clothing, and then wash off exposed area with soap and water.
- C. Inhalation : Discard contaminated clothing and shoes, and keep personal away. If breathing is difficult, administer oxygen If inhaled or swallowed, do not perform the inhalation phase of breathing Take an emergency medical examination by a doctor Perform the artificial respiration using the pocket mask installed the one way valves, or other inhaled medical devices. If the cessation of breathing may occur, perform the artificial respiration Avoid from source of exposure, and then moved into an area with fresh air
- D. Ingestion Contact : It is need to be considered that early removal of some ingested material by cautious gastric lavage must be weighed against potential complications of bleeding or perforation Get a doctor's attention immediately if ingestion of large amounts of materials. Take an appropriate medical treatment depending on the symptoms. Do not induce vomiting, and then if vomiting occurs, keep head below hips to prevent aspiration into lungs. Induce vomiting
- E. Notes to Physician : There is no specific antidote and take an appropriate medical treatment.

### 5. Fire-fighting measures

- A. Suitable (Unsuitable) extinguishing media
- 1) Suitable extinguishing media : Extinguished agent as powder foam or carbon dioxide, and regular foam
  - 2) (Unsuitable) extinguishing media : Water is not an appropriate extinguished agent
  - 3) Case of bic fire : Use an appropriate protect device depend on the fire scenario Evacuate more than 800m if an explosion hazard may occur. Spread a large amount of the extinguished agent as a mist form with staying upwind
- B. Specific hazards arising from the chemical
- 1) Pyrolysate : Carbon dioxide, toxic carbon compounds/Nitrogen compounds/sulfur compounds
  - 2) Fire and Explosion danger : Intermediate levels of fire hazard. Explosive vapor/air mixture can be made at a temperature of 100°C.
- C. Special protective actions for fire-fighters
- 1) Personal Precautions, protective equipment : Respirator or air respirator, heat resistant clothing, heat resistant hat, heat resistant gloves, heat resistant boots
  - 2) Emergency procedures : Keep unauthorized personnel out except the fire-suppression personnel Cool containers with water until well after fire is out. If there is no risk, move to move containers from fire area. Perform a fire fighting using an appropriate extinguished agent.

### 6. Accidental release measures

#### A. Personal Precautions, protective equipment and emergency procedures

- 1) Personal Precautions, protective equipment : Respirator for organic gases other appropriate protective equipment / protection / protective gloves
- 2) Emergency procedures : Do not contact with the skin Do work with the personal protected devices such as respirator for organic gases other appropriate protective equipment / protection / protective gloves Spread water for reducing the suppression of generated steam Take an action if there is no risk

#### B. Environmental precautions

- 1) Atmosphere : Stay upwind and keep out of low areas. Spread water for reducing the suppression of generated steam
- 2) Soil : Use absorbent to collect the appropriate container. Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand bag barriers.
- 3) Under water : Collect spilled material with mechanic devices Use absorbent to collect the appropriate container.

#### C. Methods and materials for containment and cleaning up

- 1) Small spill : Appropriate container for disposal of spilled material collected. Absorb for use sand or other non-combustible material.
- 2) Large spill : Notification to central government, local government. When emissions at least of the standard amount Keep unnecessary people away, isolate hazard area and deny entry.

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### 7. Handling and storage

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A. Precautions for safe handling : Use local ventilations and a full ventilation system when handling Close the container for minimizing the petroleum steam Ground for preventing the static discharge Keep or handle followed by Dangerous goods Safety Management Act

B. Conditions for safe storage, including any incompatibilities : Stored in an isolated place, Freezing note, Hot body care Do not contact to strong oxidizer or acid Keep proper temperature : 5~35°C Outdoor Storage is to avoid direct sunlight. Because of evaporation and contamination concerns, The vessel is fully enclosed and kept in ventilated indoor

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### 8. Exposure controls/personal protection

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#### A. Exposure Limits

- 1) 1,3-Dioxolan-2-one polymer with 1,6-hexanediol and 1,5-pentanediol
  - 1-1. ACGIH : NO DATA
  - 1-2. Biological exposure indices : NO DATA

#### 2) Toluene

- 2-1. ACGIH : A4
- 2-2. Biological exposure indices : NO DATA

#### 3) Xylene

- 3-1. ACGIH : A4
- 3-2. Biological exposure indices : NO DATA

B. Engineering Controls : ▷ Spread water for reducing the suppression of generated steam ▷ Stay upwind and keep out of low areas.. ▷ NO DATA. ▷ NO DATA.

#### C. Personal Protective Equipment

- 1) Respiratory protection : Use the personal protect respirator for organic solvent or higher level of capacity when workers are supposed to be exposed under unsuitable respiratory working condition, or longer period exposure than standard level. Wear respirator should be authorized by Korea Occupational Safety and Health Agency
- 2) Eye protection : Let workers do wear the safety glasses in case hazard caused by mist may be expected. Cleansing Organization (saline) or install washing facilities and an emergency washing facilities in the place close to workplace. Use the protect respirator for organic solvent or higher level of capacity.
- 3) Hand protection : Wear the chemical protection of gloves Do the workers wear the impermeable protective gloves made from rubber/PVC due to skin irritation may be supposed by chronicle/long period exposure.
- 4) Skin protection : Wear appropriate chemical protective clothing. Work after wearing the impermeable protective apron made by rubber/PVC in case hazard caused by exposure or spill, if needed wear the impermeable whole body protective clothing.

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### 9. Physical and chemical properties

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A.Appearance : transparent liquid  
B.Odor : solvent odor  
C.Odor threshold : NO DATA  
D.PH : NO DATA  
E.Melting point/Freezing point : NO DATA  
F.Initial Boiling Point/Boiling Ranges : 108~143°C  
G.Flash point : 18  
H.Evaporating Rate : NO DATA  
I.Flammability(solid, gas) : NON Flammable  
J.Upper/Lower Flammability or explosive limits : NO DATA  
K.Vapour pressure : NO DATA  
L.Solubility : NO DATA  
M.Vapour density : higher than air  
N.Specific gravity : 0.93-0.97  
O.Partition coefficient of n-octanol/water : NO DATA  
P.Autoignition temperature : 499°C  
Q.Decomposition temperature : NO DATA  
R.Viscosity : NO DATA  
S.Molecular weight : NO DATA

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## 10.Stability and reactivity

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A.Chemical stability : NO DATA  
B.Possibility of hazardous reactions : Avoid contaminants and friction Do not contact with heat, spark, flame or other flammable sources  
C.Conditions to avoid : Oxidation agent, metal and combustable materials  
D.Hazardous decomposition products : Thermal decomposition products (carbon etc.,)

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## 11.Toxicological information

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A.Information on the likely routes of exposure  
1)Respiratory tracts : Adverse lung effects, Dyspnoea, Hypothermia, Vomitting  
2)Oral : Vomitting, Diarrhea, Stomach pain, Irregular heartbeat  
3)Skin : Irritation, Burn, Adverse nerve effects  
4)Eye : Irritation, eye damage  
B.Delayed and immediate effects and also chronic effects from short and long term exposure  
1)1,3-Dioxolan-2-one polymer with 1,6-hexanediol and 1,5-pentanediol  
1-1. Acute toxicity  
a. Oral : NO DATA  
b. Dermal : NO DATA  
c. Inhalation : NO DATA  
1-2. Skin corrosion/irritation : NO DATA  
1-3. Serious eye damage/irritation : NO DATA  
1-4. Respiratory sensitization : NO DATA  
1-5. Skin sensitization : NO DATA  
1-6. Carcinogenicity  
6-1. IARC : NO DATA  
6-2. OSHA : NO DATA  
6-3. ACGIH : NO DATA  
6-4. NTP : NO DATA  
6-5. EU CLP : NO DATA  
1-7. Germ cell mutagenicity : NO DATA  
1-8. Reproductive toxicity : NO DATA  
1-9. STOT-single exposure : NO DATA  
1-10. STOT-repeated exposure : NO DATA  
1-11. Aspiration hazard : NO DATA  
2)Toluene  
2-1. Acute toxicity

- a. Oral : NO DATA
- b. Dermal : NO DATA
- c. Inhalation : NO DATA
- 2-2. Skin corrosion/irritation : skinIrritation, rabbit, Irritation, OECD Guide line 404 human, skin Irritation, guinea pig, skin Irritation
- 2-3. Serious eye damage/irritation : NO DATA
- 2-4. Respiratory sensitization : NO DATA
- 2-5. Skin sensitization : NO DATA
- 2-6. Carcinogenicity
  - 6-1. IARC : NO DATA
  - 6-2. OSHA : NO DATA
  - 6-3. ACGIH : NO DATA
  - 6-4. NTP : NO DATA
  - 6-5. EU CLP : NO DATA
- 2-7. Germ cell mutagenicity : NO DATA
- 2-8. Reproductive toxicity : Heritage in human epidemiological studies, increased neonatal dysplasia, malformations, decreased estrogen levels, in animal studies, toxicity does not appear in the first generation of the second generation in fetal death, birth defects symptoms appear
- 2-9. STOT-single exposure : Prayer is considered a central nervous system stimulating organs, acting anesthetic indicates
- 2-10. STOT-repeated exposure : Human headaches, memory loss, chronic central nervous system disorders, hematuria, proteinuria, renal dysfunction, such as brain atrophy, stem cell localization, hepatotoxicity and Causes
- 2-11. Aspiration hazard : Hydrocarbons, and the dynamic viscosity ratio of 0.65 mm<sup>2</sup> / s (25 °C) of

### 3)Xylene

- 3-1. Acute toxicity
  - a. Oral : NO DATA
  - b. Dermal : LD50 = 1590mg/kg(mouse)
  - c. Inhalation : LC50 = 10 ~ 20 mg/L
- 3-2. Skin corrosion/irritation : Stimulus-induced severe
- 3-3. Serious eye damage/irritation : Middle stimulus
- 3-4. Respiratory sensitization : NO DATA
- 3-5. Skin sensitization : NO DATA
- 3-6. Carcinogenicity
  - 6-1. IARC : NO DATA
  - 6-2. OSHA : NO DATA
  - 6-3. ACGIH : NO DATA
  - 6-4. NTP : NO DATA
  - 6-5. EU CLP : NO DATA
- 3-7. Germ cell mutagenicity : NO DATA
- 3-8. Reproductive toxicity : NO DATA
- 3-9. STOT-single exposure : Causes acting anesthetic
- 3-10. STOT-repeated exposure : Human eye, nose irritation, headache, chest pain, brain disorders, respiratory distress, cyanosis, fever, leukopenia causes, respiratory system, nervous system dysfunction Causes
- 3-11. Aspiration hazard : NO DATA

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## 12.Ecological information

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### A.Ecotoxicity

- 1)1,3-Dioxolan-2-one polymer with 1,6-hexanediol and 1,5-pentanediol
  - 1-1. Fish : NO DATA
  - 1-2. Crustaceans : NO DATA
  - 1-3. Algae : NO DATA
- 2)Toluene
  - 2-1. Fish : NO DATA
  - 2-2. Crustaceans : NO DATA
  - 2-3. Algae : NO DATA
- 3)Xylene

- 3-1. Fish : NO DATA
- 3-2. Crustaceans : NO DATA
- 3-3. Algae : NO DATA
- B.Persistence and degradability
  - 1)1,3-Dioxolan-2-one polymer with 1,6-hexanediol and 1,5-pentenediol
    - 1-1. Persistence : NO DATA
    - 1-2. Degradability : NO DATA
  - 2)Toluene
    - 2-1. Persistence : NO DATA
    - 2-2. Degradability : NO DATA
  - 3)Xylene
    - 3-1. Persistence : NO DATA
    - 3-2. Degradability : NO DATA
- C.Bioaccumulative potential
  - 1)1,3-Dioxolan-2-one polymer with 1,6-hexanediol and 1,5-pentenediol
    - 1-1. Bioaccumulative potential : NO DATA
    - 1-2. Biodegration : NO DATA
  - 2)Toluene
    - 2-1. Bioaccumulative potential : NO DATA
    - 2-2. Biodegration : NO DATA
  - 3)Xylene
    - 3-1. Bioaccumulative potential : NO DATA
    - 3-2. Biodegration : NO DATA
- D.Mobility in soil
  - 1) 1,3-Dioxolan-2-one polymer with 1,6-hexanediol and 1,5-pentenediol
    - ▷ NO DATA
  - 2) Toluene
    - ▷ NO DATA
  - 3) Xylene
    - ▷ NO DATA
- E.Other adverse effects
  - 1) 1,3-Dioxolan-2-one polymer with 1,6-hexanediol and 1,5-pentenediol
    - ▷ NO DATA
  - 2) Toluene
    - ▷ NO DATA
  - 3) Xylene
    - ▷ NO DATA

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### 13.Disposal considerations

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- A.Disposal methods : Spilled material should keep in the airtighted container, and consign according to Waste Mateial Management Act
- B.Special precautions for disposal : Discard it followed by appropriate regulations Prohibit the unauthorized disposal and incineration due to adversely affect natural ecosystems

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### 14.Transport information

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- A.UN number : 1263
- B.Proper shipping name : PAINT (including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning or reducing compound)
- C.Hazard class : 3
- D.Packing group : II
- E.Marine pollutant : be applicable

F.Special precautions for user related to transport or transportation measures

- 1)EmS FIRE SCHEDULE : F-E
- 2)EmS SPILLAGE SCHEDULE : S-E

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## 15. Regulatory information

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1)1,3-Dioxolan-2-one polymer with 1,6-hexanediol and 1,5-pentanediol

1-1. Information of EU Classification

- ▷ Classification : NO DATA
- ▷ Risk Phrases : NO DATA
- ▷ Safety Phrase : NO DATA

1-2. U.S. Federal regulations

- ▷ OSHA PROCESS SAFETY (29CFR1910.119) : NO DATA
- ▷ CERCLA Section 103 (40CFR302.4) : NO DATA
- ▷ EPCRA Section 302 (40CFR355.30) : NO DATA
- ▷ EPCRA Section 304 (40CFR355.40) : NO DATA
- ▷ EPCRA Section 313 (40CFR372.65) : NO DATA

1-3. Rotterdam Convention listed ingredients : NO DATA

1-4. Stockholm Convention listed ingredients : NO DATA

1-5. Montreal Protocol listed ingredients : NO DATA

2)Toluene

2-1. Information of EU Classification

- ▷ Classification : F; R11Repr. Cat. 3; R63Xn; R48/20-65Xi; R38R67
- ▷ Risk Phrases : R: 11-38-48/20-63-65-67
- ▷ Safety Phrase : S: (2-)36/37-46-62

2-2. U.S. Federal regulations

- ▷ OSHA PROCESS SAFETY (29CFR1910.119) : notapplicable
- ▷ CERCLA Section 103 (40CFR302.4) : 453.599 kg 1000 lb
- ▷ EPCRA Section 302 (40CFR355.30) : notapplicable
- ▷ EPCRA Section 304 (40CFR355.40) : notapplicable
- ▷ EPCRA Section 313 (40CFR372.65) : pertinent

2-3. Rotterdam Convention listed ingredients : NO DATA

2-4. Stockholm Convention listed ingredients : NO DATA

2-5. Montreal Protocol listed ingredients : NO DATA

3)Xylene

3-1. Information of EU Classification

- ▷ Classification : R10Xn; R20/21Xi; R38
- ▷ Risk Phrases : R: 10-20/21-38
- ▷ Safety Phrase : S: (2-)25

3-2. U.S. Federal regulations

- ▷ OSHA PROCESS SAFETY (29CFR1910.119) : notapplicable
- ▷ CERCLA Section 103 (40CFR302.4) : 45.3599 kg 100 lb
- ▷ EPCRA Section 302 (40CFR355.30) : notapplicable
- ▷ EPCRA Section 304 (40CFR355.40) : notapplicable
- ▷ EPCRA Section 313 (40CFR372.65) : pertinent

3-3. Rotterdam Convention listed ingredients : NO DATA

3-4. Stockholm Convention listed ingredients : NO DATA

3-5. Montreal Protocol listed ingredients : NO DATA

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## 16.Other information

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A.Reference : Occupational Health and Safety Act

Korea Industrial Safety Corporation Preparation of Material Safety Data Sheet

KOSHA CODE W-05-2007 【The guideline for MSDS , 2012.】

B.Issue date : 2007-08-29

C.Revision number and Last date revised : 2.(2013-07-01)

D.Other : " WWW.NOROO.CO.KR"