

### Safety Data Sheet

According to U.S.A. Federal Hazcom 2012 and Canadian HPR - WHMIS 2015

#### 1. Identification

##### 1.1. Product identifier

Code **MI528-0**  
Product name **Iron Reagent**

##### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Intended use **Determination of Iron in Water Samples.**

##### 1.3. Details of the supplier of the safety data sheet

Name **Milwaukee Electronics Kft.**  
Full address **Alsóikötő sor 11.**  
District and Country **H6726 Szeged**  
**Hungary**  
Tel. **+36-62-428-050**  
Fax **+36-62-428-051**

e-mail address of the competent person responsible for the Safety Data Sheet **info@milwaukeeinst.com**

Product distribution by: **Milwaukee Instruments, Inc.- 2950 Business Park Drive - Rocky Mount - NC 27804 - U.S.A. - Technical Service Contact Information: +1 252 443 3630, fax number 252.443.1937 - e-mail: sales@milwaukeeinstruments.com**

##### 1.4. Emergency telephone number

For urgent inquiries refer to **USA Emergency Contact Information: +1-800-424-9300 - CHEMTREC 24 hours/365 days**

#### 2. Hazards identification

##### 2.1. Classification of the substance or mixture

The product is classified as hazardous pursuant to the provisions set forth in OSHA Hazard Communication Standard (HCS) (29 CFR 1910.1200). The product thus requires a safety datasheet. Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

Classification and Hazard Statement  
Acute toxicity, category 4 Harmful if swallowed.  
Serious eye damage, category 1 Causes serious eye damage.

Hazard pictograms:



Signal words: **Danger**

Hazard statements:  
**H302** Harmful if swallowed.  
**H318** Causes serious eye damage.

Precautionary statements:

Prevention:  
**P280** Wear protective gloves / eye protection / face protection.

Response:  
**P305+P351+P338** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
**P310** Immediately call a POISON CENTER or doctor.

## 2. Hazards identification ... / >>

Storage: --  
Disposal: --

The mixture contains 25.30% of components of unknown acute oral toxicity.

### 2.2. Other hazards

Environmental classification as for Reg. (EU) 1272/2008 (CLP):

The product is classified as hazardous for environment pursuant to the provisions set forth in EC Regulation 1272/2008 (CLP).

Classification and Hazard Statement

Hazardous to the aquatic environment, chronic toxicity, category 3

Harmful to aquatic life with long lasting effects.

Hazard statements:

**H412** Harmful to aquatic life with long lasting effects.

Precautionary statements:

Prevention: --  
Response: --  
Storage: --  
Disposal: --

Additional hazards

Contact with acids liberates toxic gas.

## 3. Composition/information on ingredients

### 3.2. Mixtures

Contains:

Identification	x = Conc. %	Classification:
<b>SODIUM METABISULFITE</b>		
CAS	7681-57-4	<b>Acute toxicity, category 4 H302, Serious eye damage, category 1 H318</b>
EC	231-673-0	
INDEX	016-063-00-2	
<b>SODIUM DITHIONITE</b>		
CAS	7775-14-6	<b>Self-heating substance or mixture, category 1 H251, Acute toxicity, category 4 H302</b>
EC	231-890-0	
INDEX	016-028-00-1	
<b>1,10-PHENANTHROLINE</b>		
CAS	5144-89-8	<b>Acute toxicity, category 3 H301, Hazardous to the aquatic environment, acute toxicity, category 1 H400 M=1, Hazardous to the aquatic environment, chronic toxicity, category 1 H410 M=1</b>
EC	200-629-2	
INDEX	613-092-00-8	

\* There is a batch to batch variation.

The full wording of hazard (H) phrases is given in section 16 of the sheet.

## 4. First-aid measures

### 4.1. Description of first aid measures

**EYES:** Remove contact lenses, if present. Wash immediately with plenty of water for at least 15 minutes, opening the eyelids fully. If problem persists, seek medical advice.

**SKIN:** Remove contaminated clothing. Rinse skin with a shower immediately. Get medical advice/attention immediately. Wash contaminated clothing before using it again.

**INHALATION:** Remove to open air. If the subject stops breathing, administer artificial respiration. Get medical advice/attention immediately.

**INGESTION:** Get medical advice/attention immediately. Do not induce vomiting. Do not administer anything not explicitly authorised by a doctor.

#### 4. First-aid measures ... / >>

##### 4.2. Most important symptoms and effects, both acute and delayed

Specific information on symptoms and effects caused by the product are unknown.

###### SODIUM METABISULFITE

Irritation and corrosion. Risk of serious damage to eyes.

###### SODIUM DITHIONITE

Irritant effects, Cough, respiratory paralysis, Shortness of breath, pain, Diarrhoea, Nausea, Vomiting, collapse, muscular weakness, death.

##### 4.3. Indication of any immediate medical attention and special treatment needed

Information not available

#### 5. Fire-fighting measures

##### 5.1. Extinguishing media

###### SUITABLE EXTINGUISHING EQUIPMENT

The extinguishing equipment should be of the conventional kind: carbon dioxide, foam, powder and water spray.

###### UNSUITABLE EXTINGUISHING EQUIPMENT

None in particular.

##### 5.2. Special hazards arising from the substance or mixture

###### HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE

Do not breathe combustion products. The product is combustible and, when the powder is released into the air in sufficient concentrations and in the presence of a source of ignition, it can create explosive mixtures with air. Fires may start or get worse by leakage of the solid product from the container, when it reaches high temperatures or through contact with sources of ignition.

###### SODIUM METABISULFITE

Not combustible. Ambient fire may liberate hazardous vapours. Fire may cause evolution of: Sulphur oxides.

###### SODIUM DITHIONITE

Combustible material, danger of spontaneous combustion! Risk of dust explosion. Development of hazardous combustion gases or vapours possible in the event of fire. Fire may cause evolution of: Sulphur oxides.

###### 1,10-PHENANTHROLINE

Combustible. Development of hazardous combustion gases or vapours possible in the event of fire. Fire may cause evolution of: nitrogen oxides.

##### 5.3. Advice for firefighters

###### GENERAL INFORMATION

Use jets of water to cool the containers to prevent product decomposition and the development of substances potentially hazardous for health. Always wear full fire prevention gear. Collect extinguishing water to prevent it from draining into the sewer system. Dispose of contaminated water used for extinction and the remains of the fire according to applicable regulations.

###### SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS

Normal fire fighting clothing i.e. fire kit (BS EN 469), gloves (BS EN 659) and boots (HO specification A29 and A30) in combination with self-contained open circuit positive pressure compressed air breathing apparatus (BS EN 137).

#### 6. Accidental release measures

##### 6.1. Personal precautions, protective equipment and emergency procedures

If there are no contraindications, spray powder with water to prevent the formation of dust.

Wear suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. These indications apply for both processing staff and those involved in emergency procedures.

##### 6.2. Environmental precautions

The product must not penetrate into the sewer system or come into contact with surface water or ground water.

##### 6.3. Methods and material for containment and cleaning up

Collect the leaked product and place it in containers for recovery or disposal. If there are no contraindications, use jets of water to eliminate product residues.

Make sure the leakage site is well aired. Evaluate the compatibility of the container to be used, by checking section 10. Contaminated

### 6. Accidental release measures ... / >>

material should be disposed of in compliance with the provisions set forth in point 13.

#### 6.4. Reference to other sections

Any information on personal protection and disposal is given in sections 8 and 13.

## 7. Handling and storage

### 7.1. Precautions for safe handling

Ensure that there is an adequate earthing system for the equipment and personnel. In order to avoid the risk of fires and explosions, never use compressed air when handling. Keep away from heat, sparks and naked flames; do not smoke or use matches or lighters. Avoid leakage of the product into the environment. Avoid contact with eyes and skin. Do not breathe powders, vapours or mists. Do not eat, drink or smoke during use. Remove any contaminated clothes and personal protective equipment before entering places in which people eat.

### 7.2. Conditions for safe storage, including any incompatibilities

Store only in the original container. Keep the product in clearly labelled containers. Keep containers well sealed. Store in a ventilated and dry place, far away from sources of ignition. Avoid violent blows. Avoid overheating. Avoid contact with water.

### 7.3. Specific end use(s)

Information not available

## 8. Exposure controls/personal protection

### 8.1. Control parameters

Regulatory References:

USA	NIOSH-REL	NIOSH publication No. 2005-149, 3th printing, 2007.
USA	CAL/OSHA-PEL	California Division of Occupational Safety and Health (Cal-OSHA) Permissible Exposure Limits (PELs).
	TLV-ACGIH	ACGIH 2019

#### SODIUM METABISULFITE

##### Threshold Limit Value

Type	Country	TWA/8h		STEL/15min	
		mg/m3	ppm	mg/m3	ppm
TLV-ACGIH	-	5			
CAL/OSHA	USA	5			
NIOSH	USA	5			

Legend:

(C) = CEILING ; INHAL = Inhalable Fraction ; RESP = Respirable Fraction ; THORA = Thoracic Fraction.

During the risk assessment process, it is essential to take into consideration the ACGIH occupational exposure levels for inert particulate not otherwise classified (PNOC respirable fraction: 3 mg/m3; PNOC inhalable fraction: 10 mg/m3). For values above these limits, use a P type filter, whose class (1, 2 or 3) must be chosen according to the outcome of risk assessment.

### 8.2. Exposure controls

As the use of adequate technical equipment must always take priority over personal protective equipment, make sure that the workplace is well aired through effective local aspiration. Personal protective equipment must comply with current regulations.

#### HAND PROTECTION

In the case of prolonged contact with the product, protect the hands with penetration-resistant work gloves (OSHA 29 CFR 1910.138). Work glove material must be chosen according to the use process and the products that may form. Latex gloves may cause sensitivity reactions.

#### SKIN PROTECTION

Wear category I professional long-sleeved overalls and safety footwear. Wash body with soap and water after removing protective clothing.

#### EYE PROTECTION

Wear airtight protective goggles (OSHA 29 CFR 1910.133).

#### RESPIRATORY PROTECTION

Use a NIOSH certified filtering facemask (NIOSH 42 CFR 84, OSHA 29 CFR 1910.134) or equivalent device, whose class and effective need, must be defined according to the outcome of risk assessment.

#### ENVIRONMENTAL EXPOSURE CONTROLS

The emissions generated by manufacturing processes, including those generated by ventilation equipment, should be checked to ensure compliance with environmental standards.

Product residues must not be indiscriminately disposed of with waste water or by dumping in waterways.

## 9. Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Properties	Value	Information
Appearance	solid powder	
Colour	ivory	
Odour	pungent	
Odour threshold	Not available	
pH	5.5 - 6.0 pH, 17 g/L	
Melting point / freezing point	Not available	
Initial boiling point	Not applicable	
Boiling range	Not available	
Flash point	Not applicable	
Evaporation rate	Not available	
Flammability (solid, gas)	Not available	
Lower inflammability limit	Not available	
Upper inflammability limit	Not available	
Lower explosive limit	Not available	
Upper explosive limit	Not available	
Vapour pressure	Not available	
Vapour density	Not available	
Relative density	2	
Solubility	soluble in water	
Partition coefficient: n-octanol/water	Not available	
Auto-ignition temperature	Not available	
Decomposition temperature	Not available	
Viscosity	Not available	
Explosive properties	Not available	
Oxidising properties	Not available	

### 9.2. Other information

Total solids (250°C / 482°F)	100,00 %
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## 10. Stability and reactivity

### 10.1. Reactivity

There are no particular risks of reaction with other substances in normal conditions of use.

#### SODIUM DITHIONITE

Danger of spontaneous combustion! Self-ignition possible due to air moisture. Risk of dust explosion.

### 10.2. Chemical stability

The product is stable in normal conditions of use and storage.

#### SODIUM DITHIONITE

In case of decomposition in closed containers and tubes risk of bursting due to buildup of overpressure.

#### 1,10-PHENANTHROLINE

Sensitivity to light.

### 10.3. Possibility of hazardous reactions

The powders are potentially explosive when mixed with air.

#### SODIUM METABISULFITE

Generates dangerous gases or fumes in contact with: acids. Exothermic reaction with: Oxidizing agents, nitrites, nitrates, Sulphides.

#### SODIUM DITHIONITE

A risk of explosion and/or of toxic gas formation exists with the following substances: acids, Violent reactions possible with: Oxidizing agents, Water, salts of oxyhalogenic acids.

#### 1,10-PHENANTHROLINE

Violent reactions possible with: Oxidizing agents, acids.

### 10. Stability and reactivity ... / >>

#### 10.4. Conditions to avoid

Avoid environmental dust build-up.

#### SODIUM DITHIONITE

Exposure to moisture. Heating (decomposition). Caution! Temperatures > 50°C cause evolution of gas in closed containers.

Overpressure produces a risk of bursting.

#### 10.5. Incompatible materials

Information not available

#### 10.6. Hazardous decomposition products

Information not available

### 11. Toxicological information

In the absence of experimental data for the product itself, health hazards are evaluated according to the properties of the substances it contains, using the criteria specified in the applicable regulation for classification.

It is therefore necessary to take into account the concentration of the individual hazardous substances indicated in section 3, to evaluate the toxicological effects of exposure to the product.

#### 11.1. Information on toxicological effects

##### SODIUM METABISULFITE

Eye irritation, Rabbit, Result: Eye irritation, Causes serious eye damage.

##### SODIUM DITHIONITE

Acute inhalation toxicity, Symptoms: Irritation symptoms in the respiratory tract, Cough, Shortness of breath - Skin irritation rabbit, Result: No irritation - Eye irritation, Possible damages: slight irritation - Sensitisation, May produce an allergic reaction.

#### Metabolism, toxicokinetics, mechanism of action and other information

Information not available

#### Information on likely routes of exposure

Information not available

#### Delayed and immediate effects as well as chronic effects from short and long-term exposure

Information not available

#### Interactive effects

Information not available

#### ACUTE TOXICITY

##### SODIUM METABISULFITE

LD50 (Oral)	1540 mg/kg Rat
LD50 (Dermal)	> 2000 mg/kg Rat

##### 1,10-PHENANTHROLINE

LD50 (Oral)	132 mg/kg Rat
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##### SODIUM DITHIONITE

LD50 (Oral)	2500 mg/kg Rat
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#### SKIN CORROSION / IRRITATION

Does not meet the classification criteria for this hazard class

#### SERIOUS EYE DAMAGE / IRRITATION

Causes serious eye damage

#### RESPIRATORY OR SKIN SENSITISATION

### 11. Toxicological information ... / >>

Does not meet the classification criteria for this hazard class

#### GERM CELL MUTAGENICITY

Does not meet the classification criteria for this hazard class

#### CARCINOGENICITY

Does not meet the classification criteria for this hazard class

#### REPRODUCTIVE TOXICITY

Does not meet the classification criteria for this hazard class

#### STOT - SINGLE EXPOSURE

Does not meet the classification criteria for this hazard class

#### STOT - REPEATED EXPOSURE

Does not meet the classification criteria for this hazard class

#### ASPIRATION HAZARD

Does not meet the classification criteria for this hazard class

### 12. Ecological information

This product is dangerous for the environment and the aquatic organisms. In the long term, it have negative effects on aquatic environment.

#### 12.1. Toxicity

##### SODIUM METABISULFITE

EC50 - for Crustacea 89 mg/l/48h Daphnia magna

EC50 - for Algae / Aquatic Plants 48 mg/l/72h Desmodesmus subspicatus

##### SODIUM DITHIONITE

LC50 - for Fish 46 mg/l/96h Leuciscus idus

EC50 - for Crustacea 98 mg/l/48h Daphnia magna

EC50 - for Algae / Aquatic Plants 206 mg/l/72h Green algae

#### 12.2. Persistence and degradability

##### SODIUM METABISULFITE

Solubility in water > 10000 mg/l

Degradability: information not available

##### SODIUM DITHIONITE

Solubility in water > 10000 mg/l

Degradability: information not available

#### 12.3. Bioaccumulative potential

##### SODIUM METABISULFITE

Partition coefficient: n-octanol/water -3.7 Log Kow

## 12. Ecological information ... / >>

1,10-PHENANTHROLINE

Partition coefficient: n-octanol/water 1.78 Log Kow

SODIUM DITHIONITE

Partition coefficient: n-octanol/water < -4.7 Log Kow

### 12.4. Mobility in soil

Information not available

### 12.5. Results of PBT and vPvB assessment

On the basis of available data, the product does not contain any PBT or vPvB in percentage greater than 0,1%.

### 12.6. Other adverse effects

SODIUM DITHIONITE

Biological effects: Reacts with water to form toxic decomposition products.

## 13. Disposal considerations

### 13.1. Waste treatment methods

Reuse, when possible. Neat product residues should be considered special non-hazardous waste.

Disposal must be performed through an authorised waste management firm, in compliance with national and local regulations.

CONTAMINATED PACKAGING

Contaminated packaging must be recovered or disposed of in compliance with national waste management regulations.

## 14. Transport information

The product is not dangerous under current provisions of the Code of International Carriage of Dangerous Goods by Road (ADR) and by Rail (RID), of the International Maritime Dangerous Goods Code (IMDG), and of the International Air Transport Association (IATA) regulations.

### 14.1. UN number

Not applicable

### 14.2. UN proper shipping name

Not applicable

### 14.3. Transport hazard class(es)

Not applicable

### 14.4. Packing group

Not applicable

### 14.5. Environmental hazards

Not applicable

### 14.6. Special precautions for user

Not applicable

### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Information not relevant

## 15. Regulatory information

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

U.S. Federal Regulations

### 15. Regulatory information ... / >>

Clean Air Act Section 112(b):  
 No component(s) listed.

Clean Air Act Section 602 Class I Substances:  
 No component(s) listed.

Clean Air Act Section 602 Class II Substances:  
 No component(s) listed.

Clean Water Act – Priority Pollutants:  
 No component(s) listed.

Clean Water Act – Toxic Pollutants:  
 No component(s) listed.

DEA List I Chemicals (Precursor Chemicals):  
 No component(s) listed.

DEA List II Chemicals (Essential Chemicals):  
 No component(s) listed.

EPA List of Lists:  
313 Category Code:  
 No component(s) listed.

EPCRA 302 EHS TPQ:  
 No component(s) listed.

EPCRA 304 EHS RQ:  
 No component(s) listed.

CERCLA RQ:  
 No component(s) listed.

EPCRA 313 TRI:  
 No component(s) listed.

RCRA Code:  
 No component(s) listed.

CAA 112 (r) RMP TQ:  
 No component(s) listed.

#### State Regulations

Massachusetts:  
 7681-57-4 SODIUM METABISULFITE  
 7775-14-6 SODIUM DITHIONITE

Minnesota:  
 7681-57-4 SODIUM METABISULFITE

New Jersey:  
 7681-57-4 SODIUM METABISULFITE  
 7775-14-6 SODIUM DITHIONITE

New York:  
 No component(s) listed.

Pennsylvania:  
 7681-57-4 SODIUM METABISULFITE  
 7775-14-6 SODIUM DITHIONITE

California:  
 7681-57-4 SODIUM METABISULFITE

Proposition 65:  
 This product does not contain any substances known to the State of California to cause cancer, reproductive harm or birth defects.

### 15. Regulatory information ... / >>

#### International Regulations

Substances subject to exportation reporting pursuant to (EC) Reg. 649/2012:

None

Substances subject to the Rotterdam Convention:

None

Substances subject to the Stockholm Convention:

None

Candadian WHMIS

Information not available

### 16. Other information

Text of hazard (H) indications mentioned in section 2-3 of the sheet:

<b>H251</b>	Self-heating: may catch fire.
<b>H301</b>	Toxic if swallowed.
<b>H302</b>	Harmful if swallowed.
<b>H318</b>	Causes serious eye damage.
<b>H400</b>	Very toxic to aquatic life.
<b>H410</b>	Very toxic to aquatic life with long lasting effects.

#### LEGEND:

- 313 CATEGORY CODE: Emergency Planning and Community Right-to Know Act Section 313 Category Code
- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- CAA 112 ® RMP TQ: Risk Management Plan Threshold Quantity (Clean Air Act Section 112®)
- CAS NUMBER: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CERCLA RQ: Reportable Quantity (Comprehensive Environment Response, Compensation, and Liability Act)
- CLP: EC Regulation 1272/2008
- DEA: Drug Enforcement Administration
- EmS: Emergency Schedule
- EPA: US Environmental Protection Agency
- EPCRA: Emergency Planning and Community Right-to Know Act
- EPCRA 302 EHS TPQ: Extremely Hazardous Substance Threshold Planning Quantity (Section 302 Category Code)
- EPCRA 304 EHS RQ: Extremely Hazardous Substance Reportable Quantity (Section 304 Category Code)
- EPCRA 313 TRI: Toxics Release Inventory (Section 313 Category Code)
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- OEL: Occupational Exposure Level
- PEL: Predicted exposure level
- RCRA Code: Resource Conservation and Recovery Act Code
- REL: Recommended exposure limit
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TSCA: Toxic Substances Control Act
- TWA STEL: Short-term exposure limit
- TWA: Time-weighted average exposure limit
- VOC: Volatile organic Compounds
- WHMIS: Workplace Hazardous Materials Information System.

#### GENERAL BIBLIOGRAPHY:

- GHS rev. 3
- The Merck Index. 10th Edition
- Handling Chemical Safety
- Niosh - Registry of Toxic Effects of Chemical Substances
- INRS - Fiche Toxicologique (toxicological sheet)
- Patty - Industrial Hygiene and Toxicology
- N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition
- ECHA website
- Database of SDS models for chemicals - Ministry of Health and ISS (Istituto Superiore di Sanità) - Italy

**16. Other information** ... / >>

- 6 NYCRR part 597
- Cal/OSHA website
- California Safe Drinking Water and Toxic Enforcement Act
- EPA website
- Hazard Communication Standard (HCS 2012)
- IARC website
- List Of Lists EPA: Consolidated List of Chemicals Subject to EPCRA, CERCLA and Section 112© of the Clean Air Act
- Massachusetts 105 CMR Department of public health 670.000: "Right to Know"
- Minnesota Chapter 5206 Departemnt Of Labor and Industry Hazardous Substances, Employee "Right to Know".
- New Jersey Worker and Community Right to know Act N.J.S.A.
- NTP. 2011. Report on Carcinogens, 12th Edition.
- OSHA website
- Pennsylvania, Hazardous Substance List, Chapter 323

**Note for users:**

The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product.

This document must not be regarded as a guarantee on any specific product property.

The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses.

Provide appointed staff with adequate training on how to use chemical products.

Product's classification is based on the criteria set out in OSHA Hazard Communication Standard (HCS) (29 CFR 1910.1200), unless otherwise indicated in sections 11 and 12.

The data for evaluation of chemical-physical properties are reported in section 9.

**Changes to previous review:**

The following sections were modified:

01 / 02 / 03 / 04 / 05 / 08 / 09 / 10 / 11 / 12 / 16.