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**In Case of Emergency, Call
1-800-327-8633 (FAST MED)**

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MSDS prepared by:
Department of Regulatory & Biology Development
Syngenta Crop Protection Canada, Inc.

For further information contact:
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SECTION – 1: PRODUCT IDENTIFICATION

Product Identifier: TOUCHDOWN® iQ Liquid Herbicide
Registration Number: 27192 (Pest Control Products Act)
Chemical Class: Phosphonic acid herbicide
Synonym: None

Formulation No.: A127980

Active Ingredient (%): Glyphosate (28.3 %)
Chemical Name : N-(phosphonomethyl) glycine
Product Use: TOUCHDOWN® iQ is a water-soluble herbicide used for non-selective weed control. For further details please refer to product label.

CAS No.: 1071-83-6

SECTION – 2 : COMPOSITION/INFORMATION ON INGREDIENTS

Material	OSHA PEL	ACGIH TLV	Other	NTP/IARC/OSHA Carcinogen	WHMIS†
Ammonium Hydroxide CAS No. 1336-21-6 (≤ 5 %)	50 ppm TWA	25 ppm TWA	35 ppm STEL	No	Yes
Glyphosate (28.3 %)	Not Established	Not Established	10 mg/m ³ TWA***	No	Not Established

*** Syngenta Occupational Exposure Limit (OEL)

† Material listed in Ingredient Disclosure List under Hazardous Products Act.

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

SECTION – 3: HAZARDS IDENTIFICATION

Symptoms of Acute Exposure

May cause mild eye and skin irritation. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Hazardous Decomposition Products

Can decompose at high temperatures forming toxic gases.

Physical Properties

Appearance: Brown liquid.
Odour: Faint and sweet.

Unusual Fire, Explosion and Reactivity Hazards

This product will form flammable and explosive hydrogen gas on contact with incompatible metals (i.e. galvanized or unlined steel). See "Conditions to Avoid", Section 10. Can decompose at high temperatures and form toxic gases.

Potential Health Effects

Relevant routes of exposure: Skin, eyes, mouth, lungs.

Adverse health effects from exposure to product or ingredients of product:

May be mildly irritating via ocular and dermal routes. Product is of low toxicity via the ingestion route however, medical attention should be sought.

SECTION – 4: FIRST AID MEASURES

IF POISONING IS SUSPECTED, immediately contact the poison information centre, doctor or nearest hospital. Have the product container, label or Material Safety Data Sheet with you when calling Syngenta, a poison control center or doctor, or going for treatment. Tell the person contacted the complete product name, and the type and amount of exposure. Describe any symptoms and follow the advice given. Call the Syngenta Emergency Line [**1-800-327-8633 (1-800-FASTMED)**], for further information.

- EYE CONTACT:** Immediately flush eyes with clean water, holding eyelids apart for a minimum of 20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta, a poison control center or doctor for treatment advice. Obtain medical attention immediately if irritation persists.
- SKIN CONTACT:** Immediately remove contaminated clothing and wash skin, hair and fingernails thoroughly with soap and water. Flush skin with running water for a minimum of 20 minutes. Obtain medical attention if irritation occurs.
- INHALATION:** Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is laboured, give oxygen. Obtain immediate medical attention.
- INGESTION:** If swallowed, immediately contact Syngenta, a poison control centre, doctor or nearest hospital for treatment advice. Provided the patient is conscious, wash out mouth with water. Do not give anything by mouth to an unconscious person. Do not induce vomiting unless directed by a physician or a poison control center. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer water.

NOTES TO PHYSICIAN:

There is no specific antidote if this product is ingested. Treat symptomatically.

MEDICAL CONDITIONS KNOWN TO BE AGGRAVATED:

None known.

SECTION – 5: FIRE FIGHTING MEASURES

Flash point and method: Does not flash.

Upper and lower flammable (explosive) limits in air: Not available.

Auto-ignition temperature: Not available.

Flammability: Can burn in fire, releasing toxic vapours.

Hazardous combustion products: During a fire, irritating and possible toxic gases may be generated by thermal decomposition or combustion. Thermal decomposition products may include carbon monoxide, carbon dioxide and oxides of nitrogen and phosphorus.

Conditions under which flammability could occur: Product is not flammable. Keep fire exposed containers cool by spraying with water.

Extinguishing media: Use foam, carbon dioxide, dry powder, halon extinguishant or water fog or mist, (avoid use of water jet). Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion. Prevent use of contaminated buildings, area, and equipment until decontaminated. Water runoff can cause environmental damage. Contain run-off water with, for example, temporary earth barriers.

Sensitivity to explosion by mechanical impact: None known.

Sensitivity to explosion by static discharge: None known.

SECTION – 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions: Make sure all personnel involved in the spill cleanup follow good industrial hygiene practices. A small spill can be handled routinely. Wear suitable protective clothing and eye protection to prevent skin and eye contact. Use adequate ventilation and wear an air-supplied respirator to prevent inhalation.

Procedures for dealing with release or spill: Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Sections 7 and 8. Pump or scoop large amounts of liquid into a disposable container. Absorb remaining liquid or smaller spills with clay, sand or vermiculite. Scoop or sweep up material and place into a disposal container. Wash area with detergent and water. Pick up wash liquid with additional absorbent and place into compatible disposal container. On soils, skim off the upper contaminated layer and collect for disposal. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition. Spillages or uncontrolled discharges into watercourses must be alerted to the appropriate regulatory body.

SECTION – 7: HANDLING AND STORAGE

Handling practices: KEEP OUT OF REACH OF CHILDREN and animals. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. After work, rinse gloves and remove protective equipment. Wash hands thoroughly with soap and water after handling, and before eating, tobacco use, drinking, or using the toilet. Wash contaminated clothing before re-use and separate from household laundry. Keep containers closed when not in use. Keep product, wash or rinse water, and contaminated materials out of water, away from crops, and away from access by people, animals and birds.

Appropriate storage practices/requirements: Store in original container only in a well-ventilated, cool, dry, secure area. Protect from heat, sparks and flame. Do not expose sealed containers to temperatures above 40 °C and prevent product from freezing. Keep separate from other products to prevent cross contamination. Rotate stock. Clean up spilled material immediately.

National Fire Code classification: Not applicable.

SECTION – 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Applicable control measures, including engineering controls: This product is intended for use outdoors where engineering controls are not necessary. If necessary, ensure work areas have ventilation, containment, and procedures sufficient to maintain airborne levels below the TLV. Warehouses, production area, parking lots and waste holding facilities must have adequate containment to prevent environmental contamination. Provide separate shower and eating facilities.

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION, PACKAGING AND USE OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

Personal protective equipment for each exposure route:

General: Avoid breathing dust, vapours or aerosols. Avoid contact with eye, skin and clothing. Wash thoroughly after handling and before eating, drinking, or handling tobacco.

INGESTION: Do not eat, drink, handle tobacco, or apply cosmetics in areas where there is a potential for exposure to this material. Always wash thoroughly after handling.

EYES: Where eye contact is likely, use chemical splash goggles. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

SKIN: Where contact is likely, wear chemical-resistant gloves (such as nitrile or butyl), coveralls, socks and chemical-resistant footwear. For overhead exposure, wear chemical-resistant headgear.

INHALATION: A respirator is not normally required when handling this substance. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below exposure limits. A NIOSH-certified combination air-purifying respirator with an N, P or R 95 or HE class filter and an organic vapor cartridge may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a pressure demand atmosphere-supplying respirator if there is any potential for uncontrolled release,

exposure levels are not known, or under any other circumstances where air-purifying respirators may not provide adequate protection.

SECTION – 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Light to dark brown liquid.

Formulation Type: Solution.

Odour: Faint and sweet.

pH: 6.7 (1% aqueous solution @ 25 °C).

Vapour pressure and reference temperature: $< 1.8 \times 10^{-7}$ mmHg @ 20 °C (Glyphosate Technical).

Vapour density: Not available.

Boiling point: Not available.

Melting point: Not available.

Freezing point: -29 °C

Specific gravity or density: 1.27 g/mL @ 20 °C.

Evaporation Rate: Not available.

Water/oil partition coefficient: Not available.

Odour threshold: Not available.

Viscosity: 75 cps @ 20 °C.

Solubility in Water: 0.91 g/100 mL @ 20 °C (Glyphosate Technical).

SECTION – 10: STABILITY AND REACTIVITY

Chemical stability: Stable under normal use and storage conditions.

Conditions to avoid: Concentrate should not be stored in galvanized steel, carbon steel, aluminum or unlined steel containers. Spray solutions should not be mixed, stored or applied in containers other than plastic, plastic-lined steel, stainless steel or fiberglass.

Incompatibility with other materials: See “Conditions to Avoid”, above.

Hazardous decomposition products: This product will form flammable and explosive hydrogen gas on contact with incompatible metals (i.e. galvanized or unlined steel). See "Conditions to Avoid", above. Can decompose at high temperatures and form toxic gases.

Hazardous polymerization: Will not occur.

SECTION – 11: TOXICOLOGICAL INFORMATION

Acute toxicity/Irritation Studies (Finished Product):

Ingestion:	<u>Practically Non-Toxic</u> Oral (LD50 Rat):	> 5,000 mg/kg body weight
Dermal:	<u>Practically Non-Toxic</u> Dermal (LD50 Rat):	> 5,000 mg/kg body weight
Inhalation:	<u>Practically Non-Toxic</u> Inhalation (LC50 Rat):	> 5.12 mg/L air - 4 hours
Eye Contact:	<u>Mildly Irritating (Rabbit)</u>	
Skin Contact:	<u>Slightly Irritating (Rabbit)</u>	
Skin Sensitization:	<u>Not a Sensitizer (Guinea Pig)</u>	

Neurotoxicity

Glyphosate Technical: No known neurotoxic effects based on animal studies.

Reproductive/Developmental Effects

Glyphosate Technical: Not a reproductive or developmental hazard.

Chronic/Subchronic Toxicity Studies

Glyphosate Technical: Subchronic (90-day) rat study (NOEL of 5,000 ppm, 410 – 440 mg/kg) resulted in body weight reduction and clinical chemistry changes.

Carcinogenicity

Glyphosate Technical: Not carcinogenic in animal studies.

Other Toxicity Information:

None.

Toxicity of Other Components

The acute toxicity test results reported in Section 11, above, for the finished product take into account any acute hazards related to the “other components” in the formulation.

Ammonia: None known.

Other materials that show synergistic toxic effects together with the product: None known.

Target Organs

Active Ingredient

Glyphosate Technical: Eye, skin.

Inert Ingredients

Ammonia: None known.

SECTION – 12: ECOLOGICAL INFORMATION

Summary of Effects

TOUCHDOWN iQ is a herbicide that is mixed with water and applied as a spray for the control of annual and perennial grasses and broadleaf weeds. The active ingredient, glyphosate, is highly toxic to plants, but since there are no uses involving direct application on water, the risk to aquatic non-target plants is low. Terrestrial non-target plants may be injured by spray drift, but there is no risk to plants when the product is applied following the label directions. The toxicity of glyphosate is moderate to low for fish, aquatic invertebrates (water flea), birds, and insects (bees).

Eco-Acute Toxicity

Glyphosate Technical:		
Bees LC ₅₀ /EC ₅₀ (oral and contact)		> 86 and >116 ug/bee
Invertebrates (<i>Daphnia magna</i>) 48-hour LC ₅₀ /EC ₅₀		> 1000 mg/L
Fish (Rainbow Trout) 96-hour LC ₅₀ /EC ₅₀		130 mg/L
Fish (Bluegill) 96-hour LC ₅₀ /EC ₅₀		47 mg/L
Bobwhite Quail LD ₅₀		> 2,000 mg/kg bw
Mallard Duck LD ₅₀		Not Available
Birds (8-day dietary - Bobwhite Quail) LC ₅₀ /EC ₅₀		> 5,000 mg/kg
Birds (8-day dietary - Mallard Duck) LC ₅₀ /EC ₅₀		> 5,000 mg/kg
Green Algae (72-hour E _r C50)		21 mg/L
Green Algae (72-hour E _b C50)		17 mg/L

Eco-Chronic Toxicity

Glyphosate Technical:		
Birds: Mallard Duck		
21-day dietary - LC ₅₀ /EC ₅₀		950 mg/kg
1-generation reproduction – NOEC		1,000 mg/kg
Birds: Bobwhite Quail		
14-day dietary –LC ₅₀ /EC ₅₀		> 2,025 mg/kg

The chronic risk assessment for glyphosate indicates that the risk of harmful effects on to birds, mammals is low and there is no risk to aquatic invertebrates from chronic exposure.

Environmental Fate

The active ingredient, glyphosate, has a low bioaccumulation potential, low mobility in soil, and low persistence in soil and water. The Dissipation half-life in soil is 3 days. The main route of degradation is by microbial degradation and formation of bound residues.

SECTION – 13: DISPOSAL CONSIDERATIONS

Waste disposal information: Do not reuse empty containers. Empty container retains product residue. Triple rinse, or equivalent, empty container, return rinse water to dilution mixture, and dispose of dilution mixture as a hazardous waste if it cannot be disposed of by use according to label instructions. Dispose of empty containers in accordance with local regulations. Consult provincial environment ministry for advice on waste disposal. Industrial/commercial waste may be handled at licensed facilities only. Waste shipments must be securely packaged and properly labelled. Only licensed carriers may be used, and proper documents must accompany the shipment.

SECTION – 14 : TRANSPORT INFORMATION

Shipping information such as shipping classification:

TRANSPORTATION OF DANGEROUS GOODS CLASSIFICATION - ROAD/RAIL.

Not Regulated.

IATA CLASSIFICATION - AIR

Not Regulated.

SECTION – 15: REGULATORY INFORMATION

WHMIS classification for product: Exempt

A statement that the MSDS has been prepared to meet WHMIS requirements, except for use of the 16 headings.

This MSDS has been prepared in accordance with WHMIS requirements, but the data are presented under 16 headings.

Other regulations; restrictions and prohibitions

Pest Control Products (PCP) Act Registration No.: 27192

SECTION – 16: OTHER INFORMATION

The information contained herein is offered only as a guide to the handling of this specific material and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations. No warranty of any kind is given or implied and Syngenta will not be liable for any damages, losses, injuries or consequential damages which may result from the use of or reliance on any information contained herein. This Material Safety Data Sheet is valid for three years. This product is under the jurisdiction of the Pest Control Products Act and is exempt from the requirements for a WHMIS compliant MSDS. Hazardous properties of all ingredients have been considered in the preparation of this MSDS. Read the entire MSDS for the complete hazard evaluation of this product.

Prepared by: Syngenta Crop Protection Canada, Inc.

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