



Material safety data sheet

Granzyme B ELISPOT kit

(silver staining procedure on transparent plates)

1. Identification of the product (substance or mixture) and supplier/company

Product identifiers

Product: Granzyme B ELISPOT kit (silver staining procedure on transparent polystyrene-bottomed plates)
Catalogue no.: ACT229-T2 (2-plate format) and ACT229-T5 (5-plate format)
Brand: U-CyTech biosciences

Relevant identified uses of the product and uses advised against

Identified uses: Laboratory reagent. To be used in ELISPOT system.
For R&D use only, not for food, drug, household or other uses.

Details of the supplier of the material safety data sheet

Supplier: U-CyTech biosciences
Yalelaan 48
3584 CM Utrecht
The Netherlands
Phone: +31 30 253 5960
E-mail: info@ucytech.com

2. Hazard identification

Classification of the products in this kit

Except for the Activator I+II solutions, the items in this kit are not classified as hazardous according to Regulation (EC) no. 1272/2008 and to Directives 67/548/EC and 1999/45/EC and their amendments.

Activator I+II solutions are classified as

According to Regulation (EC) no. 1272/2008:

Serious eye damage (Category 1)


Skin sensitization (Category 1)

Chronic aquatic toxicity (Category 1)

According to Directive 67/548/EC and its amendments:

Risk of serious eye damage. May cause sensitization by skin contact. Harmful to aquatic organisms, may cause long-term effects in the aquatic environment.

Label elements Activator I+II solutions

Pictogram: 

Signal word: Danger

Hazard statement: H317: May cause an allergic skin reaction.
 H318: Causes serious eye damage.
 H410: Very toxic to aquatic life with long lasting effects.

Precaution statements: P273: Avoid release to the environment.
 P280: Wear protective gloves/protective clothing/eye protection/face protection.
 P305 + P351 + P338:
 IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
 P501: Dispose of contents/container to an approved waste disposal plant.

Hazard symbol: Xi: Irritant

Risk phrase: R41: Risk of serious damage to eyes.
 R43: May cause sensitization by skin contact.
 R52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safely phrase: S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advise.
 S36/37/38: Wear suitable protective clothing, gloves and eye/face protection.
 S45: In case of accident or if you feel unwell, seek medical advice immediately.
 S61: Avoid release to the environment. Refer to special instructions/safety data sheets.

Other hazards - none

3. Composition/information on ingredients

Product name: Granzyme B ELISPOT kit (silver staining procedure on transparent polystyrene-bottomed plates)

Ingredients:

Cas no.	EC no.	Index no.	Classification	Concentration
Coating buffer				
-	-	-	-	-

Cas no.	EC no.	Index no.	Classification	Concentration
Coating antibodies (lyophilized)				
-	-	-	-	-
Biotinylated detector antibodies (lyophilized)				
-	-	-	-	-
GABA conjugate (lyophilized)				
-	-	-	-	-
Activator I+II				
-	-	-	Eye Dam. 1; Skin Sens. 1; Aquatic Chronic 1; H317, H318, H410 <hr/> Xi; R41, R43, R52/53	-
Blocking stock solution B				
-	-	-	-	-
Dilution buffer T				
-	-	-	-	-
Tween-20 (C₅₈H₁₁₄O₂₆)				
-	-	-	-	-

For specific ingredients of all items in this kit and the full text of the Hazard statements and Risk phrases mentioned in this section, see section 16 of this material safety data sheet (MSDS).

4. First aid measures

Description of first aid measures

- General advice: Consult physician. Show this MSDS to the doctor in attendance.
- After contact with skin: Wash contaminated area with soap and water. Remove contaminated clothing and shoes. Consult a physician.
- After swallowing: Do NOT induce vomiting (when swallowing the Coating buffer or one of the Activator I+II solutions) If the person is conscious, wash out mouth with water. Consult a physician.
- After contact with eyes: Rinse thoroughly with plenty of water for at least 15 minutes. Assure adequate flushing by separating the eyelids. Consult a physician.
- After inhalation: Provide fresh air. If breathing becomes difficult, consult a physician.

Most important symptoms and effects, both acute and delayed

Absorption of the ingredient hydroquinone (in Activator I+II) into the body leads to the formation of methemoglobin that in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

The ingredient sodium sulfite (in Activator I+II) may cause irritation of the gastrointestinal tract, violent colic and diarrhea and may cause disturbance of circulatory system or central nervous system depression and death. Persons with allergies and/or asthma may exhibit hypersensitivity to sulfites.

To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

Indication of any immediate medical attention and special treatment needed

No data available.

5. Fire-fighting measures

Extinguishing media: Water spray, carbon dioxide, dry chemical powder or alcohol-resistant foam.

Special hazards /risks: Except for Coating buffer, Tween-20 and Activator I+II there is no data available.

Coating buffer and Tween-20:

Vapors heavier than air.

Forms explosive mixtures with air on intense heating.

Development of hazardous combustion gases or vapors possible in the event of fire. In case of fire carbon oxides may develop.

Activator I+II:

Carbon oxides, nitrogen oxides (NO_x), sulphur oxides.

Advice for fire fighters: Wear self-contained breathing apparatus and protective clothing for fire fighting if necessary.

6. Accidental release measures

Personal precautions: Use personal protective equipment to avoid exposure. Avoid formation of dust and aerosols. Avoid breathing dust, vapors, mist or gas. Ensure adequate ventilation. Follow general safety rules for laboratories. Evacuate personnel to safe areas in case of an emergency.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let products enter drains. Discharge into the environment must be avoided.

Clean-up methods: Soak up with inert absorbent material or pick up and arrange disposal without creating dust. Sweep up and keep in suitable, closed containers for disposal (section 13).

7. Handling and storage

Safe handling: Only for laboratory use. Use personal protective equipment to avoid (prolonged or repeated) exposure. Avoid formation of dust and aerosols. Ensure adequate ventilation. Follow general safety rules for laboratories.

Keep Activator I+II away from acids and sources of ignition; use only non-sparking tools. No smoking.

Safe storage: Store all items except Tween-20 at 2-8°C in a dry and well-ventilated place. Keep containers tightly closed. Keep Activator I+II away from acids, light, air and heat. Keep Coating buffer away from heat.

Store Tween-20 in a cool, dry and well-ventilated place. Keep containers tightly closed.

8. Exposure controls/personal protection

Contains no substances with occupational exposure limit values.

Appropriate engineering controls and hygiene measures

Facilities storing or utilizing this product should be equipped with an eyewash facility, a safety shower and mechanical exhaust. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the workday.

Personal protective equipment

The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection

The selected safety glasses have to have side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

Skin and body protection

The selected clothing has to be impervious.

9. Physical and chemical properties

Coating antibodies, biotinylated detector antibodies and GABA conjugate:

Physical state and appearance:	solid (lyophilized)	Color:	white
Odor:	no data available	pH (at 20°C):	no data available
Melting/freezing point:	no data available	Boiling/condensation point:	no data available
Flash point:	no data available	Auto ignition temperature:	no data available
Flammability limits:	no data available	Specific gravity:	no data available
Solubility:	soluble in water		

Activator I+II and Coating buffer:

Physical state and appearance:	liquid	Color and form:	transparent, colorless
Odor:	no data available	pH (at 20°C):	no data available
Melting point:	no data available	Boiling/condensation point:	no data available
Flash point:	no data available	Auto ignition temperature:	no data available
Flammability limits:	no data available	Specific gravity:	no data available
Solubility:	solutions are aqueous solutions		

Blocking stock solution B and Dilution buffer T:

Physical state and appearance:	liquid	Color and form:	transparent, (light) yellow
Odor:	no data available	pH (at 20°C):	no data available
Melting/freezing point:	no data available	Boiling/condensation point:	no data available
Flash point:	no data available	Auto ignition temperature:	no data available
Flammability limits:	no data available	Specific gravity:	no data available
Solubility:	products are aqueous solutions		

Tween-20:

Physical state and appearance:	liquid to viscous	Color:	yellowish
Odor:	no data available	pH (at 20°C):	7
Melting/freezing point:	no data available	Boiling/condensation point:	100°C
Flash point:	> 110°C - closed up	Auto ignition temperature:	no data available
Flammability limits:	no data available	Density (at 25°C):	1.95 g/ml
Solubility:	soluble in water	Vapor pressure	< 1.33 hPa

10. Stability and reactivity

Chemical stability: Stable under recommended storage conditions.

Conditions to avoid: Activator I+II: keep away from light, air, open flames and hot surfaces.
Other items: no data available.

Materials to avoid: Bases, oxidizing agents, strong oxidizing agents, strong acids, reducing agents, heavy metal salts, strong reducing agents, alcohol, ammonia, magnesium, acid chlorides, acid anhydrides.

Hazardous reactions/decomposition products:

No data available for all items except for the following items were hazardous decomposition products are formed under fire conditions:

Coating buffer and Tween-20: Carbon oxides.

Activator I+II: Nitrogen oxides (NO_x), silver/silver oxides, sulphur oxides. And sulphur dioxide when in contact with acids.

11. Toxicological information

Acute toxicity: Tween-20: LD₅₀ (oral, rat): 40.554 mg/kg.
Other items: no data available.

Irritation and corrosion (skin and eyes): Activator I+II: damaging to eyes.
Tween-20: mild skin irritation (human, 3 d)
Other items: no data available.

Sensitization (skin and respiratory): Activator I+II: May cause allergic skin reaction.
Other items: no data available.

Germ cell mutagenicity: No data available.

Carcinogenicity: Activator I+II: Contain a component (hydroquinone) that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP or EPA classification. Limited evidence of carcinogenicity in animal studies.
Tween-20: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
Other items: no data available.

Reproductive toxicity: No data available.

Specific target organ toxicity (single and repeated): No data available.

Aspiration hazard: No data available.

Signs and symptoms of exposure:

To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

Potential health effects:

Activator I+II:

Inhalation: May be harmful if inhaled and may cause respiratory tract irritation.

Skin: May be harmful if absorbed through skin and causes skin irritation.

Eyes: Causes serious eye irritation.

Ingestion: May be harmful if swallowed.

Aggravated medical condition: Bronchoconstriction, bronchospasm, gastrointestinal disturbance, flushing, hypotension, tingling sensation, urticaria/angioedema, shock. Exposure can aggravate asthma.

Signs and symptoms of exposure:

Symptoms of exposure to sodium bisulfite and sodium sulfite may include burning sensation, coughing wheezing, laryngitis, shortness of breath, headache, nausea, vomiting, chest pain, difficulty in breathing, gastrointestinal discomfort, violent colic, diarrhea and disturbance of circulatory system or central nervous system depression and death. Persons with allergies and/or asthma may exhibit hypersensitivity to sulfites. Absorption of the ingredient hydroquinone into the body leads to the formation of methemoglobin that in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

Other items:

Inhalation: May be harmful if inhaled and may cause respiratory tract irritation.

Skin: May be harmful if absorbed through skin and may cause skin irritation.

Eyes: May cause eye irritation.

Ingestion: May be harmful if swallowed.

Further hazardous properties cannot be excluded. The products should be handled with the care usual when dealing with chemicals.

Additional information:

RTECS: Tween-20: TR7400000 - Others items: not available.

12. Ecological information

Toxicity: Tween-20: LC₅₀ (fish, 24h): 350 mg/l.

Other items: no data available.

Persistence and degradability: No data available.

Bio accumulative potential: No data available.

Mobility in soil: No data available.

Results of PBT and vPvB assessment: No data available.

Other adverse effects: Activator I+II: May cause long-term adverse effects in the aquatic environment.

Other items: no data available.

13. Disposal considerations

Product: The generation of waste should be avoided or minimized wherever possible.

Contact a licensed professional waste disposal service to dispose these materials.

Dissolve or mix with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Observe all federal, state and local environmental regulations.

Packaging: Dispose of as unused product.

14. Transport information

This product is not dangerous for road (ARD), rail (RID), inland waterways (ADNR), sea (IMDG) and air (ICAO/IATA) transport. UN number is not available.

15. Regulatory information

Coating buffer, coating antibodies, biotinylated detector antibodies, GABA conjugate, Blocking stock solution B, Dilution buffer T and Tween-20 are not classified as dangerous according to EU legislation.

Activator I+II solutions are classified as dangerous according to Regulation (EC) no. 1272/2008 and Directive 67/548/EC and its amendments.

16. Other information

Specific ingredients of the items of this kit

- Coating buffer

Cas no.	EC no.	Index no.	Classification	Concentration
Sodium acetate (C₃H₃NaO₂)				
127-09-3	204-823-8	-	-	< 5%
Acetic acid (C₂H₄O₂)				
64-19-7	200-580-7	607-002-00-6	Corr. Metals 1; Flam. Liq. 3; Skin. Corr. 1A; H226, H290, H312, H314, H332 <hr/> C; R10, R35	< 1%

- Lyophilized coating antibodies, biotinylated detector antibodies and GABA conjugate (when reconstituted):

Cas no.	EC no.	Index no.	Classification	Concentration
Proteins (antibodies or GABA conjugate respectively)				
-	-	-	-	< 1%
Serum albumin (<i>this ingredient is not in coating antibody present</i>)				
9048-46-8	232-936-2	-	-	1%
Trehalose, dihydrate (C₁₂H₂₂O₁₁ • 2H₂O)				
6138-23-4	202-739-6	-	-	< 5%

- Tween-20 (Tween is a registered trade mark of Uniqema, a business unit of ICI Americas Inc.; synonyms: Polyoxyethylenesorbitan monolaurate, polyethylene glycol sorbitan monolaurate):

Cas no.	EC no.	Index no.	Classification	Concentration
Tween-20				
9005-64-5	500-018-3	-	-	-

- Activator I+II:

Cas no.	EC no.	Index no.	Classification	Concentration
4-(Methylamino)phenol hemisulfate salt (formula: C₇H₉NO•0.5H₂SO₄; synonym: metol)				
55-55-0	200-237-1	650-031-00-4	Acute Tox. 4; Skin Sens. 1; Aquatic Acute 1; Aquatic Chronic 1; STOT RE 2; H373, H302, H317, H410 Xn, N; R22, R43, R48/22, R50/53	< 1%
Hydroquinone (formula: C₆H₆O₂; synonym: 1,4-Benzenediol)				
123-31-9	204-617-8	604-005-00-4	Carc. 2; Acute Tox. 4; Germ Cell Mut. 2; Eye Dam. 1; Skin Sens. 1; Aquatic Acute 1; H400, H302, H317, H318, H341, H351 Xn, N; R22, R40, R41, R43, R50, R68	< 1%
Sodium bisulfite (formula: Na₂S₂O₅; synonym: sodium metabisulfite)				
7681-57-4	231-673-0	016-063-00-2	Acute Tox. 4; Eye Dam. 1; H302, H318, EUH031 Xn; R22, R31, R41	10% (in Activator II)
Sodium sulfite (formula: Na₂O₃S; synonym: disodium sulfite)				
7757-83-7	213-821-4	-	EUH031 R31	< 1%
Silver nitrate (formula: AgNO₃; synonym: silver(+1) cation nitrate)				
7761-88-8	231-853-9	047-001-00-2	Ox. Sol. 2; Skin Corr. 1B; Aquatic Acute 1; Aquatic Chronic 1; H272, H314, H410 O, C, N; R8, R34, R50/53	< 1%

- Blocking stock solution B and Dilution buffer T:

Information regarding the specific chemical identity of Blocking stock solution B and Dilution buffer T is being withheld as a trade secret of the manufacturer. However, the products contain no substances which at their given concentration, are considered to be hazardous to health according to Regulation (EC) no. 1272/2008 and Directive 67/548/EC and its amendments.

Text of Hazard statements and Risk phrases mentioned in section 3 and 16

Acute Tox.	Acute toxicity
Aquatic Acute	Acute aquatic toxicity
Aquatic Chronic	Chronic aquatic toxicity
Carc.	Carcinogenicity
Corr. Metals	Corrosive to metals
Eye Dam.	Serious eye damage
Flam. Liq.	Flammable liquid
Germ Cell Mut.	Germ cell mutagenicity
Ox. Sol.	Oxidizing solids
Skin Corr.	Skin corrosion
Skin Sens.	Skin sensitization
STOT RE	Specific target organ toxicity - repeated exposure
H226	Flammable liquid and vapor
H272	May intensify fire; oxidizer
H290	May be corrosive to metals
H302	Harmful if swallowed
H312	Harmful in contact with skin
H314	Causes severe skin burns and eye damage
H317	May cause allergic skin reaction
H318	Causes serious eye damage
H332	Harmful if inhaled
H341	Suspected of causing genetic defects
H351	Suspected of causing cancer
H373	May cause damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects
EUH031	Contact with acids liberates toxic gas.
C	Corrosive
N	Dangerous for the environment
O	Oxidizing
Xi	Irritant
Xn	Harmful
R8	Contact with combustible material may cause fire.
R10	Flammable
R22	Harmful if swallowed
R31	Contact with acids liberates toxic gas

R34	Causes burns
R35	Causes severe burns
R40	Limited evidence of carcinogenic effect
R41	Risk of serious damage to eyes
R43	May cause sensitization by skin contact
R50	Very toxic to aquatic organisms
R68	Possible risk of irreversible effects
R48/22	Harmful: danger of serious damage to health by prolonged exposure if swallowed
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Further information

The information provided with this document is furnished in good faith and without warranty of any kind. Personnel handling this product must consider these data only as supplemental to other information gathered by them and must make independent determinations of this suitability and completeness of information from all sources to assure proper use and disposal of the materials and the safety and health of employees and customers. U-CyTech B.V. shall not be held liable for any damage resulting from handling or from contact with the above product.

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