
IN THE NAME OF GOD

Storage of blood and blood components in blood bank

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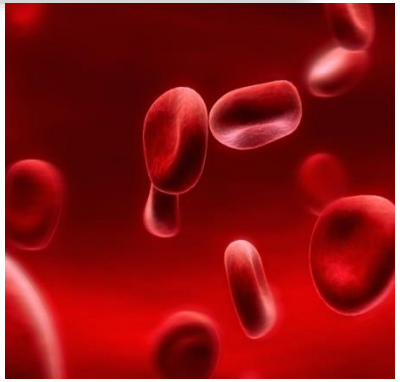
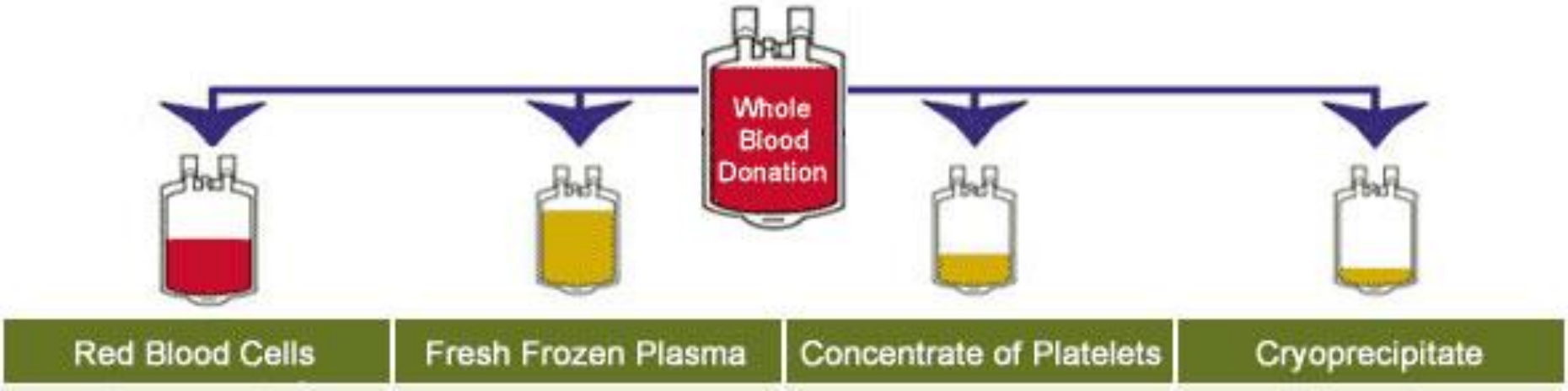
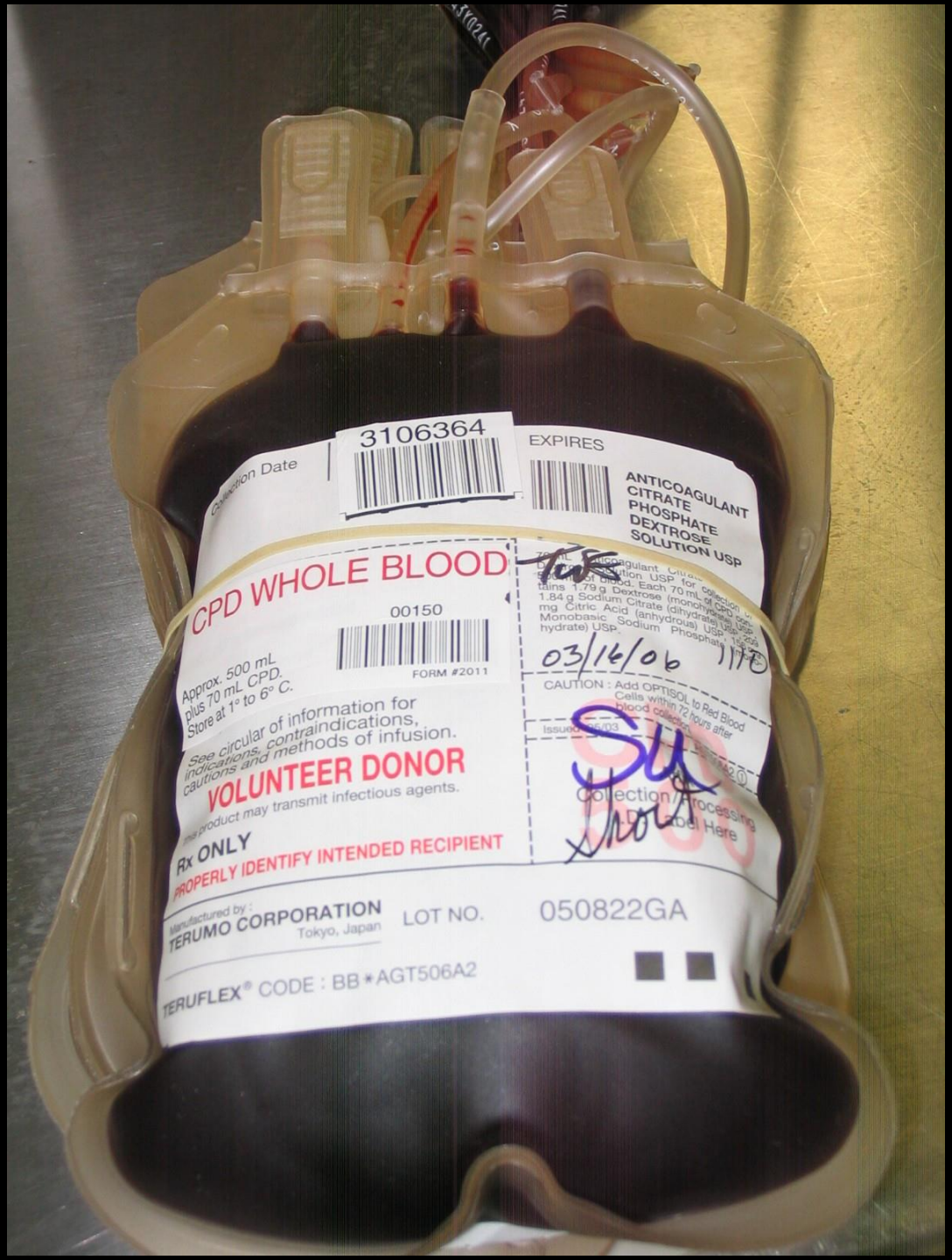


Goal

Maintain viability and function
Prevent physical changes
Minimize bacterial contamination

Blood Components




3106364
Collection Date
EXPIRES
ANTICOAGULANT
CITRATE
PHOSPHATE
DEXTROSE
SOLUTION USP
CPD WHOLE BLOOD
00150
FORM #2011
Approx. 500 mL
plus 70 mL CPD.
Store at 1° to 6° C.
See circular of information for
indications, contraindications,
cautions and methods of infusion.
VOLUNTEER DONOR
This product may transmit infectious agents.
Rx ONLY
PROPERLY IDENTIFY INTENDED RECIPIENT
03/16/06
CAUTION : Add OPTISOL to Red Blood
Cells within 72 hours after
Blood collection.
Collection/Processing
Label Here
Manufactured by :
TERUMO CORPORATION
Tokyo, Japan
LOT NO. 050822GA
TERUFLEX® CODE : BB*AGT506A2

Storage Lesion

- Significant for infants and massive transfusion.

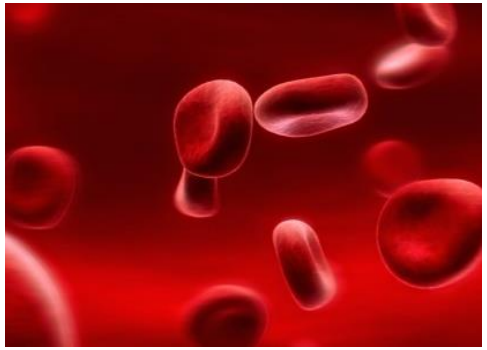
biochemical changes

ATP decreases

Potassium increases

Sodium decreases

Plasma hemoglobin increases



Whole Blood

Whole blood and red cells must always be stored at a temperature between

- +1 °C and +6 °C.

Whole Blood

- The main reasons for giving a blood transfusion are to restore or help to maintain the body's oxygen-carrying capacity and the volume of blood circulating around the body
- If blood is not stored at between +1 °C and +6 °C, its oxygen-carrying ability is greatly reduced.

- **The anticoagulant/preservative solution in the blood bag contains nutrients for the blood during storage and stops the blood from clotting. The red cells can only carry and deliver oxygen if they remain viable: that is, if they retain the same properties as they have during their normal circulation in the body.**

Whole Blood

- The most important substances in maintaining the viability of red cells are glucose and adenosine triphosphate (ATP). It is essential to maintain an equilibrium between ATP, 2,3 Diphosphoglycerate (2,3 DPG), glucose and pH.

➢ **One of the anticoagulant/preservatives most commonly used is citrate phosphate dextrose with adenine (CPDA-1). The dextrose and adenine help the red cells to maintain ATP during storage, and the citrate is the anticoagulant which stops the blood from clotting.**

Whole Blood

- Another important reason for storing blood between +1 °C and +6 °C is to keep the growth of any bacterial contamination in the unit of blood to a minimum.If blood is stored above +6 °C, bacteria that may have inadvertently entered the unit during collection may grow to such an extent that transfusion of the contaminated blood could be fatal.

- **The lower limit of + 1°C is also very important.**

This is because red cells are very sensitive to freezing. If they are allowed to freeze, the red cell membranes rupture and the haemoglobin is released; that is, the cells are haemolysed. The transfusion of haemolysed blood can also be fatal.

Whole Blood

- **Storage:** **CPD** :21 days stored at 1-6º

  CPDA-1: 35 days stored at 1-6º


Collection Date
Unit Number
1961160
EXPIRES
ANTICOAGULANT
CITRATE
PHOSPHATE
DEXTROSE
SOLUTION USP
AS-5 RED BLOOD CELLS
ADENINE-SALINE ADDED
16.7mEq Sodium Added
From 500 mL
CPD Whole Blood
Store at 1 - 6° C
04250
0316006110
See circular of information for indications, contraindications, cautions and methods of infusion.
VOLUNTEER DONOR
This product may transmit infectious agents.
Rx ONLY
PROPERLY IDENTIFY INTENDED RECIPIENT
CAUTION: Add OPTISOL to Red Blood Cells within 72 hours after blood collection.
Issued: 05/03
AGD506A2
Affix
Collection/Processing
I.D. Label Here
Manufactured by:
TERUMO CORPORATION
Tokyo, Japan
LOT NO.
050929KK
TERUFLEX® CODE : BB*AGD506A2

Packed Red Blood Cells

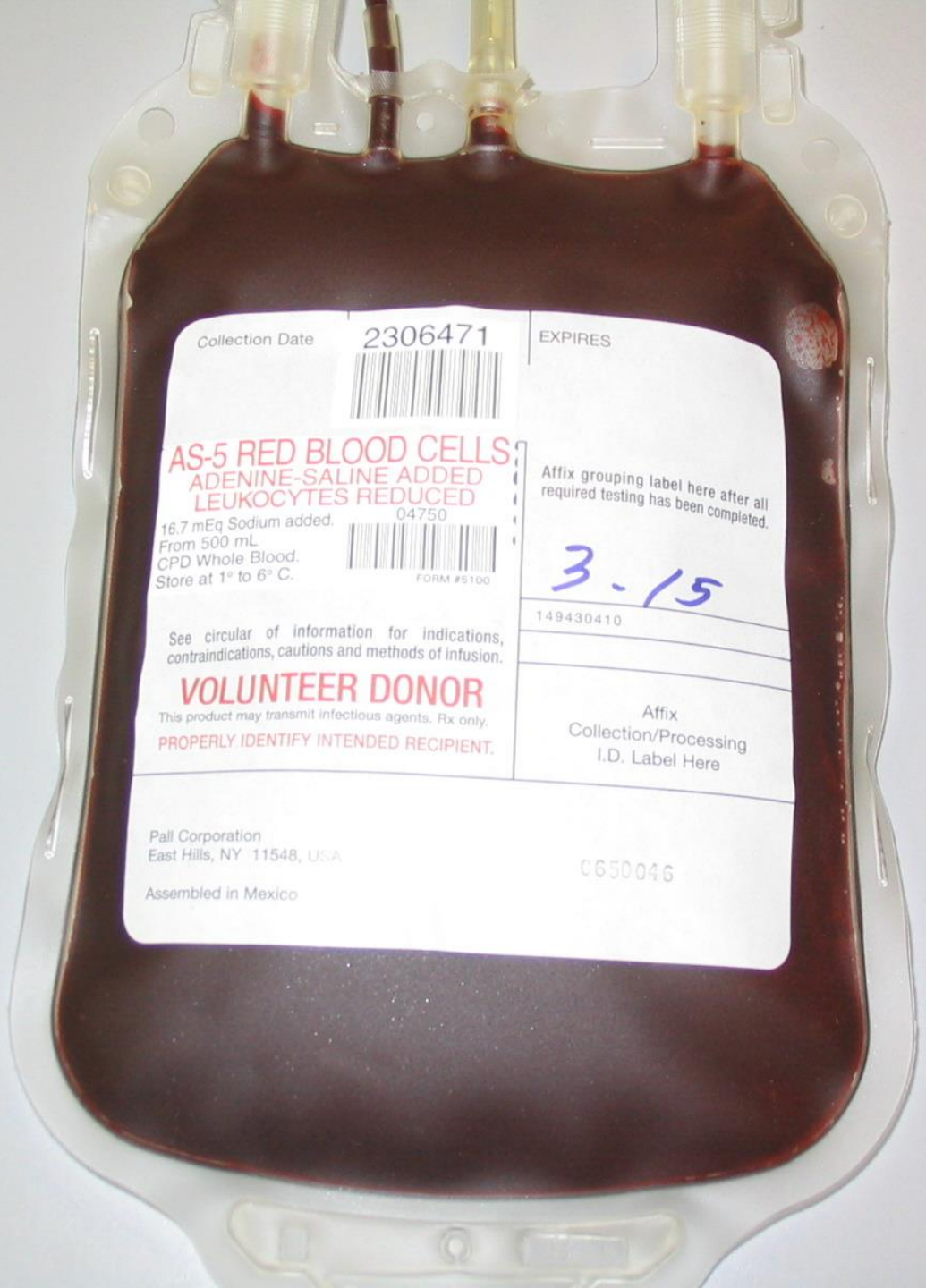
- **Storage:** **CPD** :21 days stored at 1-6º

  CPDA-1: 35 days stored at 1-6º

  Additive solution: 42 days

Anticoagulants

	CPD	CPD-A1
Storage time	21 days	35 days
Temperature	1-6 C	1-6 C
	Slows glycolytic activity	
Adenine	None	Substrate for ATP synthesis
Volume	450 +/- 10%	
Dextrose	Supports ATP generation by glycolytic pathway	
Citrate	Prevents coagulation by bindi	


Collection Date
2306471
EXPIRES
AS-5 RED BLOOD CELLS
ADENINE-SALINE ADDED
LEUKOCYTES REDUCED
04750
16.7 mEq Sodium added.
From 500 mL
CPD Whole Blood.
Store at 1° to 6° C.
FORM #5100
Affix grouping label here after all required testing has been completed.
3-15
149430410
See circular of information for indications, contraindications, cautions and methods of infusion.
VOLUNTEER DONOR
This product may transmit infectious agents. Rx only.
PROPERLY IDENTIFY INTENDED RECIPIENT.
Affix
Collection/Processing
I.D. Label Here
Pall Corporation
East Hills, NY 11548, USA
Assembled in Mexico
C650046

Saline Washed Red Blood Cells

A. Description: packed red cells washed with saline

1. 99% of plasma proteins are removed
2. 85% of leukocytes are removed

Saline Washed Red Blood Cells

B. Processing: manual and automatic methods

C. Storage: once washed, 24-hour outdate

Saline Washed Red Blood Cells

D. Indications:

1. History of allergic or febrile reactions secondary to plasma proteins not prevented by pre-transfusion administration of antihistamines and leukocyte reduction
2. IgA deficiency with documented IgA antibodies
3. History of anaphylactic reaction to blood components

Irradiated Blood Products

A. Products irradiated:

Whole blood, packed red cells, platelets and granulocyte concentrates

Irradiated Blood Products

B. Indications: preventing graft versus host disease

1. Immunocompromised patients
2. Directed donations from blood relatives
3. Premature infants ≤ 1200 gms
4. Fetuses receiving intrauterine transfusions
5. Neonatal exchange transfusions

Irradiated Blood Products

C.Storage:

Red cells outdate 28 days from irradiation (or original expiration if less than 28 days)

Red Blood Cells Frozen; Red Blood Cells Deglycerolized (D-RBC)

- Blood is frozen to preserve: rare types, for autologous transfusion, stock piling blood for military mobilization and/or civilian natural disasters.
- Blood is drawn into an anticoagulant preservative.
  - Plasma is removed and glycerol is added.
  - After equilibration unit is centrifuged to remove excess glycerol and frozen.
- Expiration
  - **If frozen, 10 years.**
  - **After deglycerolization, 24 hours.**
- Storage temperature
  - high glycerol -65 C.
  - low glycerol -120 C, liquid nitrogen.


4325403
Collection Date
EXPIRES
313
SW
1+
12
PLATELETS
Approx. 45-65 mL
from 500 mL CPD
Whole Blood.
Store at 20° to 24° C.
12000
FORM #2244
Store Platelets 5 days at
20-24°C
Store Red Blood Cells
42 days at 1-6°C
XT-612 Plastic
Manufactured by :
TERUMO CORPORATION
TERUFLEX®
Tokyo, Japan
031606 1106
CPD
500
Issued 10/99
S-4(P)-ARO
LOT NO.
050621GB
indications, contraindications,
cautions and methods of infusion.
VOLUNTEER DONOR
This product may transmit infectious agents.
Rx ONLY
PROPERLY IDENTIFY INTENDED RECIPIENT

Platelet Concentrates

Storage:

1. Stored at 20-24º C on a rotator
2. 5-day outdate

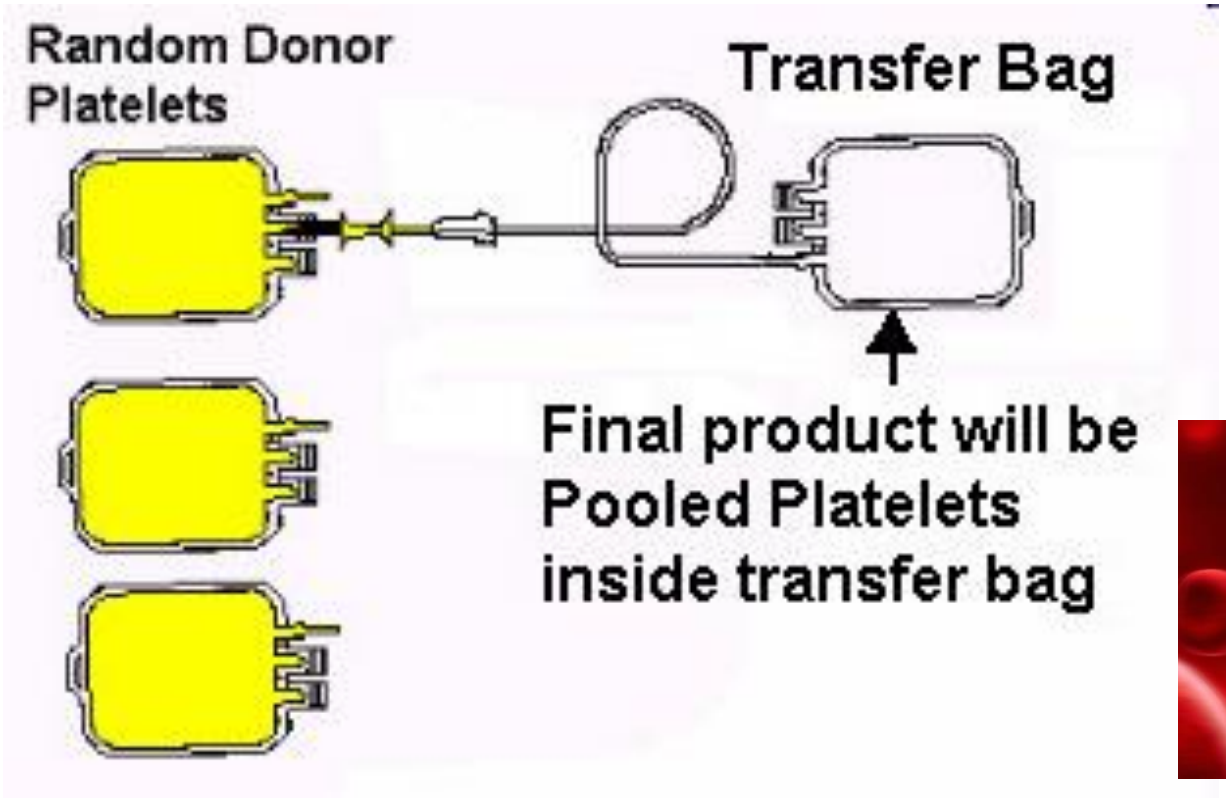
Platelets (PLTS), Platelet Concentrate (PC) or Random Donor Platelet Concentrate (RD-PC)

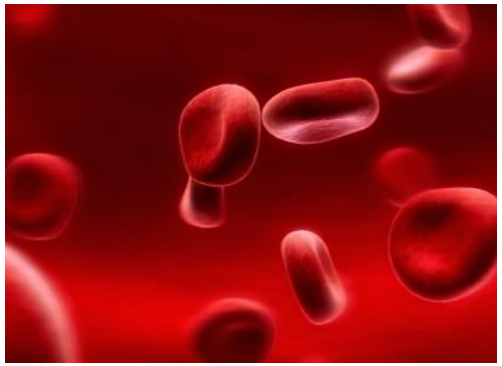
- Prepared from a single unit of whole blood.
- Due to storage at RT it is the most likely component to be contaminated with bacteria.

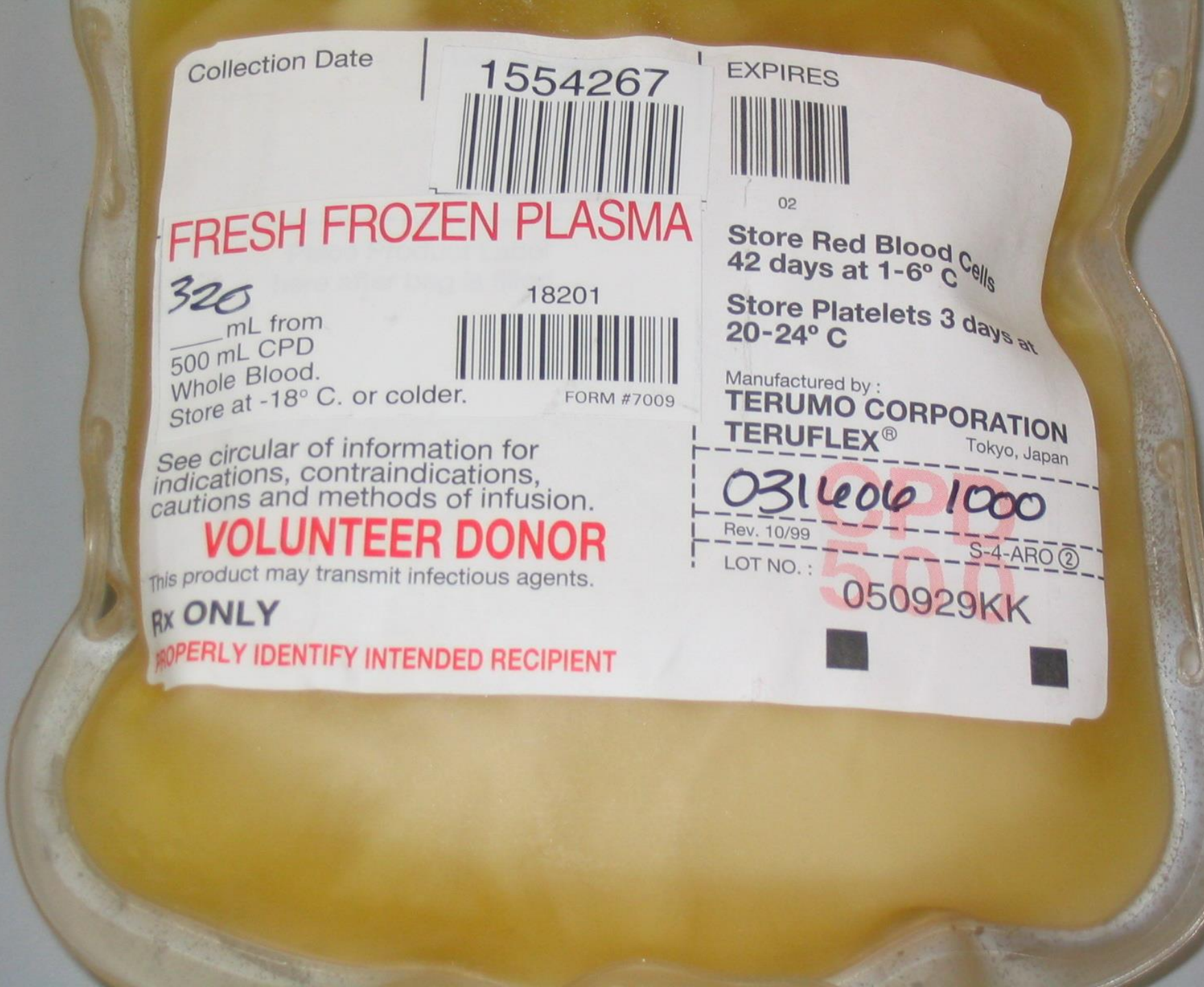
- *Expiration is 5 days as a single unit, 4 hours if pooled.*
- Store at 20-24 C (RT) with constant agitation. This is essential to prevent platelet aggregation which results in loss of viability.

Pooling Platelets

- 6-10 units transferred into one bag
- Expiration = 4 hours






Collection Date
1554267
EXPIRES
02
FRESH FROZEN PLASMA
320
mL from
500 mL CPD
Whole Blood.
Store at -18° C. or colder.
18201
FORM #7009
Store Red Blood Cells
42 days at 1-6° C
Store Platelets 3 days at
20-24° C
Manufactured by :
TERUMO CORPORATION
TERUFLEX®
Tokyo, Japan
See circular of information for
indications, contraindications,
cautions and methods of infusion.
VOLUNTEER DONOR
This product may transmit infectious agents.
Rx ONLY
PROPERLY IDENTIFY INTENDED RECIPIENT
0311606 1000
Rev. 10/99
S-4-ARO ②
LOT NO. :
050929KK
CPD
500

Fresh frozen plasma

- **Fresh frozen plasma (FFP) is plasma that has been separated from a unit of whole blood within 6 to 8 hours of collection, and has been rapidly frozen and maintained at all times at a temperature of –20 °C or lower.**

There is no lower temperature limit for the storage of FFP, although the optimal temperature is –30 °C or lower .

- **Plasma contains water, electrolytes, clotting factors and other proteins(mostly albumin), most of which are stable at refrigerator temperature, i.e. +1 °C to +6 °C. Factor V and Factor VIII, however, which are essential in the clotting mechanism, will deteriorate and diminish in quantity if they are not stored at –20 °C or lower and greatly reduce the clotting activity of the plasma. FFP may be given to a patient to restore or help to maintain coagulation factors such as Factor V or Factor VIII.**

Fresh frozen plasma (FFP)

- **Storage:** **<=-18 C**: 12 months from collection

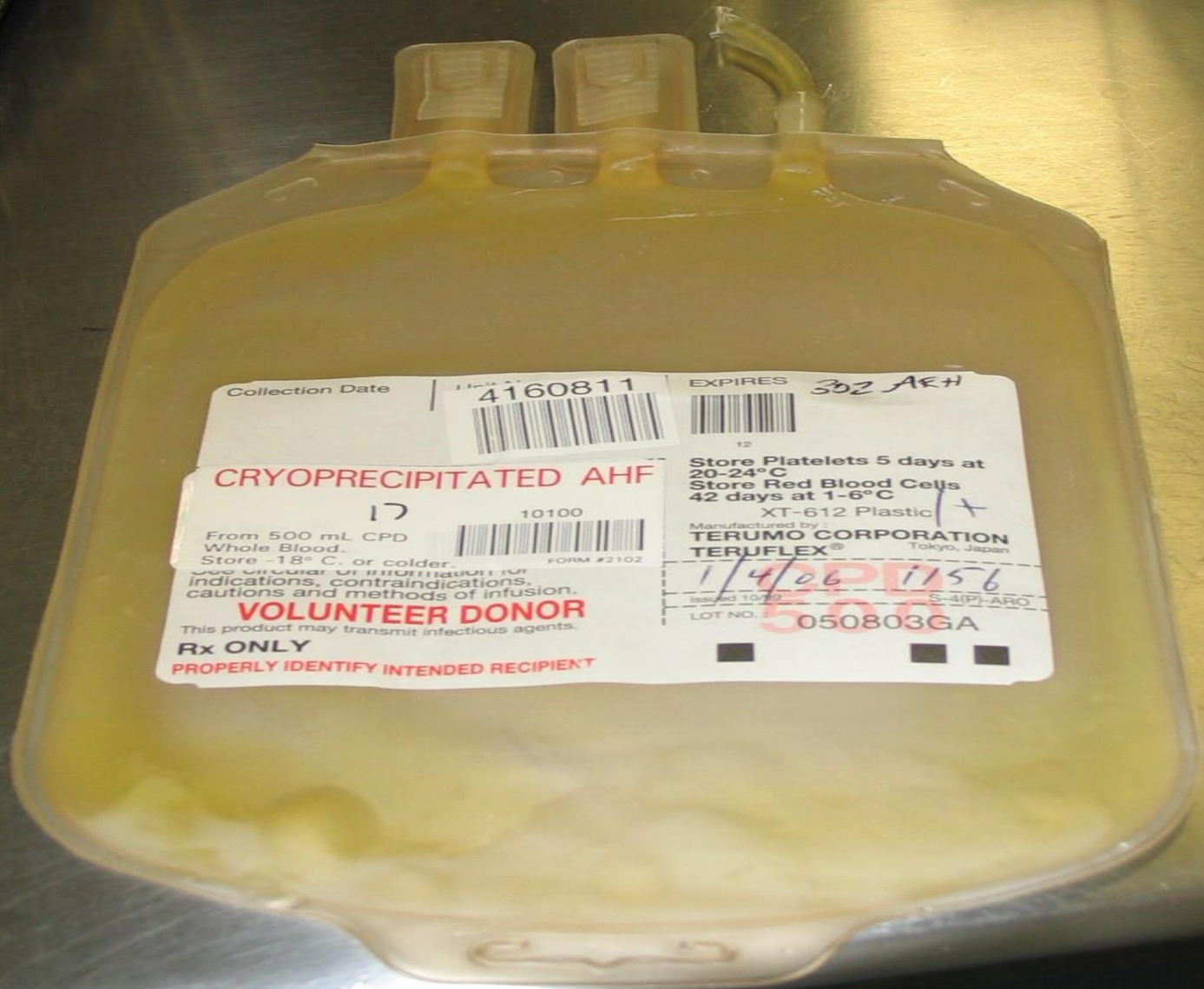
  <=-65 C: 7 years from collection

Thawing Plasma

Fresh Frozen Plasma (FFP), Plasma Frozen within 24 Hours After Phlebotomy (PF24), and Plasma Frozen within 24 Hours After Phlebotomy Held at Room Temperature up to 24 Hours After Phlebotomy (PF24RT24) must be thawed at 30 to 37 C using a waterbath or other FDA-approved device.

Thawing in a waterbath requires the frozen component to be in a plastic overwrap before insertion into the water to prevent contamination of the container entry ports.

Thawed plasma products (FFP, PF24,and PF24RT24) are stored at l to 6 C and expire 24 hours after thawing.


Collection Date
4160811
EXPIRES
12
CRYOPRECIPITATED AHF
10100
From 500 mL CPD Whole Blood.
Store -18° C. or colder.
FORM #2102
indications, contraindications, cautions and methods of infusion.
VOLUNTEER DONOR
This product may transmit infectious agents.
Rx ONLY
PROPERLY IDENTIFY INTENDED RECIPIENT
Store Platelets 5 days at 20-24°C
Store Red Blood Cells 42 days at 1-6°C
XT-612 Plastic
Manufactured by:
TERUMO CORPORATION
TERUFLEX®
Tokyo, Japan
1/4/06 1156
Issued 10/99
S-4(P)-ARO
LOT NO. 050803GA

Cryoprecipitate (CRYO), Factor VIII or Anti-Hemophilic Factor (AHF)

- **Storage Temperature**
  - **Frozen -18 C or lower**
  - **Thawed - room temperature**
- **Expiration:**
  - **Frozen 1 year**
  - **Thawed 6 hours**
  - **Pooled 4 hours**
- Best to be ABO compatible but not important due to small volume

Thawing Cryoprecipitate

Cryoprecipitate is thawed at 30 to 37 C, is gently resuspended, and can be pooled for ease of transfusion using small quantities of

0.9% sodium chloride, injection (USP) to rinse the contents of the bag into the final container

Thawed cryoprecipitate is stored at 20 to 24 C and expires within 4 hours of pooling if it is pooled in an open system or within 6 hours for single units or units pooled using an FDA-cleared sterile connecting device.

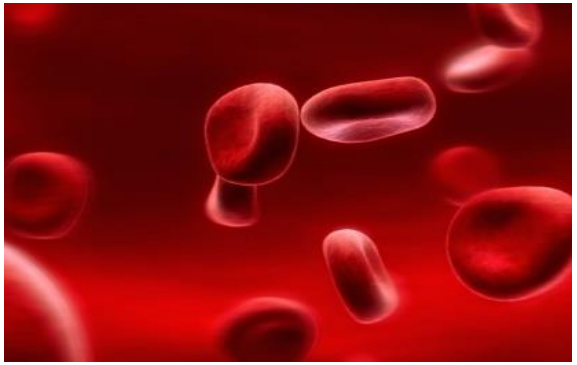
Summary of storage temperatures

Liquid RBCs 1-6C

Platelets, Cryo (thawed) and granulocytes 20-24C (room temperature)

ANY frozen plasma product ≤ -18C

ANY liquid plasma product EXCEPT Cryo 1-6C




TNX FOR YOUR ATTENTION