#### Freezing Core with Dry Ice

- Second fastest way to freeze core and preserve fluid saturations
- "Best" for most applications
- Longer freeze time results in little alteration of core physical properties
- Used when fluid saturations and physical properties are of equal importance
  - Preserves volatile and semivolatile hydrocarbons
  - Keeps fluids from migrating in high-permeance materials



#### Freezing Core with Dry Ice

- 1. Dry Ice is available at most industrial gas supply companies (some supermarkets).
- 2. Large marine ice chests are used to freeze and transport core.
  - a. Up to 72 quart coolers used for smaller core.
  - b. Large marine coolers (94 quarts and greater) used for core over two feet long.
- 3. Place approximately 50 to 75 pounds of dry ice in the bottom of the ice chest.
- 4. Label core, attach end caps, and place core in ice chest.
  - a. Close lid and core will freeze solid in 30 minutes.
  - b. Each ice chest freezes up to 22.5 feet of core using 50-75 pounds of dry ice.
- 5. Caution Do not put dry ice in an unventilated or enclosed space due to risk of death by asphyxiation!

Place 50 to 75 pounds of dry ice in the bottom of the ice chest.

Put core in ice chest and close lid. Core will freeze solid within 30 minutes.

Continue adding core and dry ice as necessary.





# Core Handling & Preservation Transporting Frozen Core

- 1. Caution Do not transport dry ice in passenger compartments due to risk of death by asphyxiation!
- 2. Large ice chests are used for transporting frozen core.
- 3. Place a layer of foam, bubble wrap, or "Styrofoam peanuts" in the bottom of ice chest to absorb shock during transport.
- 4. Place one layer of core on top of packing material.
- 5. Place a layer of dry ice over the core.
  - a. Dry ice pellets can be used as a "packing material" to secure the core and fill any voids between cores.
  - b. Block dry ice can also be used by breaking into smaller pieces and packing around core.
  - Bubble wrap or styrofoam peanuts can be added to the core layers to cushion the core during transport.



# Core Handling & Preservation Transporting Frozen Core

- 6. Continue alternating layers of core, packing materials and dry ice. Do not exceed three layers of core.
- 7. Fill remaining space with dry ice.
- 8. Put Chain of Custody in a zip lock bag and tape inside lid.
- 9. Close lid and seal with tape to keep cold.
- 10. Attach Dry Ice Placards to ice chest.
- Contact Overnight Courier for shipment to laboratory for next day delivery. Notify laboratory of shipment arrival time (tracking numbers).
- 12. Arrange shipment so core does not sit in hot warehouse or truck for days.



#### **Transporting Frozen Core**

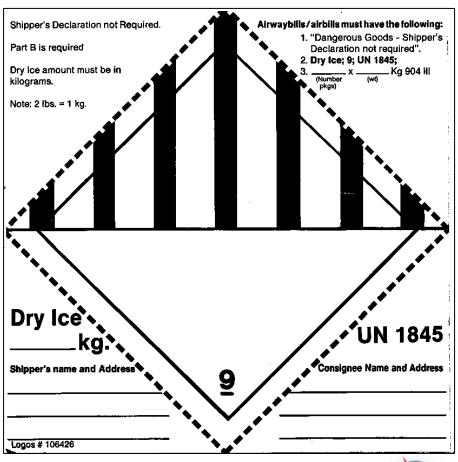
Ice chest filled with cores, dry ice, and packing material for cushioning.



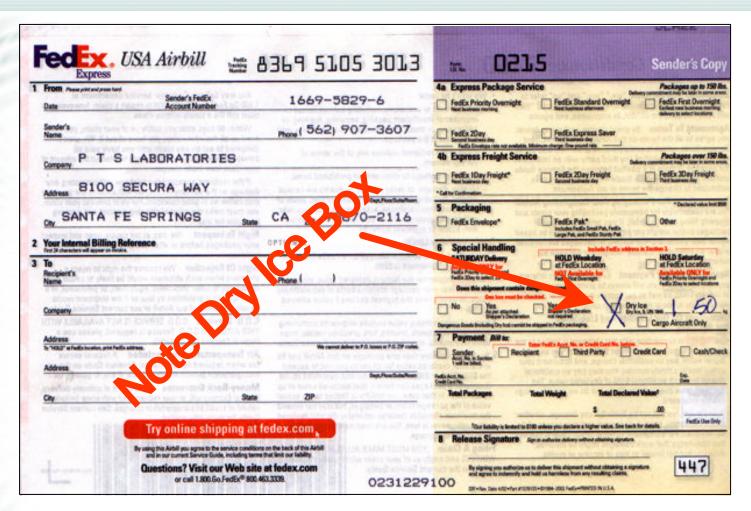


#### **Transporting Frozen Core**

Dry Ice Placard:
Overnight couriers
can supply the
placard stickers.







Paper Shipping Label: FedEx is the easiest to ship with, they routinely handle dry ice shipments.

	Ship Track/Histor	ry Address Book	Preferences	Fast Ship Re	ports My Profile
Log out Home	Ship				
cial services	4		FedEx Express re	eference informa	tion
Saturday pickup		0-		Your reference	ce
Saturday delivery				P.O. numb	er
COD (Collect on Delive	env)	Edit		Invoice numb	er
	100			Department numb	er
Hold at FedEx location		Edit	Fe / InSight <sup>s™</sup>	(a shipment visibility	y application) Learn more.
Dry Ice		Edit			
Dangerous Goods		Edit	Bid (k styleme)		
					d party payer from viewing information at
Ex ® Delivery Signatu			Shipment co		Edit
, ,	sloot cianatura tima		Inhimment lave		······································
ature type Se	elect signature type		(shipment leve	el de ail for InSight o	customers only)
, ,	elect signature type		(shipment leve	el de ail for InSight o	customers only)
ature type Se			(shipment lev	el de all for InSight (	customers only)
pping Options up/Drop-off	ckup at my location	location	(shipment lev	el de ail fir insight o	customers only)
ature type  Se  Se  Sping Options  up/Drop-off  Will use scheduled pic  Will drop off at FedEx	ckup at my location		(shipment lev	el de all for InSight (	customers only)
ature type  Se  Se  Sping Options  up/Drop-off  Will use scheduled pic  Will drop off at FedEx  Will contact FedEx to a	ckup at my location location request pickup Sch	location	(shipment lev	el de ail fir insight o	
ature type  Se  Se  Sping Options  Up/Drop-off  Will use scheduled pic  Will drop off at FedEx  Will contact FedEx to a	ckup at my location location request pickup Sch		(shipment lev	el de ail far InSight (	customers only)
ature type  Se  Se  Sping Options  Up/Drop-off  Will use scheduled pic  Will drop off at FedEx	ckup at my location location request pickup Sch		(shipment lev	el de ail fir insight o	

Electronic Shipping: FedEx is the easiest to ship with, they routinely handle dry ice shipments.