

JEFFCOOL®

Industrial Coolants and Heat Transfer Fluids

**Excerpt from original brochure - Jeffcool P150 Data Only !
Pages not pertaining to Jeffcool P150 have been deleted !**





JEFFCOOL[®] INDUSTRIAL COOLANTS AND HEAT TRANSFER FLUIDS

JEFFCOOL[®] P150 INDUSTRIAL COOLANT AND HEAT TRANSFER FLUID

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JEFFCOOL® P150 Industrial Coolant and Heat Transfer Fluid

JEFFCOOL® P150 COOLANT

DESCRIPTION APPLICATIONS

JEFFCOOL P150 coolant is an inhibited propylene glycol based industrial coolant and heat transfer agent. It is a slightly hazy liquid, free of suspended solids with a slight odor.

TYPICAL PROPERTIES		Test Method
Specific gravity, 60/60°F	1.055	D-1122
Reserve alkalinity, ml	12.0	D-1121
pH, 33% solution	10.0	D-1287
Foaming tendency, vol., ml Break time, sec	150 30	D-1881
Freezing point, 50 vol. % solution, °F 50 vol. % solution, °C	-30 -34	D-1177
Water, wt. %	4.0	D-1123
Color	Red to match standard	
Appearance	Slightly hazy and free of suspended solids	
Ash, wt. %	2.0	D-1119
Density, 60°F, lb/gal	8.8	D-1122
Flash point, COC, °F	225	D-92
Boiling point 50 vol. % solution, °F	222	D-1120
Solubility in water	Complete	

APPLICATIONS

Since JEFFCOOL P150 coolant is formulated with propylene glycol, it is especially suitable for applications in which toxicological and environmental considerations are critical.

JEFFCOOL P150 coolant is compatible and completely interchangeable with systems currently utilizing ethylene glycol based coolants.

JEFFCOOL P150 coolant protects cooling systems from freezing in winter, overheating in summer, and corrosion in all seasons. Improved heat transfer and less internal corrosion contributes significantly to overall operating and maintenance costs. JEFFCOOL P150 coolant is recommended as a heat transfer fluid for line heaters, snow melting systems for loading ramps, walkways, highways, and airfield runways, and as a coolant in ice rinks. The corrosion protection provided by JEFFCOOL P150 coolant and its low toxicity level as compared to other heat transfer fluids makes it an ideal transfer medium for heating, ventilation, and air conditioning (HVAC) systems as well as solar energy collection systems.

JEFFCOOL® P150 Industrial Coolant and Heat Transfer Fluid

Continued

Thermal Energy Storage, Heating and Cooling Systems

JEFFCOOL P150 coolant is recommended as a heat transfer fluid in combination heating and cooling systems for large buildings. The excellent corrosion protection afforded by JEFFCOOL P150 coolant prolongs the life of the piping in these systems. JEFFCOOL P150 coolant is also an excellent heat transfer medium for solar energy collection systems.

Other Industry Applications

- Automotive and aircraft manufacturers
- Chemical manufacturers
- Dye and dye intermediate producers
- Electric power companies
- Ice skating rinks
- Paint, varnish, and lacquer companies
- Paper and paper product companies
- Plastics and synthetic resin manufacturers
- Textile chemical manufacturers

HANDLING AND STORAGE

JEFFCOOL P150 coolant may be stored in unlined carbon steel tanks and drums. If storage of concentrated JEFFCOOL P150 coolant for periods over 12 months is desired, it is recommended that the storage vessels be

constructed from aluminum, stainless steel, or lined carbon steel. Vinyl, epoxy, and phenolic linings are suitable. Amercoat®-23 and Amercoat®-75 linings have been found to be satisfactory.

JEFFCOOL P150 coolant in undiluted form will not freeze at ambient temperatures. Freezing will not harm JEFFCOOL P150 coolant, but when the temperature of undiluted JEFFCOOL P150 coolant is below 30°F, the viscosity will be such that pumping and transfer will be difficult. In areas where these conditions exist, it is recommended that storage vessels be equipped with stainless steel heating coils.

Diluted JEFFCOOL P150 coolant is easily pumped under normally expected temperatures. However, at temperatures below -20°F, special pumping equipment may be necessary.

The normal precautions associated with any chemical should be observed in handling JEFFCOOL P150 coolant. This product is neither explosive nor flammable under normal storage conditions. The propylene glycol in this product is considered practically nontoxic. Splashes onto eyes or skin however, must be washed away quickly and medical treatment is advised for eye exposure. Breathing of the vapors or mists should be avoided.

INSTALLATION OF JEFFCOOL P150 COOLANT

Dilution of JEFFCOOL P150 coolant with water is necessary to obtain proper freeze protection. This should be done prior to installation. Topping-off of cooling systems should be done with pre-diluted JEFFCOOL coolant solutions at the required system concentration.

JEFFCOOL® P150 Industrial Coolant and Heat Transfer Fluid

Continued

DILUTION WATER SPECIFICATIONS

The use of hard water in JEFFCOOL P150 coolant solutions should be avoided. Hard water contains calcium and magnesium ions which deposit scale in the system and could also cause precipitation of a portion of the inhibitor system. When hard water conditions exist, distilled, deionized, or boiler condensate water should be used if at all possible. If a suitable water source is not available, pre-diluted JEFFCOOL product formulas are available from a Huntsman authorized distributor.

RECOMMENDED WATER SPECIFICATIONS

COMPONENT	SPECIFICATION
Chloride	25 PPM, Max.
Sulfate	25 PPM, Max.
Calcium	25 PPM, Max.
Magnesium	25 PPM, Max.
Total hardness	100 PPM, Max.

SYSTEM MAINTENANCE PROGRAM

Huntsman Corporation, in conjunction with our authorized JEFFCOOL brand product distributors, provides a comprehensive system maintenance program, including a product analysis service to assure that JEFFCOOL P150 coolant in customer systems maintains the proper inhibitor level and desired freeze protection. Once the system is in operation, it is recommended that samples of solution be taken at least once a year. The solution should be circulated for 30 minutes prior to sampling to ensure a representative sample.

SAMPLE TEST KITS

Sample test kits are free of charge to Huntsman distributors and their customers who purchase JEFFCOOL products. Kits are available upon request. The kits include: self-addressed shipping box, pre-labeled sample bottle, weather-proof self-adhesive product installation tag and detailed sampling procedures. Analytical results from the samples will be forwarded to customers.

REINHIBITING PROCEDURE

Occasionally, after prolonged or severe service, a solution of JEFFCOOL P150 coolant may need to be reinhibited. The need for reinhibition will be detected during the periodic analysis program and a recommended procedure will be included with the analytical results.

JEFFCOOL supplemental coolant additives (SCA) are available in five gallon and 55-gallon drum quantities from your JEFFCOOL brand product representatives. The components of JEFFCOOL SCA replenish critical inhibitors required to provide continued protection.

Additives used in inhibiting JEFFCOOL P150 coolant should be handled in strict accordance with instructions furnished by their suppliers.

TOXICITY AND SAFETY

JEFFCOOL P150 coolant is not considered hazardous under ordinary conditions of handling and use. Propylene glycol, which is the main component of this product, is considered practically nontoxic. JEFFCOOL P150 coolant is only minimally irritating to skin and eyes, but as with any chemical, unnecessary contact with these body parts is to be avoided.

JEFFCOOL® P150 Industrial Coolant and Heat Transfer Fluid

Continued

A Material Safety Data Sheet for JEFFCOOL P150 coolant is available on request.

SHIPPING INFORMATION

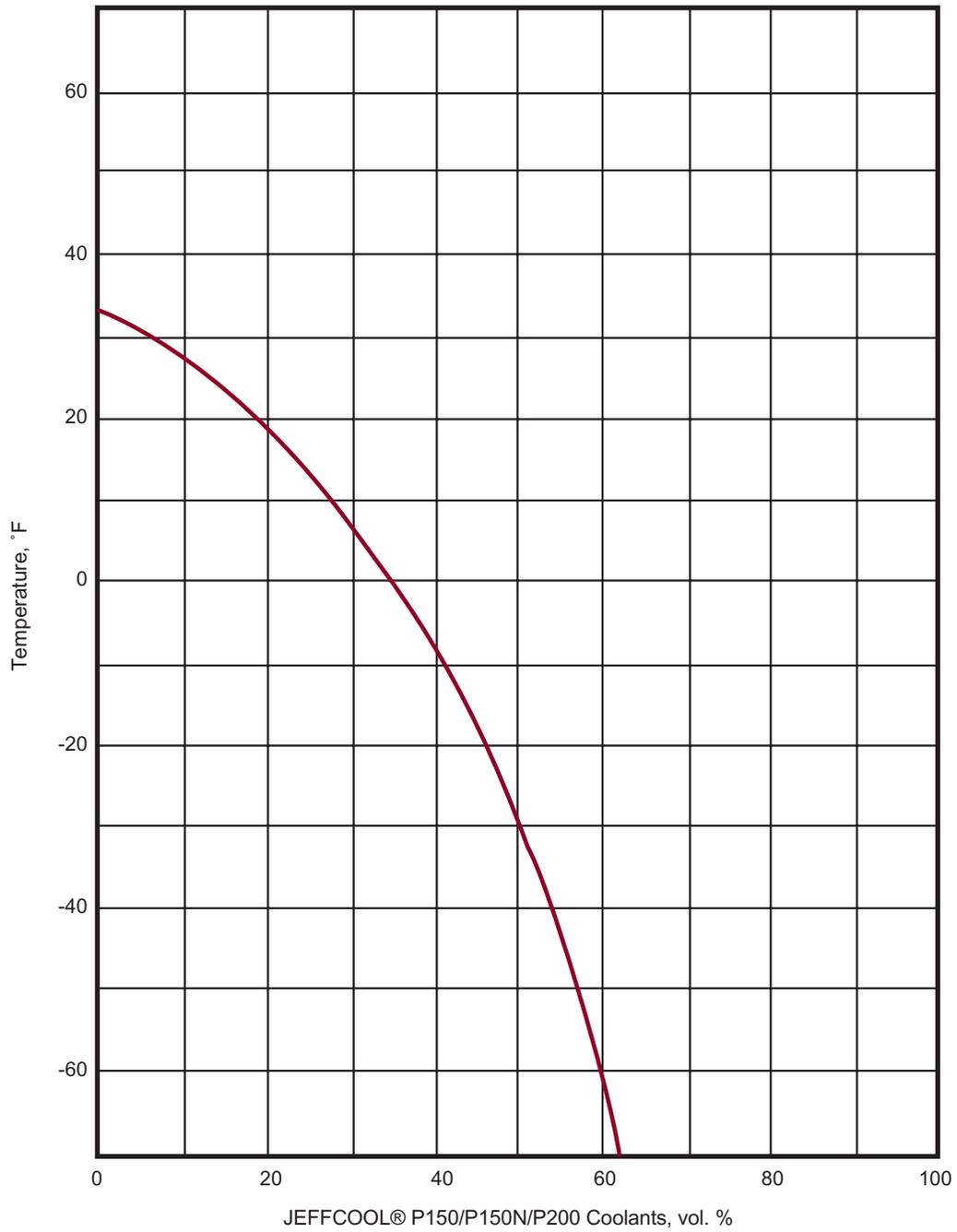
JEFFCOOL P150 coolant is available in tank wagons and 55-gallon, nonreturnable steel drums. Bulk and drum inventory is available at select locations throughout the U.S. Contact your local Huntsman Sales Representative for details.

TECHNICAL SERVICE

We maintain a technical service staff at our laboratories in The Woodlands, TX, to assist you in the use of JEFFCOOL coolant products. Additionally, several of our authorized JEFFCOOL brand product Master Distributors are staffed to provide technical assistance with JEFFCOOL coolants.

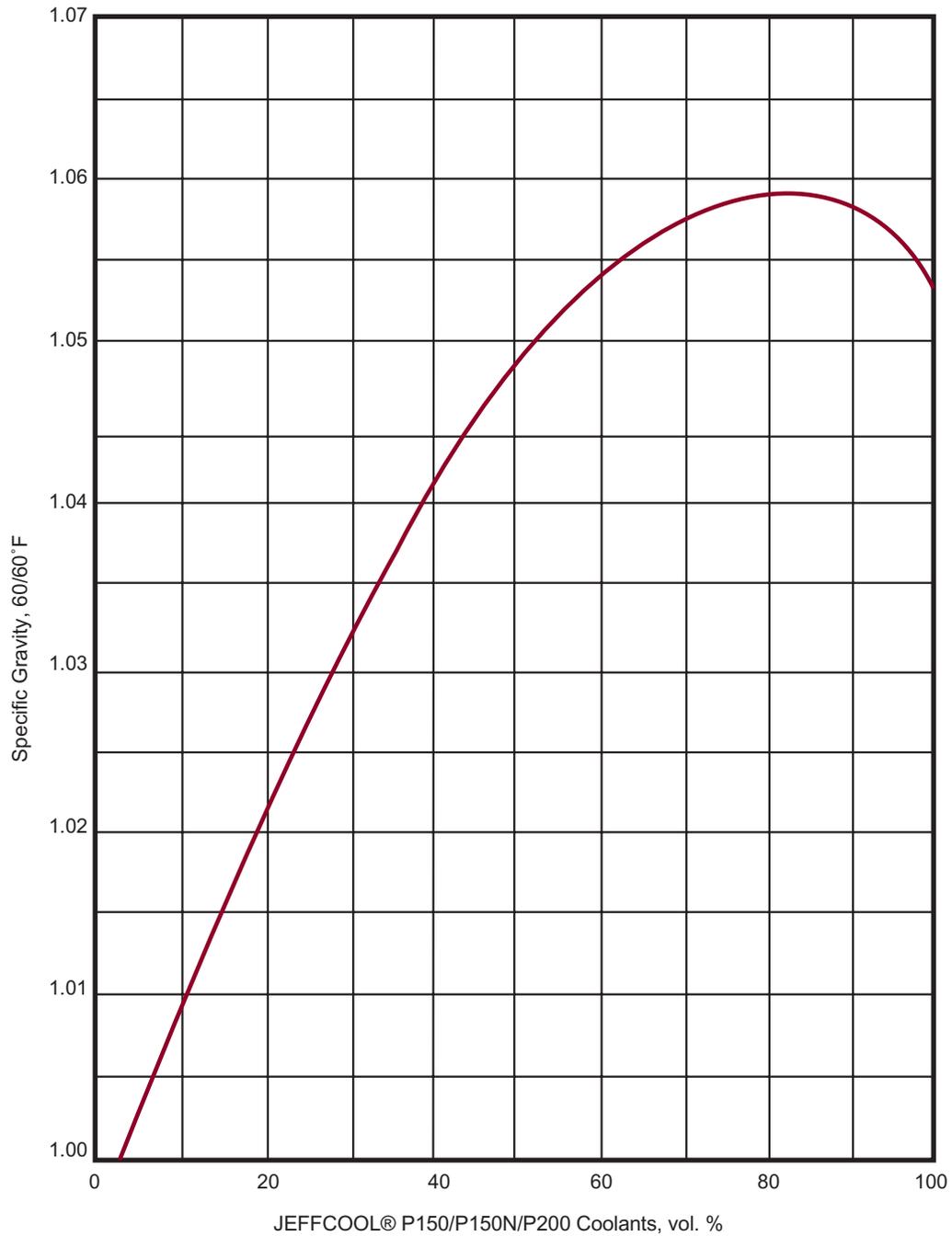
Physical Properties

FIGURE 11
Freezing Points of Aqueous Solutions of JEFFCOOL® P150, P150N & P200 Coolants



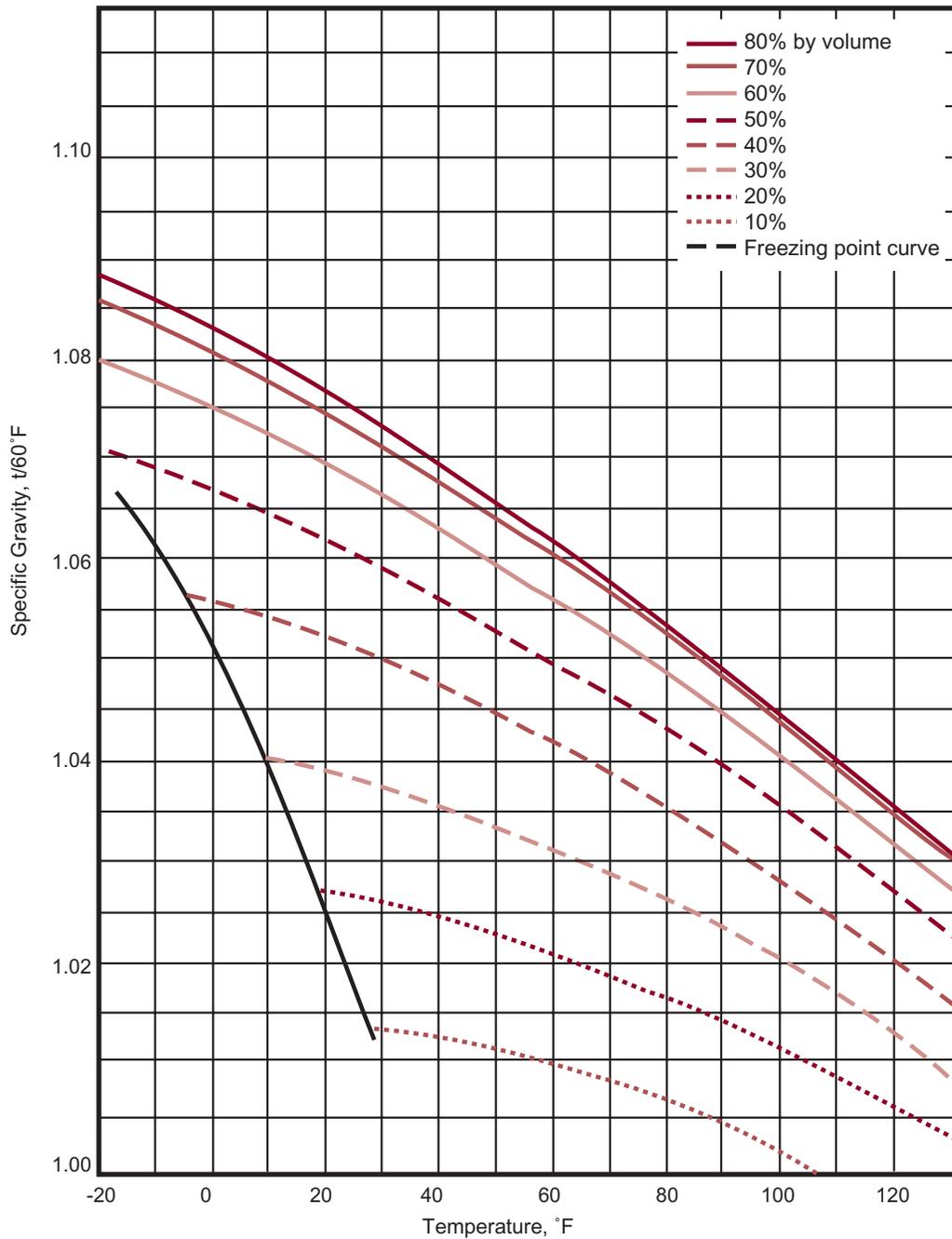
Physical Properties

FIGURE 12
Specific Gravities at 60/60°F of Aqueous Solutions of
JEFFCOOL® P150, P150N, & P200 Coolants



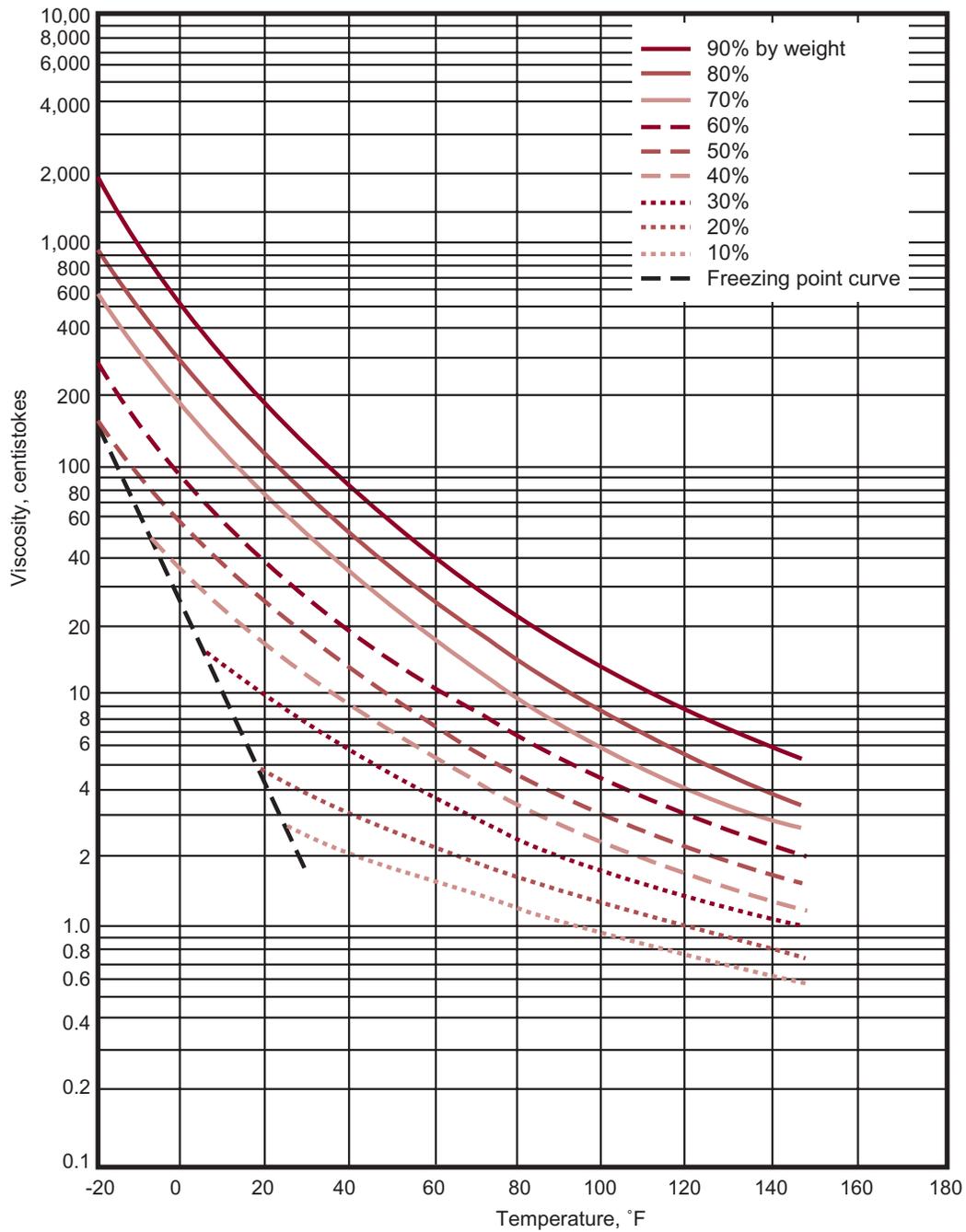
Physical Properties *Continued*

FIGURE 13
Specific Gravities of Aqueous Solutions of
JEFFCOOL® P150, P150N & P200 Coolants



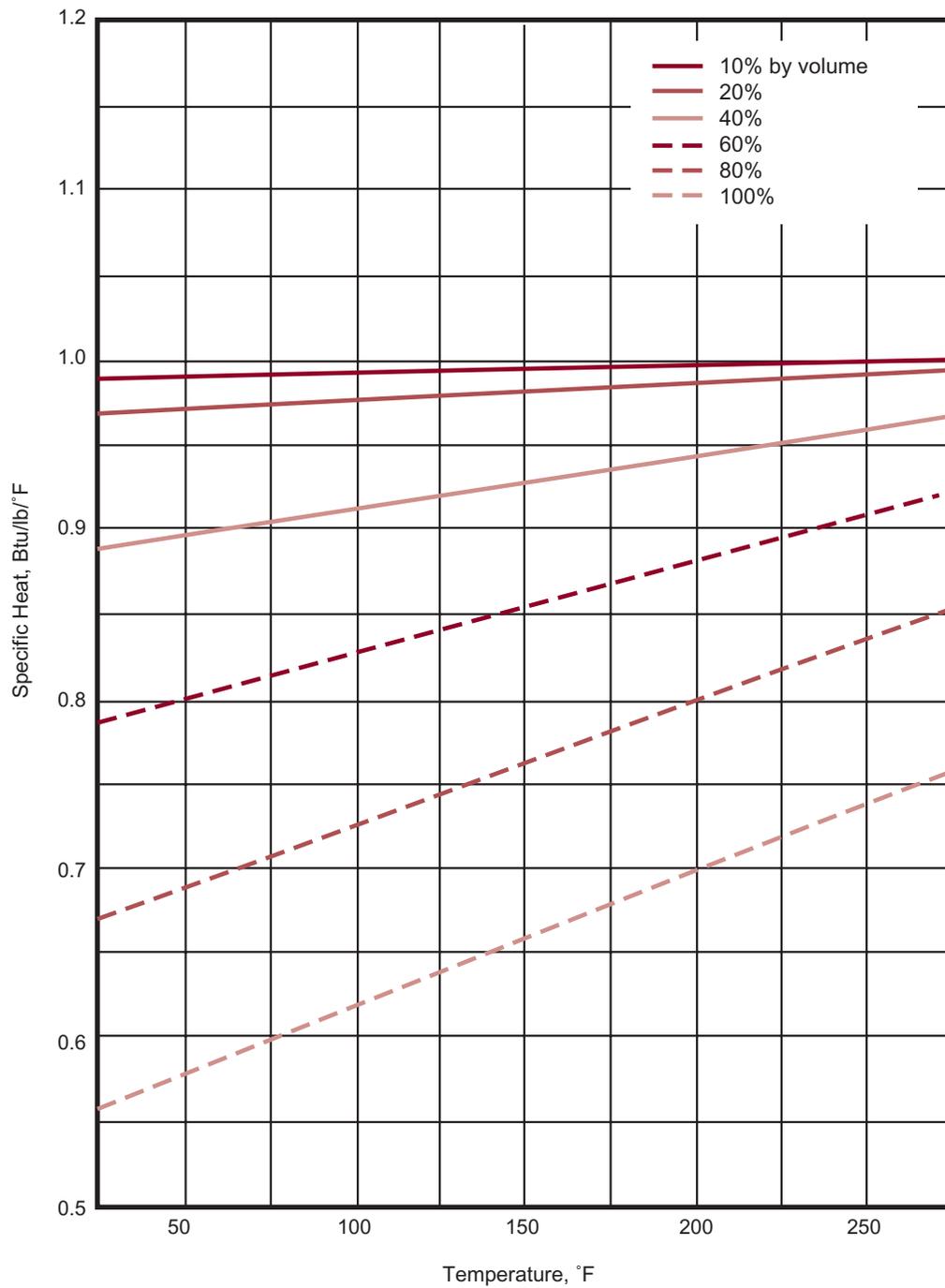
Physical Properties

FIGURE 14
Viscosities of Aqueous Solutions of JEFFCOOL® P150, P150N & P200 Coolants



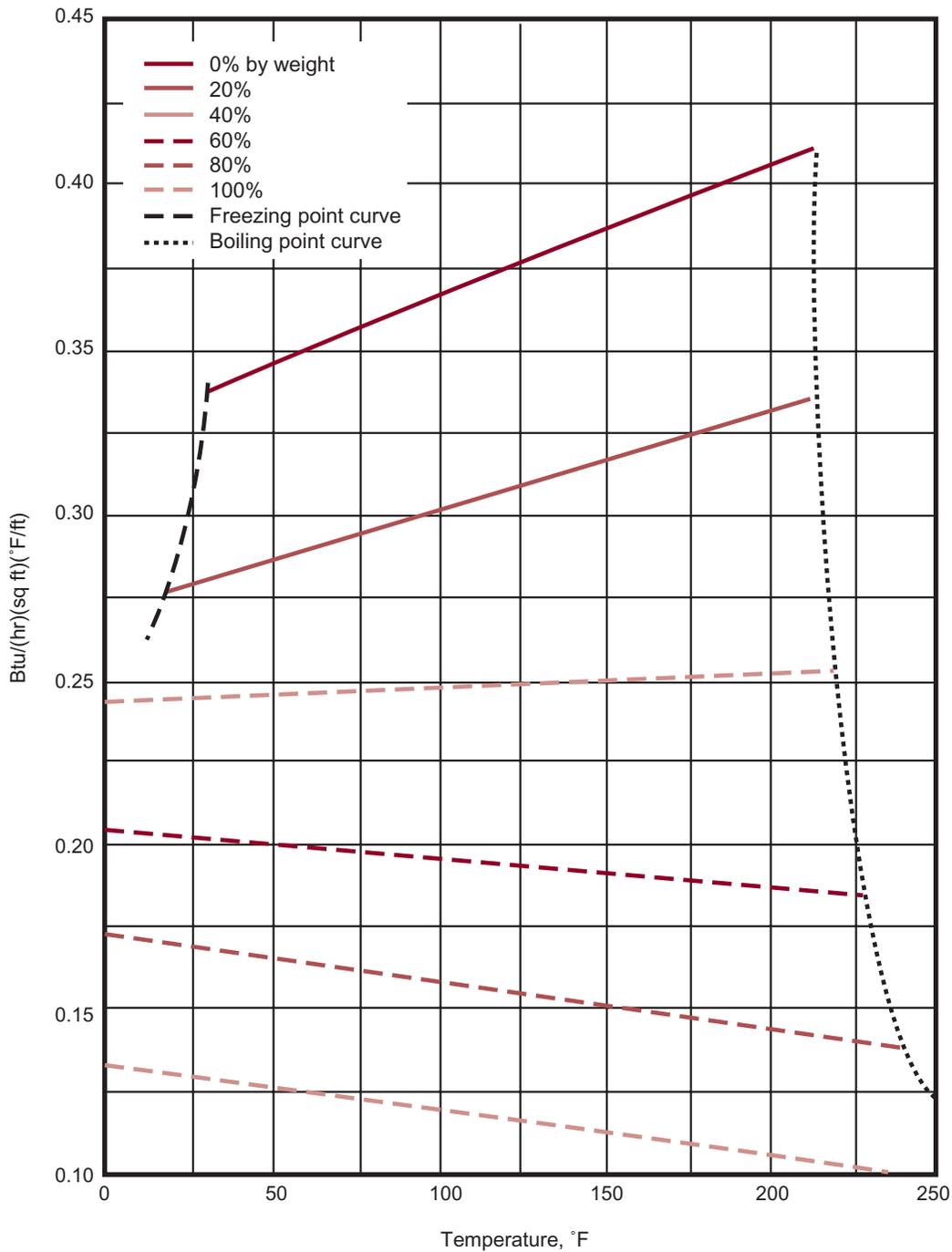
Physical Properties *Continued*

FIGURE 15
Specific Heats of Aqueous Solutions of JEFFCOOL® P150, P150N & P200 Coolants



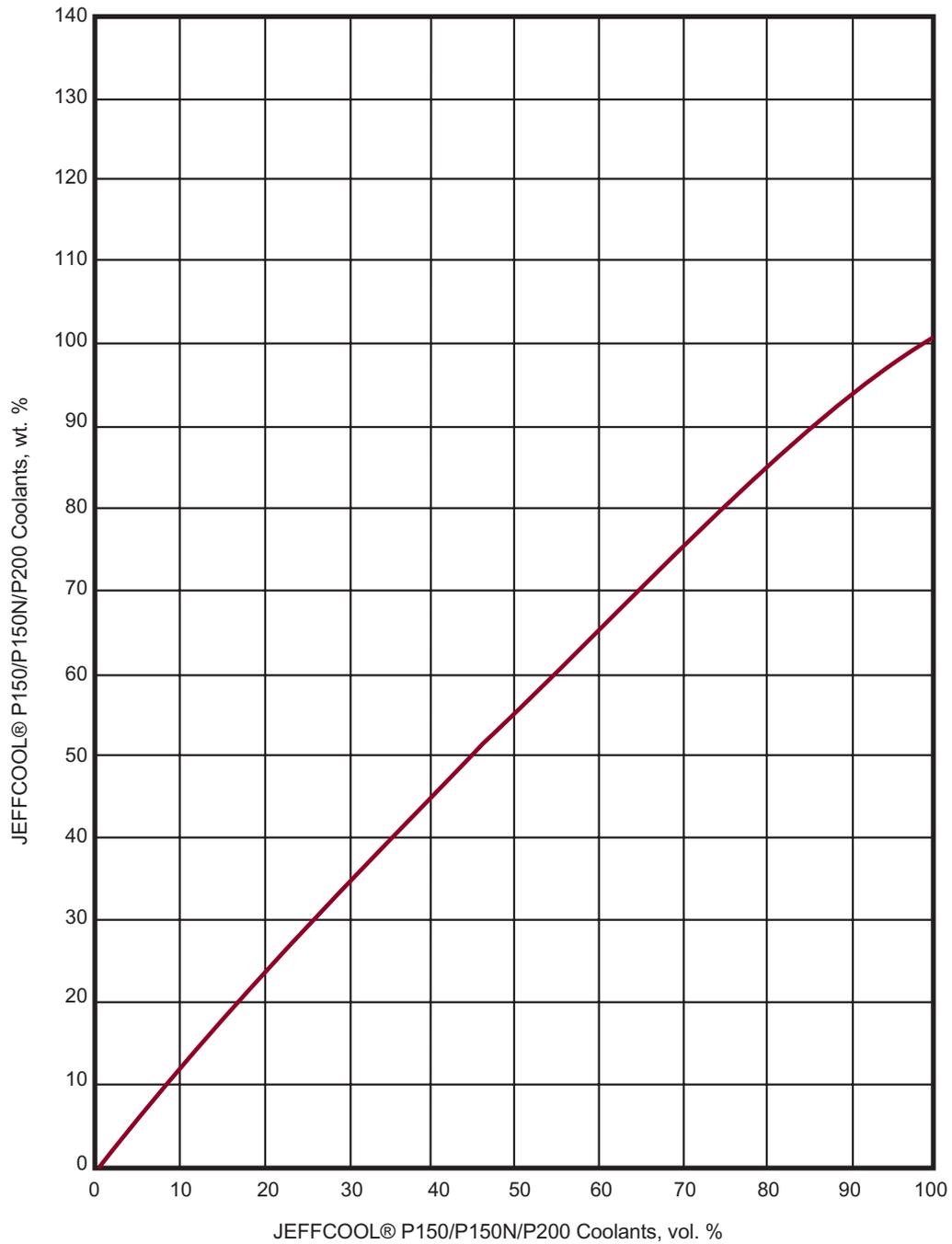
Physical Properties

FIGURE 16
Thermal Conductivities of Aqueous Solutions of
JEFFCOOL® P150, P150N & P200 Coolants



Physical Properties *Continued*

FIGURE 17
Conversion Chart for Aqueous Solutions of
JEFFCOOL® P150, P150N, & P200 Coolants



JEFFCOOL® Supplemental Coolant Additive Products

JEFFCOOL® SCA GENERIC NAMES

JEFFCOOL® Supplemental Coolant Additive

DESCRIPTION

JEFFCOOL SCA is a concentrated inhibitor package specifically for the Huntsman JEFFCOOL E100 and P150 series of industrial coolants and heat transfer fluids. It is dyed red in color to match the Huntsman standard and is slightly hazy and free of suspended solids.

APPLICATIONS

- supplemental coolant additive
- corrosion inhibitor

JEFFCOOL SCA is intended to be added to Huntsman's JEFFCOOL E100 (ethylene glycol based) and/or JEFFCOOL P150 (propylene glycol based) Coolants. When used as recommended by Huntsman's JEFFCOOL analytical service, the components of JEFFCOOL SCA can extend the useful life of coolant systems by replenishing critical inhibitors required to provide corrosion protection. Manufacturer's recommendations and instructions must be followed to achieve optimum product performance.

SALES SPECIFICATIONS

Property	Specifications	Test Method*
Appearance	Slightly hazy and substantially free of suspended solids.	ST-0061
Color	Red to match standard	
Specific Gravity, 60°F (15.6°C)	1.03 min. 1.07 max.	D-1122
Reserve Alkalinity	32 min. 42 max.	D-1121
pH, as is	9.0 min. 10.5 max.	D-1287
Chloride Ion, ppm	100 max.	D-5827-95
*Methods of Test are available upon request.		

JEFFCOOL® Supplemental Coolant Additive Products

JEFFCOOL® SCA-N GENERIC NAMES

JEFFCOOL® Supplemental Coolant Additive -N series

DESCRIPTION

JEFFCOOL SCA-N is a concentrated inhibitor package for the Huntsman JEFFCOOL N series industrial coolants and heat transfer fluids. It is dyed blue in color to match the Huntsman standard and is slightly hazy and free of suspended solids.

APPLICATIONS

- supplemental coolant additive
- corrosion inhibitor

JEFFCOOL SCA-N is intended to be added to Huntsman's JEFFCOOL E100N (ethylene glycol based) and/or JEFFCOOL P150N (propylene glycol based) Coolants. When used as recommended by Huntsman's JEFFCOOL analytical service, the components of JEFFCOOL SCA-N can extend the useful life of coolant systems by replenishing critical inhibitors required to provide corrosion protection. Manufacturer's recommendations and instructions must be followed to achieve optimum product performance.

SALES SPECIFICATIONS

Property	Specifications	Test Method*
Appearance	Slightly hazy and substantially free of suspended solids.	ST-0061
Color	Blue to match standard	
Specific Gravity, 60°F (15.6°C)	1.08 min. 1.12 max.	D-1122
Reserve Alkalinity	35 min. 45 max.	D-1121
pH, as is	9.0 min. 10.5 max.	D-1287
Chloride Ion, ppm	100 max.	D-5827-95
*Methods of Test are available upon request.		

USAGE Guidelines for JEFFCOOL® SCA and SCA-N Products

WHEN TO ADD THE JEFFCOOL SCA PRODUCT

The JEFFCOOL SCA should be added on an as-needed basis, determined by the concentrations of the inhibitors. The JEFFCOOL SCA or SCA-N should be added whenever any of the following conditions occur:

Phosphate drops below	1000 ppm
Tolytriazole drops below	100 ppm
Nitrite drops below	800 ppm (SCA-N only)

IDEAL TARGET CONCENTRATION AT 50%

Phosphate	5000 ppm
Tolytriazole	500 ppm
Nitrite	2000 ppm (SCA-N only)

For a cooling system which is completely uninhibited, whether a glycol/water mixture or just water, four quarts (one gallon) of JEFFCOOL SCA should be added per 10 gallons of cooling system volume.

For a system that specifies nitrite, limit the treatment to a maximum of two quarts of JEFFCOOL SCA-N per 10 gallons of cooling system volume, otherwise, overdose of nitrite will occur.

CONDEMNING LIMITS

The coolant should be drained and replaced with fresh fluid if any of the following occur:

- Chloride greater than 200 ppm
- pH less than 8.0 or greater than 11.0

Systems which require nitrite should use JEFFCOOL SCA-N product

CONDEMNING LIMITS FOR JEFFCOOL® PRODUCT SAMPLE ANALYSIS

Result	Value	Action
pH	<8 or >11	Replace Fluid
Chloride	>200 ppm	Replace Fluid
Water	>75%	Replace Fluid / Add JEFFCOOL® Concentrate
Water	<30%	Add Water
Tolytriazole	<100 ppm	Add JEFFCOOL® SCA or SCA-N
Phosphate	<1,000 ppm	Add JEFFCOOL® SCA or SCA-N
Nitrite	<800 ppm	Add JEFFCOOL® SCA-N

Guidelines for JEFFCOOL® P150N and E100N Products

Test	Acceptable Range	Action Levels	Action
pH	8.0 to 11.0	<8.0 or >11.0	Replace fluid
Nitrite	800 to 2999 ppm	<800 ppm	Add JEFFCOOL SCA-N (1qt per 10 gal system volume)
Nitrite	800 to 2999 ppm	>3000 ppm	Replace fluid or dilute

A pH of less than 8.0 or greater than 11.0 indicates that there is contamination or severe glycol degradation. It cannot be easily fixed, so the coolant should be replaced to avoid corrosion problems.

A nitrite concentration of at least 800 ppm is needed to protect against cavitation corrosion in heavy-duty engines. If the concentration gets over 3000 ppm (from too much JEFFCOOL SCA-N), it is corrosive to solder.

THE FREEZING POINT MAY BE LOWERED TO:			
Propylene Glycol Based Freeze Points For JEFFCOOL P150, P150N		Ethylene Glycol Based Freeze Points For JEFFCOOL E100, E100N	
20%	+10	30%	+1
30%	+8	35%	-5
35%	0	40%	-12
40%	-10	45%	-25
45%	-19	50%	-34
50%	-30	55%	-50
55%	-45	60%	-58
60%	-60		
65%	-70		

GUIDELINES FOR JEFFCOOL® P150 & E100 AL COOLANTS

In JEFFCOOL P150AL and E100 AL coolants, containing elevated levels of nitrite, nitrite and/or molybdate are the most appropriate “markers”. They can be checked quickly and with sufficient accuracy in the field with approved test strips or test kits. When these test methods indicate nitrite levels below 800-1000 ppm or molybdate levels below 300-400 ppm, it is then time to add JEFFCOOL SCA-AL for aluminum.

JEFFCOOL® AdPac-EP Product

GENERIC NAME

JEFFCOOL® AdPac-EP Concentrate

DESCRIPTION

JEFFCOOL AdPac-EP is a concentrated inhibitor for the Huntsman JEFFCOOL industrial coolants and heat transfer fluids.

APPLICATIONS

Manufacturing JEFFCOOL E100 and P150 Industrial Coolants

Corrosion inhibitor

JEFFCOOL AdPac-EP is used in the manufacturing of Huntsman's JEFFCOOL E100 (ethylene glycol based) and/or JEFFCOOL P150 (propylene glycol based) industrial coolants.

JEFFCOOL E100 and P150 coolants are accepted for use in heat transfer applications such as:

Line Heaters

Snow-Melting and Refrigeration Systems

Thermal Energy Storage, Heating and Cooling Systems

Other Industry Applications

- Automotive and aircraft manufacturers
- Chemical manufacturers
- Dye and dye intermediate producers
- Electric power companies
- Ice skating rinks
- Paint, varnish, and lacquer companies
- Paper and paper product companies
- Plastics and synthetic resin manufacturers
- Textile chemical manufacturers

JEFFCOOL® AdPac-EP Product

SALES SPECIFICATIONS

Property	Specifications	Test Method*
Appearance	Slightly hazy and free of suspended solids.	ST-0061
Color	Undyed	
Water, wt%	45.0 min. 54.0 max.	D-1123
Specific Gravity, 60/60°F (15.6°C)	1.26 min. 1.32 max.	D-1122
Reserve Alkalinity, ml	190 min. 250 max.	D-1121
pH, undiluted 11.0 max.	9.5 min. D-1287	
Chloride Ion, ppm	300 max.	CST 38.17

* Methods of Test are available upon request.

TO MAKE JEFFCOOL E100 COOLANT FROM THE ADDITIVE PACKAGE:

COMPOSITION	% BY WEIGHT	% BY VOLUME
Ethylene Glycol (coolant grade)	93.0379	93.9408
JEFFCOOL AdPac-EP	6.94	6.035
JEFFCOOL AdPac-P **	0.02	0.02
Dye, Rhodamine WT Liquid	0.0021	0.0022

** JEFFCOOL AdPac-P must be used in conjunction with AdPac-N and AdPac-EP.

TO MAKE JEFFCOOL® P150 COOLANT FROM THE ADDITIVE PACKAGE:

COMPOSITION	% BY WEIGHT	% BY VOLUME
Propylene Glycol (coolant grade)	93.0379	94.3238
JEFFCOOL AdPac-EP	6.94	5.654
JEFFCOOL AdPac-P **	0.02	0.021
Dye, Rhodamine WT Liquid	0.0021	0.0022

** JEFFCOOL AdPac-P must be used in conjunction with AdPac-N and AdPac-EP.

RECOMMENDED WATER SPECIFICATIONS

COMPONENT	SPECIFICATION
Chloride	25 PPM, Max.
Sulfate	25 PPM, Max.
Calcium	25 PPM, Max.
Magnesium	25 PPM, Max.
Total hardness	100 PPM, Max.

JEFFCOOL® AdPac-N Product

GENERIC NAME

JEFFCOOL® AdPac-N concentrate

DESCRIPTION

JEFFCOOL AdPac-N is a concentrated inhibitor package for the Huntsman JEFFCOOL N series industrial coolants and heat transfer fluids.

APPLICATIONS

- Manufacturing JEFFCOOL E100N and prediluted versions of JEFFCOOL P150N industrial coolants

- Corrosion inhibitor

JEFFCOOL AdPac-N is used in the manufacturing of Huntsman's JEFFCOOL E100N (ethylene glycol based) and/or JEFFCOOL P150N (propylene glycol bases) coolants.

JEFFCOOL E100N and P150N coolants are accepted for use in ALL heavy duty engines under the following brand names:

- Ajax
- Caterpillar
- Cooper Bessemer
- Dresser-Rand
- Enterprise
- Superior
- Waukesha

In addition, these JEFFCOOL coolants meet the performance requirements of ASTM D4985 and ASTM D5345.

JEFFCOOL E100N and P150N coolants are formulated to contain nitrite. These formulations can be used without a JEFFCOOL SCA Pre-Charge in engines that require nitrite to prevent cylinder liner cavitation corrosion, as specified by the engine manufacturer.

JEFFCOOL® AdPac-N Product

SALES SPECIFICATIONS

Property	Specifications	Test Method*
Appearance	Slightly hazy and substantially free of suspended solids.	ST-0061
Color	Un-dyed	
Water, wt%	45.0 min. 54.0 max.	D-1123
Specific Gravity, 60/60°F (15.6°C)	1.310 min. 1.370 max.	D-1122
Reserve Alkalinity, ml	190 min. 250 max.	D-1121
pH, undiluted	9.5 min. 11.0 max.	D-1287
Chloride Ion, ppm	300 max.	CST 38.17
* Methods of Test are available upon request.		

TO MAKE JEFFCOOL E100N COOLANT FROM THE ADDITIVE PACKAGE:

COMPOSITION	% BY WEIGHT	% BY VOLUME
Ethylene Glycol (coolant grade)	93.0384	93.9414
JEFFCOOL AdPac-N	6.94	6.035
JEFFCOOL AdPac-P **	0.02	0.022
Dye, Intralite, Turquoise, powder	0.0016	0.0016
** JEFFCOOL AdPac-P must be used in conjunction with AdPac-N and AdPac-EP.		

TO MAKE JEFFCOOL® P155N COOLANT FROM THE ADDITIVE PACKAGE:

COMPOSITION	% BY WEIGHT	% BY VOLUME
Propylene Glycol (coolant grade)	47.9692	47.2992
Water, Deionized	48.44	50.00
JEFFCOOL AdPac-N	3.58	2.69
JEFFCOOL AdPac-P **	0.010	0.010
Dye, Intralite, Turquoise, powder	0.0008	0.0008
** JEFFCOOL AdPac-P must be used in conjunction with AdPac-N and AdPac-EP.		

Only pre-diluted versions of JEFFCOOL P150N coolant should be made from the JEFFCOOL AdPac-N product.

RECOMMENDED WATER SPECIFICATIONS

COMPONENT	SPECIFICATION
Chloride	25 PPM, Max.
Sulfate	25 PPM, Max.
Calcium	25 PPM, Max.
Magnesium	25 PPM, Max.
Total hardness	100 PPM, Max.

JEFFCOOL® AdPac-P Product

JEFFCOOL® AdPac-P is used in conjunction with JEFFCOOL AdPac-EP and AdPac-N to manufacturer JEFFCOOL coolants and heat transfer fluids. Please follow recommended manufacturing procedures and consult with your Huntsman technical representative prior to use.

STANDARD PACKAGING

55 gallon, non-returnable steel drum (450 pounds net, 490 pounds gross). Please refer to the Material Safety Data Sheet (MSDS) for this product for instructions on safe and proper handling and disposal.

SPECIFICATIONS	
Color, APHA	50 Max
Water, weight %	0.4 Max
pH (2.5% Aqueous)	5.0 – 7.5

TYPICAL PHYSICAL PROPERTIES	
Form	Liquid
Specific gravity, 25°/25°C	1.01
Viscosity cps at 25°C	325
Pour point	-29 °C
Solubility in water at 25 °C	Insoluble



JEFFCOOL® Product Analytical Program Services

HUNTSMAN JEFFCOOL® PRODUCTS – ANALYTICAL PROGRAM SERVICES

Huntsman Corporation provides a full service testing program for the JEFFCOOL product line. Huntsman Corporation has developed a Sample Test Kit Program to provide proper product integrity and maintenance for JEFFCOOL products. Services include: sample test kit, initial fill & annual product analysis, and recommended fluid maintenance procedures.

SAMPLE TEST KITS

Sample test kits are free of charge to Huntsman distributors and their customers who purchase JEFFCOOL products. Kits are available upon request. The kits include: self-addressed shipping box, pre-labeled sample bottle, weather-proof self-adhesive product installation tag and detailed sampling procedures.

ANALYSIS

Huntsman provides free analysis on initial system charges to ensure product integrity and annual analysis at no charge for system maintenance. The analysis is sent to the customer and a copy is supplied to the distributor servicing that customer, if applicable.

PRODUCT MAINTENANCE AND RECOMMENDATIONS

Sample evaluation recommendations are made to ensure proper fluid maintenance. These recommendations are based upon a variety of criteria that must be present in fluids to function properly. Huntsman has a full line of supplemental coolant additives to effectively maintain these criteria over extended service intervals.

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Emergency Assistance

For transportation emergencies
only, call CHEMTREC 1-800-424-
9300 or 1-800-328-8501.

For all other emergencies, call
409-722-8381, our 24-hour
emergency number in Port
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