



## Key Benefits

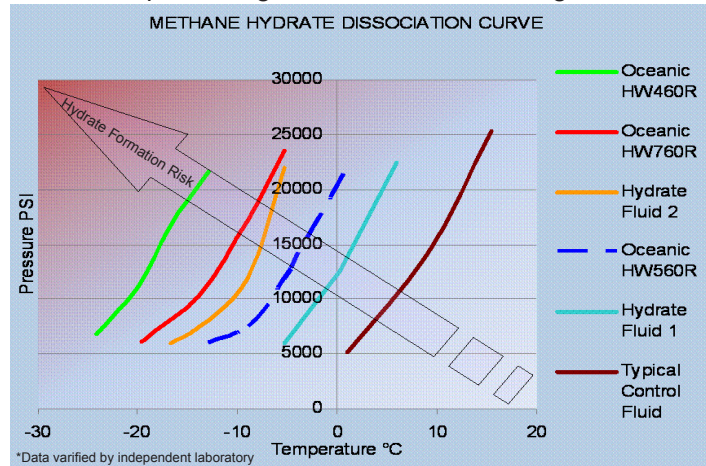
- Specified for high pressure gas wells in any climate
- Low temperature to -50°C
- Excellent extreme pressure and anti-wear lubrication properties
- Excellent liquid corrosion protection
- HW460R and HW760R offer vapor phase corrosion protection and therefore are for long term equipment storage
- Resistant to microbial infection
- Outstanding stability with high levels of seawater ingress; Seawater contamination up to:
  - 20% in HW560
  - 50% in HW460R
  - 50% in HW760R
- Fully compatible with other Oceanic HW fluids
- Manufactured to NAS 1638/AS 4059 Class 6/6b-f or better cleanliness
- Free Fluid Monitoring program ensures long service life

## Description

Oceanic HW560 is specified for high pressure gas wells with temperatures up to 100°C. Oceanic HW460 and HW760 fluids are high performance, high temperature water based hydraulic fluids with operational temperature's 145°C (275°F) for HW460R and 180°C (356°F) for HW760R.

Oceanic HW460R and HW760R have the added benefit of use at very low temperatures and best in class resistance to HYDRATE FORMATION within the control system meeting stringent global environmental acceptability regulations. Consult with your local MacDermid personnel in your region.

The following illustration indicates boundary lines for hydrate formation within various subsea fluids. Hydrate formation is likely when fluid is exposed to gas at conditions to the left of the curve and less likely when fluid is exposed to gas at conditions to the right.



## Typical Physical Properties

	Oceanic HW560	Oceanic HW460R	Oceanic HW760R
Appearance	Clear Red Fluorescent Fluid	Clear Red Fluorescent Fluid	Clear Red Fluorescent Fluid
pH	9.7	9.7	9.2
Specific Gravity @15.6°C	1.10	1.09	1.10
Kinematic Viscosity (cSt)			
-20°C (-4°F)	60	45	50
0°C (32°F)	20	15	17
40°C (104°F)	4.5	3.1	3.3
Pour Point	<-50°C (58°F)	<-40°C (-40°F)	<-40°C (-40°F)

For further recommendations, technical information, Health & Safety data sheets, OEM or environmental approvals, email [wigansales@macdermid.com](mailto:wigansales@macdermid.com)



THE CONTROL FLUID TECHNOLOGY LEADER

Hydrate Resistant Fluids | Issue No. 1 Date: Aug 2011 | [www.macdermid.com/offshore](http://www.macdermid.com/offshore)

HYDRATE RESISTANT FLUIDS



## Environmental Information

MacDermid maintains worldwide environmental approvals and can offer Oceanic Subsea Production control fluids suitable for use in every exploration and production region around the world. The current environmental status of our fluids in your specific region can be obtained from our environmental specialists.

## Storage

Hydrate Resistant fluids should be stored in dry conditions, ideally out of direct sunlight. Normal storage temperature range is 5 to 40°C. This range of fluids are capable of -50°C without detriment to product integrity.

## Material Compatibility

Hydrate Resistant fluids contain performance additives which ensure high levels of compatibility with materials typically used in subsea production control equipment. Extensive material compatibility tests have been performed.

Ferrous metals (cast iron, carbon steel, ..... low & high alloy steels, stainless steels...)	Compatible
Non-ferrous metals (copper, brass, bronze ..... and other metals and alloys*)	Compatible with alloys typically used in subsea production control equipment.
Coatings and ceramic materials	Avoid porous coatings. Compatible with most ceramic parts. Check ceramic coatings
Packaging & sealing materials (elastomers and thermoplastics*)	Compatible with standard NBR, HNBR, FFKM, VMQ/FMVQ, CR, TFE/PTFE, PEEK. Some FKM & AU/EU/PU have proven to be incompatible
Umbilical hose liner thermoplastics	Compatible with Nylon 11, PE and Polyether ester copolymers
Absorbent gasket materials	Avoid cork, leather, cotton impregnated materials
Filter elements	Polypropylene and glass fiber filter elements recommended over paper filters

\* As material compatibility varies from compound to compound and supplier to supplier, consult supplier for recommendations or request specific compatibility tests.

### MacDermid Offshore Solutions A Subsidiary of MacDermid Group

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