Technical Data Sheet

Shell **Caprinus** *HPD 40*

Railroad diesel engine oil

Shell Caprinus HPD 40 is a premium grade, heavy-duty, crankcase oil, intended mainly for railroad diesel engines of American origin, particularly those manufactured by General Electric and General Motors Electro-Motive Division (EMD).
Although it is fortified by additives providing alkalinity, dispersancy and resistance to oxidation, it does not contain zinc and therefore can be used in EMD engines fitted with silver piston-pin bearings.
Shell Caprinus HPD 40, which contains high viscosity index mineral oil, is designed specially for use in highly rated North American railroad engines subjected to the most severe operating conditions, especially where fuel sulphur is high (say around 1%) and where long oil drain intervals are required.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **Good detergency and dispersancy properties**
  A carefully balanced combination of detergency and dispersancy ensures outstanding engine cleanliness.
- **Good oxidation and thermal stability**
  Good protection against corrosion by the acidic products of combustion.
- **Good anti-wear properties**
  Maintains a protective oil film between pistons and their rings and cylinder walls, even under high operating temperatures and pressures.
- **High viscosity index base oils**
  Provides a higher level of protection than lubricants based on naphthenic mineral oils.

Main Applications

- North American diesel engines subjected to the most arduous duty where 'zinc-free' oils are recommended by the engine manufacturer. Applications are primarily for railroad locomotives, however Caprinus HPD may also be suitable for certain engines in power generation, marine and mine-haul applications.

Specifications, Approvals & Recommendations

- Detroit Diesel - Recommended for DDC Series 149 engines under severe conditions
- API Service Class'n. - CD
- EMD - Worthy of full scale field test (WOFT)
- General Electric - Gen 4 - Long Life "tentative approval"
- LMOA - Generation 5

  For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk, or the OEM Approvals website.

Compatibility & Miscibility

- **Seal & Paint Compatibility**
  Shell Caprinus HPD 40 is compatible with all seal materials and paints normally specified for use with mineral oils.

Typical Physical Characteristics

Properties			Method	Shell Caprinus HPD 40
SAE Viscosity Grade				40
Kinematic Viscosity	@40°C	cSt	IP 71	160.0
Kinematic Viscosity	@100°C	cSt	IP 71	14.5
Viscosity Index			IP 226	98
Density	@15°C	kg/l	IP 365	0.908
Flash Point (COC)		°C	IP 36	235
Pour Point		°C	IP 15	-9
TBN-E		mg KOH/g	IP 276	13.0
Sulphated Ash		% wt	IP 163	1.5

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.

Health, Safety & Environment

- **Health and Safety**

  Shell Caprinus HPD 40 is unlikely to present any significant health or safety hazard when properly used in the recommended application and good standards of personal hygiene are maintained.

  Avoid contact with skin. Use impervious gloves with used oil. After skin contact, wash immediately with soap and water.

  Guidance on Health and Safety is available on the appropriate Material Safety Data Sheet, which can be obtained from http://www.epc.shell.com/

- **Protect the Environment**

  Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

Additional Information

- **Advice**

  Advice on applications not covered here may be obtained from your Shell representative.