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APPROVAL DATE:
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REV: 4

SS –85: 5000 S HIGH DENSITY POLYETHYLENE STANDARD SPECIFICATION

1) **PRODUCT DESCRIPTION:** High density polyethylene, copolimer, with basic stabilization. Ethylene and propylene are the only monomers used for producing 5000 S grade; there are not used plasticizers or coloured masterbatches. The product has natural color.
2) **APPLICATIONS:** extrusion moulding, monofilaments and streching tapes for cables, ropes and fibres manufacuture.
3) **PROPERTIES:**

PROPERTIES	MU	LIMITS	TEST METHOD
ASPECT:	-	Granules in form of cylinder or parallelepiped with a max height of 6 mm, uniform color without extraneous matter	VISUAL
CONTAMINATION(5)	%	max 0.15	VISUAL/GRAVIMETRIC
PHYSICAL			
Melt flow index (4) (190 °C/ 2.16 kg)	g/10min	0.65-0.95	ISO 1133 B
Density(23 °C)(2,4)	g/cm^3	0.940-0.960	ISO 1183 ASTM D790 ASTM D1505
Ash content(4)	%	max 0.08	ASTM D5630
Residual solvent content(4)	%	max 0.08	SR EN 13628/1
MECANICHAL			
Yield Strength(1,4) (23 °C, v=50mm/min)	MPa	min. 20	ISO 527/1,2
Yield Stress (1,4) (23 °C, v=50mm/min)	%	min. 10	ISO 527/1,2
THERMICAL			
VICAT Softening temperature(2,3) (A - 50^{0}C/h-10N)	^{0}C	min. 115	ISO 306/A

Note:
1) The medium value of the mechanical properties is measured on standard samples made by injection process (ISO 3167/ ISO 294) conditioned according with ISO 291 requirements.
2) The average value for physical / thermal properties is measured on standard samples obtained by compression molding according with ASTM D4703C and conditioned according to ISO 291 requirements
3) Periodical tests.
4) Tests on batches.
5) Contamination: granules which do not comply with the appearance conditions, colored, expanded, unmelted, oxidizes, long and cluster granules

ADDITIONAL INFORMATIONS:

- We confirm that our product fulfills requirements regarding European Regulation (UE) No. 10/2011 relating to plastic materials and articles intended to come into contact with food stuff/ drinking water, with all subsequent ammendments.
- Processing information:
  - Recommended melt temperature: 180-230^{0}C;
  - Thermal profile recommended for extrusion: 200-230^{0}C depending on the type of equipment.

4) **QUALITY CONTROL**: Control is done on batches.
-Each lot will have max 150 tons. The lot will contain product of the same grade.
-During test operation, the product must comply all the parameters depicted in this standard specification.
-In case of litigation, the control of the quality will be done in the presence of the client representative, using the samples kept for those cases. The samples will be taken in accordance with the sampling procedure.
NOTE: All tests will be performed using the supplier's testing machines.

5) **SAMPLING PROCEDURE**:
- Sampling will be done according to the sampling procedure during packing of the batch.
- The samples will be mixed for homogenization and the quantity of sample will be reduced by the "quarter method" to minimum 5 kg.
- One sample is analyzed in the laboratory of the supplier, and the other sample will be kept three months after delivery, for control in case of litigation.
- The sample is sealed and labeled.

6)**DELIVERY:** CP4 Euro pallets (1375 kg /pallet), big-bags (1000 kg) and bulk in container-liner and silo truck.

The integrated management system of quality – environment – health and safety is certified by DNV – GL according to ISO 9001, ISO 14001 and OHSAS 18001

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7)**GUARANTEE:** The product is guaranteed 3 months after delivery under the recommended "handling, transport and storage" conditions according to "SAFETY DATA SHEET"-MSDS-04.
8)**VALABILITY**: The product is guaranteed 12 months after production data, under the recommended "handling, transport and storage" conditions, according to MSDS-04. The valability can be extended by a new inspection and evaluation of the quality.
9)**DOCUMENTS:** Certificate of conformity /Test report
10) **HANDLING, STORAGE AND TRANSPORT INFORMATION:** According to "SAFETY DATA SHEET" - MSDS - 04. If polymer is stored in conditions of high humidity and fluctuating temperatures, then atmospheric moisture can condensate inside the packing. In this case it is recommended to dry the pellets before use. During the storage, high density polyethylene should not be exposed to UV radiation. Producer does not take any responsibility for damage caused by inadequate storage.
11) **OTHER INFORMATIONS:**
The MSDS is available by Sales Marketing Rompetrol Refining offices for the customers. The MSDS contains necessary information in order to ensure customers' own safe in handling and processing activity.
The information below is related only to the delivered product.

Safety
High density polyethylene is an inert commercial polymer and under normal handling induces no hazard. Product storage must be in accordance with MSDS procedure. The working people should avoid skin or eyes contact with molten polymer. As a minimal precaution to prevent eyes injury, safety glasses are indicated.
Fabrication areas should be well ventilated. Workplace environments should be kept clean and free of dust.

Fire hazard
High density polyethylene is a combustible substance, but under normal storage conditions there is no ignition hazard. In contact with flame it becomes soft, flows, ignites and burns with a light flame until exhausting (if it isn't stabilized with a flame retardant agent). Therefore it has to be handled and stored avoiding contacts with open flames or other ignition sources. While burning, it releases high heat and a dense black smoke. In closed areas, fire fighters must use self-contained breathing apparatus.

Recycling
High density polyethylene is a recyclable material. It is recommended to recycle production rejects and wastes instead of disposal.

Disposal
Disposal of any wastes should respect all national and local valid regulations. The below information are related to High density polyethylene homopolymer/copolymer. The influence of the additives, fillers or other materials added by buyers must be taken into consideration using the related documentation. High density polyethylene homopolymer/copolymer can be disposed by inter or by controlled incineration, respecting valid regulations regarding gaseous emission or solid particles discharges. Due to the high level of heat enduced, incineration has to be done only in dedicated units. In case of interring: High density polyethylene is inert, does not degrade quickly, form a strong and permanent soil base and does not release gases or other compounds known to pollute water resources.

The mission assumed by Rompetrol Refining is to build a strong partnership supplier/customer. Assuming this purpose, Rompetrol Refining intents to offer products of high quality for satisfaction of all customers' needs and expectations, to keep permanently contact with clients in order to acknowledge processing troubleshooting, to ensure technical support to solve them, to develop new products for existing or potential markets. Rompetrol Refining recognizes community concerns regarding his potential impact activity on the environment and therefore encourages his customers to review their processes from the human health and environment point of view. In order to prevent using the products in manners for which they are not intended or tested, Rompetrol Refining offer to its customers product literature, including suitable Material Safety Data Sheet, that should be consulted prior to use its products.

NOTE: We do not undertake any responsability or liability for using Rompetrol Refining *products for other purposes than the ones recommended in this standard specification. It is the customer's responsibility to inspect and test our products in order to assure himself as to their suitability for his intended use*.

NOTE REGARDING MEDICAL APPLICATION RESTRICTIONS: Rompetrol Refining *does not recommend any company product for applications that involve human tissues or internal fluids contacts - regardless of the contact length of time, for cardiac devices, for medical device components that support human life, as well as for applications that have connections with human reproduction*.

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