

Laboratory **Stewart Surveyors & Assayers Pvt. Ltd., 25-12-40, Ground & 2nd Floor, PVR Chambers, Godeyvari Street, Visakhapatnam, Andhra Pradesh**

Accreditation Standard **ISO/IEC 17025: 2005**

Discipline **Chemical Testing** **Issue Date** **09.03.2014**

Certificate Number **T-2185** **Valid Until** **08.03.2016**

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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I. ORES & MINERALS				
1.	Iron Ore	Moisture	IS 1493 (Part 1) 1981, RA 2006/ IS 11690-1986, RA 2008/ ISO 3087 : 2011 IMSBC Code - 2012, Appx.- 2	1% to 15%
		Silica	IS 1493 (Part 1) 1981, RA 2006/ ISO 2598 -1 : 1992	0.3% to 10%
		Total Iron	IS 1493 (Part 1) 1981, RA 2006/ ISO 2597 -1 : 2006	35% to 70%
		Alumina	IS 1493 (Part 1) 1981, RA 2006/ ISO 6830 : 1986	0.3% to 10%
		Phosphorus	IS 1493 : 1959, RA 2006/ ISO 2599 : 2003/ Chemical & Instrumental Analysis of Ores, Indian Bureau of Mines:2012	0.01% to 0.2%
		Sulphur	IS 1493 (Part -1) 1981, RA 2006/ ISO 4689 : 1986 / ASTM E 1915-11	0.004% to 0.3%
		Loss on Ignition	Chemical & Instrumental Analysis of Ores, Indian Bureau of Mines : 2012, Page 292	0.5% to 10%

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	Iron Ore	Flow Moisture Point (FMP) & Transportable Moisture Limit (TML)	IMSBC Code - 2012, Appx.- 2 (By Flow Table method)	5% to 20%
		Angle of Repose	IMSBC Code - 2012, Appx.- 2 (By Tilting Box method)	30° to 45°
2.	Manganese Ore	Total Moisture	IS 1473 : 2004, RA 2008/ IS 1449 : 2010, RA 2012	1% to 15%
		Manganese	IS 1473 : 2004, RA 2008	15% to 60%
		Silica	IS 1473 : 2004, RA 2008	1% to 15%
		Total Iron	IS 1473 : 2004, RA 2008	1% to 30%
		Alumina	IS 1473 : 2004, RA 2008	0.5% to 8%
		Phosphorus	IS 1473 : 2004, RA 2008	0.015% to 0.5%
		Sulphur	IS 1473 : 2004, RA 2008	0.01% to 0.2%
II. METALS & ALLOYS				
1.	Silicomanganese	Silicon	IS 1559 : 1961, RA 2007	10% to 25%
		Manganese	IS 1559 : 1961, RA 2007/ ISO 4159 -1978 (E)	55% to 75%

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	Silicomanganese	Phosphorus	IS 1559 : 1961, RA 2007/ SSAPL/VSP/IHM/SiMn/03	0.05% to 0.5%
		Sulphur	ASTM E 1019-11	0.005% to 0.05%
		Carbon	ASTM E 1019-11	0.05% to 3.5%
2.	Ferrochromium	Silicon	IS 13452 (Part 1): 1992, RA 2007/ ISO 4158 - 1978 (E)/	1% to 10%
		HCFC	IS 13452 (Part 2):1992, RA 2007	0.2% to 6%
		LCFC		
		Chromium	IS 13452 (Part 5): 2003, RA 2009/ ISO 4140 - 1979 (E)/	50% to 70%
		HCFC	IS 13452 (Part 6):1997, RA 2007	55% to 85%
		LCFC		
		Phosphorus	IS 13452 (Part 7): 2003, RA 2009/ SSAPL/VSP/IHM/HCFC/01	0.01% to 0.06%
		HCFC	SSAPL/VSP/IHM/LCFC/05	
		LCFC		
		Sulphur	ASTM E 1019-11	0.005% to 0.5%
		HCFC		
		LCFC		0.005% to 0.5%
		Carbon	ASTM E 1019-11	4% to 10%
		HCFC		
		LCFC		0.05% to 0.4%

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3.	Ferromanganese	Silicon	IS 1559 : 1961, RA 2007	0.2% to 4%
		Manganese	IS 1559 : 1961, RA 2007/ ISO 4159 - 1978 (E)	55% to 90%
		Phosphorus	IS 1559 : 1961, RA 2007/ SSAPL/VSP/IHM/FeMn/04	0.05% to 0.5%
		Sulphur	ASTM E 1019-11	0.005% to 0.1%
		Carbon	ASTM E 1019-11	4% to 8%
4.	Ferrosilicon	Silicon	IS 1559 (Part 1): 1988, RA 2009	60% to 80%
		Aluminium	IS 1559 (Part 5): 2003, RA 2009	0.05% to 1.75%
		Phosphorus	IS 1559 (Part 4): 1982, RA 2007/ SSAPL/VSP/IHM/FeSi/02	0.005% to 0.05%
		Sulphur	ASTM E 1019-11	0.003% to 0.1%
		Carbon	ASTM E 1019-11	0.03% to 1%

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III. FOOD & AGRICULTURAL PRODUCTS

A. OILS & FATS

1.	Crude Palm Oil (CPO)	Moisture and Volatile Matter	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 3.0 / ISO 662 : 1998	0.05% to 0.50%
		Insoluble Impurities	IS 548 (Part I)-1964, RA 2010/ ISO 663 : 2007	0.003% to 0.10%
		Acid Value/ Free Fatty Acid	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 11.0 / ISO 660 : 2009	1.00% to 12%
		Refractive Index	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 5.0	1.4000 to 1.4700
		Unsaponifiable Matter	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 10.0	0.1% to 1.5%
		Saponification Value	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 9.0	188 to 220 mg KOH/gm
		Specific Gravity / Density	IS 548 (Part I)-1964, RA 2010/ ISO 6883 : 2007 / DGHS Lab. Manual 2 - 4.0	0.8950 to 0.9060 gm/ml
		Iodine Value (Wijs Method)	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 12.0 / ISO 3961 : 2009	40 to 60

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	Crude Palm Oil (CPO)	Peroxide Value	IS 548 (Part I)-1964, RA 2010	0.5 to 10 meq per 1000 gms
		Colour	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 7.0 / ISO 15305:1998	40 to 120 Units
		Melting Point (Open Tube Capillary Slip Method)	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 8.0/ ISO 6321 : 2002	30°C to 42°C
		Flash Point (Pensky Martens Closed Cup Method)	DGHS Lab. Manual 2 - 6.1	105°C to 320°C
		Mineral Oil (Holdes Test)	IS 548 (Part II)-1976, RA 2010/ DGHS Lab. Manual 2 - 28.1	Present / Absent (Qualitative Test)
		Cotton Seed Oil (Halphens Test)	IS 548 (Part II)-1976, RA 2010/ DGHS Lab. Manual 2 - 16.0	Present / Absent (Qualitative Test)
		Sesame Oil	DGHS Lab. Manual 2 - 15.0	Present / Absent (Qualitative Test)
		Castor Oil	DGHS Lab. Manual 2 - 29.0	Present / Absent (Qualitative Test)
		Beta-Carotene	BS 684-2.20:1977/ DGHS Lab. Manual 2 - 36.0	250 to 650 ppm

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2.	Crude Palm Kernel Oil (CPKO)	Moisture and Volatile Matter	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 3.0/ ISO 662 : 1998	0.05% to 0.50%
		Insoluble Impurities	IS 548 (Part I)-1964, RA 2010/ ISO 663 : 2007	0.003% to 0.10%
		Acid Value/ Free Fatty Acid	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 11.0/ ISO 660 : 2009	1.00% to 10%
		Refractive Index	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 5.0	1.4200 to 1.4800
		Unsaponifiable Matter	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 10.0	0.1% to 1.5%
		Saponification Value	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 9.0	220 to 270 mg KOH/gm
		Specific Gravity/ Density	IS 548 (Part I)-1964, RA 2010/ ISO 6883 : 2007/ DGHS Lab. Manual 2 - 4.0	0.9100 to 0.9150 gm/ml
		Iodine Value (Wijs Method)	IS 548 (Part I)-1964, RA 2010/ ISO 3961 : 2009/ DGHS Lab. Manual 2 - 12.0	10 to 25
		Peroxide Value	IS 548 (Part I)-1964, RA 2010	0.5 to 10 meq per 1000 gms

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	Crude Palm Kernel Oil (CPKO)	Flash Point (Pensky Martens Closed Cup Method)	DGHS Lab. Manual 2 - 6.1	105°C to 320°C
		Colour	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 7.0 / ISO 15305 : 1998	20 to 70 Units
		Melting Point (Open Tube Capillary Slip Method)	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 8.0/ ISO 6321 : 2002	20°C to 30°C
3.	Crude Sunflower Seed Oil (CSFO)	Moisture and Volatile Matter	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 3.0/ ISO 662 : 1998	0.05% to 0.50%
		Acid Value/ Free Fatty Acid	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 11.0/ ISO 660:2009	0.40% to 10%
		Insoluble Impurities	IS 548 (Part I)-1964, RA 2010/ ISO 663 : 2007	0.003% to 0.10%
		Refractive Index	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 5.0	1.4400 to 1.4700
		Unsaponifiable Matter	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 10.0	0.1% to 1.5%
		Saponification Value	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 9.0	180 to 220 mg KOH/gm

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	Crude Sunflower Seed Oil (CSFO)	Specific Gravity/ Density	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 4.0 / ISO 6883 : 2007	0.9100 to 0.9150 gm/ml
		Iodine Value (Wijs Method)	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 12.0/ ISO 3961 : 2009	95 to 150
		Peroxide Value	IS 548 (Part I)-1964, RA 2010	0.5 to 10 meq per 1000 gms
		Colour	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 7.0 / ISO 15305 : 1998	10 to 50 Units
		Bleachability	AOCS Cc 8b-52 :1979, Reap. 1993	38% to 90%
		Acetone Insolubles	AOCS Ja 4-46, Revised 2003	0.1% to 1.0%
		Mineral Oil (Holdes Test)	IS 548 (Part II)-1976, RA 2010/ DGHS Lab. Manual 2 - 28.1	Present / Absent (Qualitative Test)
		Cotton Seed Oil (Halphens Test)	IS 548 (Part II)-1976, RA 2010/ DGHS Lab. Manual 2 - 16.0	Present / Absent (Qualitative Test)
		Sesame Oil	DGHS Lab. Manual 2 - 15.0	Present / Absent (Qualitative Test)
		Flash Point (Pensky Martens Closed Cup Method)	DGHS Lab. Manual 2 - 6.1	105°C to 320°C

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4.	Refined Bleached Deodorized Palm Olein (RBD)	Moisture and Volatile Matter	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 3.0/ ISO 662 : 1998	0.04% to 0.50%
		Insoluble Impurities	IS 548 (Part I)-1964, RA 2010 ISO 663 : 2007	0.003% to 0.10%
		Acid Value/ Free Fatty Acid	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 11.0/ ISO 660:2009	0.05% to 10%
		Refractive Index	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 5.0	1.4500 to 1.4700
		Unsaponifiable Matter	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 10.0	0.1% to 1.5%
		Saponification Value	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 9.0	190 to 220 mg KOH/gm
		Specific Gravity/ Density	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 4.0/ ISO 6883 : 2007	0.9000 to 0.9060 gm/ml
		Iodine Value (Wijs Method)	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 12.0/ ISO 3961 : 2009	48 to 70
		Peroxide Value	IS 548 (Part I)-1964, RA 2010	0.5 to 10 meq per 1000 gms

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	Refined Bleached Deodorized Palm Olein (RBD)	Colour	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 7.0/ ISO 15305 : 1998	20 to 80 Units
		Melting Point (Open Tube Capillary Slip Method)	IS 548 (Part I)-1964, RA 2010/ DGHS Lab. Manual 2 - 8.0/ ISO 6321 : 2002	20°C to 30°C
		Flash Point (Pensky Martens Closed Cup Method)	DGHS Lab. Manual 2 - 6.1	105°C to 320°C
		Mineral Oil (Holdes Test)	IS 548 (Part II)-1976, RA 2010/ DGHS Lab. Manual 2 - 28.1	Present / Absent (Qualitative Test)
		Cotton Seed Oil (Halphens Test)	IS 548 (Part II)-1976, RA 2010/ DGHS Lab. Manual 2 - 16.0	Present / Absent (Qualitative Test)
		Sesame Oil	DGHS Lab. Manual 2 - 15.0	Present / Absent (Qualitative Test)
		Castor Oil	DGHS Lab. Manual 2 - 29.0	Present / Absent (Qualitative Test)
		Hydrocyanic Acid	IS 548 (Part II)-1976, RA 2009/ DGHS Lab. Manual 2 - 32.3	Present / Absent (Qualitative Test)
	Cloud Point	DGHS Lab. Manual 2 - 17.0	7°C to 20°C	

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5.	Crude Degummed Soyabean Oil (CDSBO)	Moisture and Volatile Matter	IS 548 (Part I)-1964, RA 2010 DGHS Lab. Manual 2 - 3.0 ISO 662 : 1998	0.04% to 0.50%
		Insoluble Impurities	IS 548 (Part I)-1964, RA 2010 ISO 663 : 2007	0.005% to 0.10%
		Acid Value/ Free Fatty Acid	IS 548 (Part I)-1964, RA 2010 DGHS Lab. Manual 2 - 11.0 ISO 660 : 2009	0.5% to 10%
		Refractive Index	IS 548 (Part I)-1964, RA 2010 DGHS Lab. Manual 2 - 5.0	1.4600 to 1.4720
		Unsaponifiable Matter	IS 548 (Part I)-1964, RA 2010 DGHS Lab. Manual 2 - 10.0	0.1% to 1.5%
		Saponification Value	IS 548 (Part I)-1964, RA 2010 DGHS Lab. Manual 2 - 9.0	180 to 210 mg KOH/gm
		Specific Gravity/ Density	IS 548 (Part I)-1964, RA 2010 DGHS Lab. Manual 2 - 4.0 ISO 6883 : 2007	0.9100 to 0.9150gm/ml
		Iodine Value (Wijs Method)	IS 548 (Part I)-1964, RA 2010 DGHS Lab. Manual 2 - 12.0 ISO 3961 : 2009	110 to 150
	Peroxide Value	IS 548 (Part I)-1964, RA 2010	0.5 to 10 meq per 1000 gms	

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	Crude Degummed Soyabean Oil (CDSBO)	Colour	IS 548 (Part I)-1964, RA 2010 DGHS Lab. Manual 2 - 7.0 ISO 15305 : 1998	20 to 40 Units
		Bleachability	AOCS Cc 8b-52 :1979, Reap. 1993	40% to 90%
		Flash Point (Pensky Martens Closed Cup Method)	DGHS Lab. Manual 2 - 6.1	105°C to 320°C
		Phosphorus	DGHS Lab. Manual 2 - 34.0	0.003% to 0.20%

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